

Mathematics 700-1200

Diagnostic Tests

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MATHEMATICS 700-1200

Introduction

PLACEMENT TEST for the LIFE PAC CURRICULUM

Instructions

This test is designed to aid the teacher in proper placement of the student into the LIFE PAC curriculum. It has two sections: the Student Test and the Answer Key. The Answer Key is an insert in the Student Test and may be removed when testing begins.

This is not a timed test and the student should be given an opportunity to answer each question adequately. If the student becomes bogged down and the test seems too difficult, skip to the next section. If the test is still too difficult, this child's academic skill level has been reached and testing may stop. Each test level should take no longer than one hour. Students should not use calculators for any of these tests.

Testing should begin approximately two grade levels below the student's current or just completed grade level. For example, a student entering tenth grade [1000] should begin testing at the eighth grade [800] level. This allows for proper grade level placement as well as identification of any learning gaps that the student may have.

Once the test has been administered, it is ready to be scored. The teacher or parent does all of the scoring except for those who are using one of our placement services. Use the Answer Key to mark all incorrect answers on the Student Test. Next, record the total number of **correct** answers in the box beneath the LIFE PAC number in the left hand column. When all tests have been graded, transfer the number correct by LIFE PAC to the Student Placement Worksheet on the back page of the Answer Keys. Then add the total number of points per grade level.

Test	Level	Test	Level
701 - 710	7	1001 - 1010	10
801 - 810	8	1101 - 1110	11
901 - 910	9	1201 - 1210	12

There are ten possible points per section. Put all answers on the blanks to the right of the questions unless instructed to do otherwise.

701



Write the number represented by the expanded form.

1. $4 \times 100,000 + 5 \times 1,000 + 3 \times 100 + 6$ 1. _____

Write the correct symbol to make the sentences true. ($>$, $<$, $=$)

2. a. $8 _ 7$ b. $14 _ 14$ c. $24 _ 29$ 2a. _____

b. _____

Complete the table for the given sentence.

$$a - b = 25$$

a =	52	69	34	3. _____
-----	----	----	----	----------

b =	3. _____	4. _____	5. _____	4. _____
-----	----------	----------	----------	----------

5. _____

Find the number that makes the sentence true.

6. $18 + 5 + 14 + N = 48$ 6. _____

7. Find the sum of 5,742 and 3,824. 7. _____

8. Find the difference of 5,742 and 3,824. 8. _____

9. Find the *estimated* answer of $492 + 220$ to the nearest hundred. 9. _____

10. Find the *estimated* answer of $6,443 - 3,861$ to the nearest thousand. 10. _____

702



1. In the multiplication problem $67 \times 7 = 469$, what is the
a. multiplier b. multiplicand c. product ? 1a. _____

b. _____

c. _____

2. In the division problem $75 \div 5 = 15$, what is the
a. dividend b. quotient c. divisor ? 2a. _____

b. _____

3. What is the missing number in the sequence 1, 3, 9, $_$, 81, 243...? 3. _____

3. _____

4. What is the value of the exponential number 4^3 ? 4. _____

4. _____

5. What is the value of 54×10^8 ? 5. _____

5. _____

What is the answer to

6. $79 \times 68 =$ 6. _____

7. $896 \times 76 =$ 7. _____

8. $525 \div 19 =$ 8. _____

9. $47,352 \div 78 =$ 9. _____

10. If your classroom had 38 pupils and 1 was absent on Monday, 2 on Tuesday, 4 on Wednesday, 0 on Thursday, and 3 on Friday, what was the average daily attendance? 10. _____

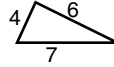
703



1. What is the name of AC and/or DB ?

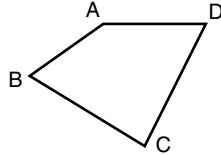


2. What do we use to measure an angle?
 a. ruler b. scale c. protractor
3. What is the perimeter of the triangle?



4. What is the name of a triangle that has one angle equal to 90° ?

5. The name of



is

- a. parallelogram ABCD b. trapezoid ABCD
 c. quadrilateral ABCD d. rectangle ABCD

6. What is the sum of the angles of a quadrilateral?
7. What is the diameter of a circle if the radius is 3 inches?
8. What is the circumference of a circle with a radius of 3 inches?
9. What is the area of a rectangle with dimensions of 16 ft. and 18 ft.?
10. What is the sum of the angles of a hexagon?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

704



1. Raise $\frac{5}{9}$ to higher terms with a denominator of 54.
2. Find the quotient of $\frac{45}{7}$.
3. Select the correct symbol. $\frac{7}{8}$ ($<$, $>$) $\frac{7}{9}$.
4. Write $2\frac{1}{5}$ as a decimal.
5. Write .00034 as a percent.
6. Show the ratio of 9 nickels to 34 pennies.
7. Write 64% as a fraction reduced to lowest terms.
8. Write .13% as a decimal.
9. What is the decimal equivalent to the fraction $\frac{7}{8}$?
10. Convert 5 grams to milligrams.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

705



1. Show how a set is written if the elements of the set are 5, 7, 9, 11. 1. _____
2. Given $A = \{1, 2, 3, 4, 5\}$, a subset of A would be 2. _____
 - a. $\{1, 2, 3, 4, 5, 6\}$ c. $\{0\}$
 - b. $\{1, 2, 3\}$ d. $\{2, 4, 6, 8\}$
3. The intersection of sets $A = \{3, 4, 5, 6, 7\}$ and $B = \{3, 6, 9, 12\}$ is 3. _____
 - a. $\{3, 6\}$ c. $\{3, 4, 5, 6, 7, 9, 12\}$
 - b. $\{3, 4, 5, 6, 7\}$ d. an empty set
4. Write CXIV in Arabic numerals. 4. _____
5. Write a number that is 10,000 times larger than .0008. 5. _____
6. Show 7,000,000 as a power of 10. 6. _____
7. What is the greatest common factor of 24 and 64? 7. _____
8. What is the least common multiple of 20 and 28? 8. _____
9. List the prime factors of 16 using exponential notation. 9. _____
10. 58 is an example of a (a. prime b. composite) number. 10. _____

706



1. a. $\frac{3}{4}$ b. $9\frac{1}{3}$ 2. a. $\frac{7}{15}$ b. $3\frac{7}{12}$
 - $+\frac{7}{8}$ $+6\frac{4}{9}$ $-\frac{4}{45}$ $-1\frac{3}{4}$ 1a. _____ b. _____
 - 2a. _____ b. _____
3. Add: $21.023 + 5.6 =$ 4. Subtract $4.3 - 3.28 =$ 3. _____
5. Write the decimal fraction .07 as a common fraction. 4. _____
6. Write the decimal .255 as a common fraction in lowest terms. 5. _____
7. Write the common fraction $\frac{3}{7}$ as a decimal fraction to the nearest hundredth. 6. _____
8. From the list of fractions and decimals, find three that are equivalent in value. 7. _____
 - a. $\frac{5}{8}$ b. $\frac{1}{4}$ c. 0.625 d. $\frac{25}{40}$ e. .0625 f. $\frac{25}{64}$
9. A radio announcer takes $2\frac{7}{8}$ minutes to play each record and $1\frac{1}{2}$ minutes to read a commercial. How long does he take to read a commercial and play two records? 8. _____ /

 9. _____
10. The first game of a double-header lasted 2.1 hours. The second game lasted only $1\frac{4}{5}$ hours. How much longer was the first game than the second game? 10. _____

- 707
1. a. $\frac{2}{3} \times \frac{4}{5} =$ b. $12 \times 6 \frac{1}{8} =$ 1a. _____ b. _____
2. a. $\frac{3}{8} \div \frac{1}{4} =$ b. $\frac{4}{5} \div 6 =$ 2a. _____ b. _____
3. a. $5 \frac{2}{3} \times 1 \frac{1}{17} =$ b. $2 \frac{3}{8} \div 2 \frac{5}{7} =$ 3a. _____ b. _____
4. a. $.85 \times 2.1 =$ b. $41.76 \times 7.4 =$ 4a. _____ b. _____
5. a. $83.78 \div 2.36 =$ b. $3.18 \div .16 =$ 5a. _____ b. _____
6. a. $3.451 \times 100 =$ b. $7.39 \div 1,000 =$ 6a. _____ b. _____
- Find the missing number.**
7. 25% of 28 = N 7. _____
8. 20 = 50% of N 8. _____
9. 24 = N% of 96. 9. _____
10. Debra earns a 6.5% commission. One week, her total sales were \$4,375. How much did she earn that week? 10. _____

- 708
1. If the area is 24 sq. ft. and the length is 8 ft., what is the width? 1. _____
2. If a square is 5 in. on a side, what is its perimeter? 2. _____
3. How much interest will be paid on \$350 if the rate of interest is 18%? 3. _____
4. Of the following choices, which one is an equation?
 a. 4 b. xy c. $14 = 2 \times 7$ d. $(3 + 5) \times 8$ 4. _____
5. What is the ratio 15:75 reduced to lowest terms? 5. _____
6. Write the proportion: Four is to nine as twelve is to twenty-seven. 6. _____
7. Which of these is a true proportion?
 a. $6:12 = 20:30$ b. $2:3 = 8:12$ c. $1:5 = 5:1$ d. $6:8 = 24:34$ 7. _____
8. What is the approximate rate of travel of an airplane that goes 1,800 miles in 3.5 hours? 8. _____
9. Jody plans to have a picture enlarged. The picture is now 2 in. wide by 3 in. long. When enlarged, the length will be 42 in. What will be the width? 9. _____
10. The ratio of hamsters to gerbils in a pet shop is 1:3. If the pet shop has 9 hamsters, how many gerbils does it have? 10. _____

709



1. A selection in which every member of a large group has an equal chance of being chosen is called a _____
 a. frequency b. biased sample c. random sample d. graph

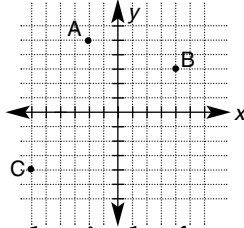
Find the following information about the numbers.

8 10 5 8 12 8 12

2. What is the mean? _____
 3. What is the median? _____
 4. What is the mode? _____
 5. What is the range for the following set of numbers?
 6 7 3 24 13 12
 13 14 2 7 9 10

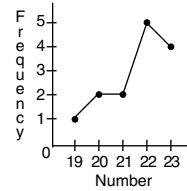
Identify points on the coordinate axes.

6. Point A
 7. Point B
 8. Point C



On the line graph

9. If the number is 19, what is the frequency?
 10. If the frequency is 5, what is the number?



710



1. Write this number in expanded notation. 80,000
 2. 7,062 (<, >) 6,974
 3. A quadrilateral with four sides equal and parallel.
 a. square b. rectangle c. parallelogram d. trapezoid
 4. Find the greatest common factor for 16 and 48.
 5. The diameter of a regulation basketball hoop is 18 in. What is the circumference of the hoop?
 6. a. $\frac{2}{3}$ b. $5\frac{4}{5}$
 $+\frac{1}{9}$ $-3\frac{2}{15}$
 7. a. $\frac{4}{9} \times \frac{3}{8}$ b. $7\frac{1}{3} \div 3\frac{2}{3}$
 8. Find the missing term in the following equation.
 3:18 = ____:36
 9. Write the words to this formula. $D = R \times T$
 10. Rhonda attempted 9 field goals and made 4. What was her field goal percentage?

801



1. Write in numerals: two million, five thousand, two hundred six. 1. _____
2. _____
2. What is the position of the 5 in the number 500,493? 3. _____
3. How many digits in 8,720? 4. _____
4. Round 489,045 to the nearest ten thousand. 5. _____

5. How many fish did Bill Knox catch on Thursday?

Monday



Tuesday



Wednesday



Thursday

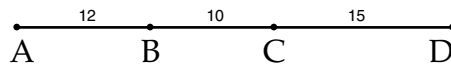


Friday



each represents 4 fish

6. Find the quotient of 27 and 2025. 6. _____
7. How many feet in 696 inches? 7. _____
8. If the perimeter of a square is 272 in., what is the length of each side? 8. _____
9. AB = 12 in., BC = 10 in. and CD = 15 in. What is the length of AD? 9. _____



10. A pyramid has a square base with an edge of 42 meters. Find the area of the base. 10. _____

802



1. Write MDCXIV in Arabic numerals. 1. _____
2. The number 15 in the base two number system is (a. 10000_2 b. 1011_2 c. 1111_2 d. 1101_2). 2. _____
3. Write the following in exponential form: $5 \times 5 \times 5 \times 5$ 3. _____
4. $(2 + 6) + 3 = 2 + (6 + 3)$ is an example of the (a. associative b. commutative) property of addition. 4. _____
5. List three prime numbers between 16 and 24. 5. _____
6. Write 36 in prime factorization. 6. _____
7. What is the square root of 36? 7. _____
8. What is the lowest common denominator of $\frac{7}{8}, \frac{9}{10}, \frac{1}{12}$? 8. _____
9. Reduce the fraction $\frac{85}{102}$ to lowest terms. 9. _____
10. What is the next number in the number pattern $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \dots$? 10. _____

803

1. What is the smallest fraction equivalent to $\frac{6}{8}$, $\frac{15}{20}$, and $\frac{21}{28}$?
2. Raise the fraction $\frac{2}{7}$ to higher terms with a denominator of 42.
3. Write the improper fraction $\frac{11}{7}$ as a mixed number.
4. Express 18 inches and 2 yards as a ratio.
5. Arrange in order from smallest to largest:
 $\frac{1}{2}$, $1\frac{2}{3}$, $\frac{5}{6}$, $\frac{7}{12}$, $\frac{17}{8}$, $\frac{1}{8}$
6. Write the fraction $\frac{1}{5}$ as a decimal.
7. Write 71% as a fraction.
8. What is the height of a building that casts a shadow of 25 ft. at the same time of day that a stick 8 ft. long casts a shadow of 5 ft.?
9. The number 10^{-3} means (a. 7 b. 0.001 c. -30 d. 10,000).
10. If John sells \$50 worth of merchandise, he makes \$5. What is his percent of commission?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

804

1. Add and simplify: $\frac{2}{3} + \frac{1}{2} =$ 2. $357\frac{4}{5}$
 $98\frac{2}{3}$
 $+ 162\frac{7}{15}$

3. Subtract and simplify: $\frac{4}{5} - \frac{4}{7} =$ 4. $7\frac{1}{4}$
 $- 5\frac{3}{5}$

5. Add: $754.32 + 16.304 + 9.24 =$
6. Subtract: $7.37 - 3.402 =$
7. Add and subtract: $5.326 + 0.17 - 2.3904 =$
8. Round 72,048 to the nearest 10.
9. Write an improper fraction using the numbers 5 and 10.
10. Change the fraction $\frac{3}{5}$ to a decimal fraction.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

805

1. Multiply and simplify: $\frac{2}{15} \times 6 =$

1. _____

2. Multiply and simplify: $8\frac{2}{3} \times 6\frac{3}{4} =$

2. _____

3. Multiply:
$$\begin{array}{r} 7,456 \\ \times 0.0014 \\ \hline \end{array}$$

3. _____

4. Divide: $20.1 \overline{)1,616.04}$

4. _____

5. Divide and simplify. $\frac{5}{8} \div \frac{3}{4} =$

5. _____

6. Divide and simplify: $4\frac{9}{10} \div 2\frac{3}{5} =$

6. _____

7. If a family has an annual income of \$15,000 and budgets $\frac{1}{5}$ of it for housing, what is the amount of money that is reserved for housing?

7. _____

8. What number is 12 percent of 30?

8. _____

9. 14.72 is 23% of what number?

9. _____

10. What percent of 120 equals 21?

10. _____

806

Given the following numbers: 19, 28, 37, 23, 17, 42, 58

1. Find the mean. 2. Find the median. 3. Find the deviation.

1. _____

Given the following numbers: 2, 2, 3, 6, 1, 9, 4, 2, 5, 7, 6, 8, 6, 2

4. What is the frequency distribution of 2?

2. _____

A box contains ten balls of like shape and size. Three are red, two are white, and five are blue. The balls are also numbered from 1 to 10. Find the following probabilities.

3. _____

5. one red ball.

4. _____

6. one ball with a number >5 .

5. _____

7. Given the function rule $d = r \times t$ and the following table, what is the missing ordered-pair number?

6. _____

Time in hours	1	2	3	4	5
Distance	40	80	120	160	

7. _____

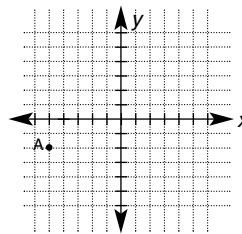
8. What are the missing order-pair numbers for $f(n) = 3 \times n + 2$?

8. _____

n	0	1	2	3
$f(n)$	2			

9. Write the ordered pair for point A.

9. _____

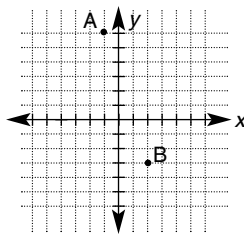


10. A school committee has two girls, Mary and Jean and three boys, Jim, Doug, and Allen. What is the probability of Mary or Doug being chosen by drawing to represent the committee at an assembly?

10. _____



1. Select the positive integers. (a. 0, 1, 2, 3, 4,... b. 1, 2, 3, 4,... c. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$ d. $\frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}$.) 1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8a. _____
b. _____
9. _____
2. Write the integers -8, 2, 0, -6, 5, 10, -15 in order from smallest to largest.
3. What is the absolute value of $|-32|$?
4. Find the sum: $25 + (-11) + (-15) + 7 + (-8) + 17$.
5. Find the difference: $-15 - (-28)$
6. Find the product: $2 \times (-9) \times 0$
7. Find the value of q^3 when $q = -3$.
8. What are the coordinates of (a. point A and b. point B) on the graph?
9. If $a = 2$, $b = -5$, and $c = 0$, what is the answer to this algebraic expression: $a^2b + (-3)^c - \frac{c}{ab} =$
10. Find the missing number for a in the table to make the given sentence true. 10. _____



$a - b = -1$	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 5px;">a</td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;"> </td> </tr> <tr> <td style="padding: 5px;">b</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">-2</td> </tr> </table>	a	0	3		b	1	4	-2
a	0	3							
b	1	4	-2						



1. Find the area of the given triangle. 1. _____
 2. Find the area of the given trapezoid. 2. _____
3. _____
 3. Find the circumference of a circle with a radius of 4.1 cm.
 4. Find the area of a circle with a diameter of 5 ft. 4. _____
 5. Find the volume of a tank with measurements $1\frac{1}{2}$ ft., 3 ft. and 2 ft. 5. _____
 6. Select the area of the given prism. 6. _____
- a. $8\sqrt{2} \text{ ft.}^2$
 - b. $12\sqrt{2} \text{ ft.}^2$
 - c. $20 \text{ ft.}^2 + 8\sqrt{2} \text{ ft.}^2$
7. Select the volume of a paint can 6 in. high and $7\frac{1}{2}$ in. in diameter. 7. _____
 - a. $28\frac{1}{8} \pi \text{ in.}^3$ b. $45 \pi \text{ in.}^3$ c. $84\frac{3}{8} \pi \text{ in.}^3$
 8. Convert 270 ft.^3 to cubic yards. 8. _____
 9. Select the surface area of a sphere with a radius of 5 in. 9. _____
 - a. $50 \pi \text{ in.}^2$ b. $\frac{125}{3} \pi \text{ in.}^2$ c. $100 \pi \text{ in.}^2$
 10. Select the formula for the surface area of a cone. 10. _____
 - a. $S = \pi r (s + r)$ b. $S = 2\pi r^2 + 2\pi rh$ c. $S = 4 \pi r^2$

809

1. What is the distance between -32 and +50 on the number line? 1. _____
2. What is the coefficient of the term $\frac{2}{3}xy$? 2. _____
3. Write this phrase in numbers:
a number divided by three plus six 3. _____
4. Write this phrase in numbers:
five less than three times a number 4. _____
5. Find the solution to $y - \frac{3}{4} = 1\frac{3}{4}$. 5. _____
6. Find the solution to $18x + 11 = 29$. 6. _____
7. Simplify: $14xy - 6x - 7xy + 8x - 6xy$ 7. _____
8. Solve: $3x - 6 = 2x - 9$ 8. _____
9. Mark is three times as old as his sister. Two years ago he was seven times as old as his sister. Their present ages are:
a. Mark 6 yrs; sister 2 yrs c. Mark 9 yrs; sister 3 yrs
b. Mark 15 yrs; sister 5 yrs d. Mark 16 yrs; sister 4 yrs 9. _____
10. Pam found that she could read 9 pages of a novel in 20 minutes. At this rate, how long would it take her to read 378 pages? 10. _____

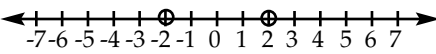
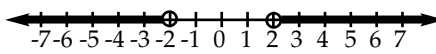
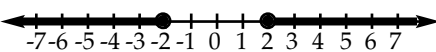
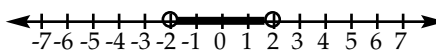
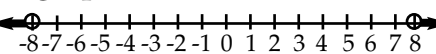
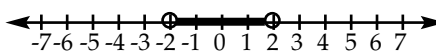
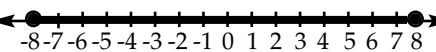
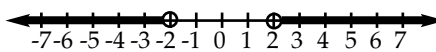
810

1. Change 1.6 to percent. 1. _____
2. Find the products of (a. 4^2) and (b. 3^3) . 2a. _____ b. _____
3. Find the area of a circle to the nearest tenth, with a radius of 8.1 cm. 3. _____
4. Find the volume of a rectangular solid with length 14 in., width 8 in., and height 6 in. 4. _____
5. Use the distributive property to find the product of $(x + 3)(y - 4)$. 5. _____
6. Translate to algebraic symbols: Two more than four times a number is one less than the number. 6. _____
7. Write the opposites of 6, -9, 0. 7. _____
8. The sum of four consecutive integers is 18. Find the integers. 8. _____
9. Write the numeral 5,000,000 in powers of ten. 9. _____
10. What is the greatest common factor of 12, 18, and 30? 10. _____



1. The variable term in $2x^3 - 4$ is _____.
 a. 2 b. 3 c. 4 d. $2x^3$
 1. _____
2. The product in $2(a + b) + 5$ is _____.
 a. 2 b. $(a + b)$ c. $2(a + b)$ d. 5
 2. _____
3. Simplifying $18(x - 1) + 9$ equals _____.
 a. $18x - 9$ b. $18x - 18 + 9$ c. $18x + 9$ d. $18x + 27$
 3. _____
4. Simplifying $7.8x - 2.1x$ equals _____.
 a. $4.6x$ b. $5.7x$ c. $9.9x$ d. $10.9x$
 4. _____
5. Evaluate $xy + x$ for $x = 3$ and $y = 5$.
 a. 11 b. 13 c. 18 d. 20
 5. _____
6. Evaluate $5a^3 - 2b + c$ for $a = 2$, $b = 3$, and $c = 4$.
 a. 9 b. 20 c. 28 d. 38
 6. _____
7. The meaning of $3x^2 - 4$ in words is _____.
 a. four less than three times the square of a number
 b. three times a number minus four
 c. four minus three times a number squared
 d. three times a number squared less four times the number
 7. _____
8. The meaning of y^3 is _____.
 a. three times a number b. a number squared
 c. a number less three d. a number cubed
 8. _____
9. The difference of $8 - (-3)$ is _____.
 a. 5 b. -5 c. 11 d. -11
 9. _____
10. The quotient of $\frac{12x^2}{-4}$ is _____.
 a. 4 b. $-3x^2$ c. $8x^2$ d. $12x^2$
 10. _____



1. Evaluate. $-2|-2| + |1| = \underline{\hspace{1cm}}$.
 a. -3 b. 0 c. 1 d. 5 1.
2. $\frac{R}{2} + 6 = 14$ $R = \underline{\hspace{1cm}}$.
 a. -16 b. 8 c. 16 d. 40 2.
3. Evaluate $A = \frac{h}{2}(a + b)$ when $h = 7$, $a = 10$, and $b = 12$.
 a. 72 b. 77 c. 87 d. 112 3.
4. Nine less than three times a number is fifty is written .
 a. $3n - 9 = 50$ b. $9 - 3n = 50$
 c. $9 = 3n - 50$ d. $3 + 9n = 50$ 4.
5. The solution to $\frac{-x}{3} = 4$ is .
 a. $x = -12$ b. $x = -4$ c. $x = 1\frac{1}{3}$ d. $x = 3$ 5.
6. Solve $x + a = yb$ for b .
 a. $b = x + a - y$ b. $b = y - (x + a)$
 c. $b = y(x + a)$ d. $b = \frac{x+a}{y}$ 6.
7. The solution to $8(x + 1) > 7(x + 2)$ is .
 a. $x > -6$ b. $x > \frac{22}{15}$ c. $x > 6$ d. $x > 10$ 7.
8. The solution to $10(y + 4) < 0$ is .
 a. $y < -8$ b. $y < -4$ c. $y < -\frac{2}{5}$ d. $y < \frac{1}{4}$ 8.
9. The graph of the solution to $4|y| < 8$ is .
 a.  b. 
 c.  d.  9.
10. The graph of the solution to $|x| + 3 > 5$ is .
 a.  b. 
 c.  d.  10.



1. 12 diminished by 6 times a number **in mathematical symbols is** ____ . 1. _____
 a. $12 + 6x$ b. $12 - 6x$ c. $6x - 12$ d. $6x \div 12$
2. A boy is 6 years older than his sister, whose age is x . 2. _____
In mathematical symbols, the boy's age is ____ .
 a. $6x$ b. $6 - x$ c. $x + 6$ d. $x - 6$
3. Jay has 3 more dimes than nickels. He has 25 coins altogether. 3. _____
The equation is ____ .
 a. $3 + d + d = 25$ b. $n + 3 + n = 25$
 c. $n + n - 3 = 25$ d. $3d + n = 25$
4. **The equation for a triangle with sides of q inches, $4q$ inches, and $2q$ inches, and a perimeter of 24 inches is** ____ . 4. _____
 a. $q + 4q + 2q = 24$ b. $6q = 24$
 c. $q + 4q - 3q = 24$ d. $24 = q - 4q + 2q$
5. The larger of two numbers is 5 times the smaller number. 5. _____
 The sum of the numbers is 54. **The numbers are** ____ .
 a. 30 and 6 b. 30 and 24 c. 40 and 8 d. 45 and 9
6. Sally has seven times times as many dimes as pennies. Their value 6. _____
 is \$2.84. **The number of pennies and dimes she has is** ____ .
 a. 2 pennies, 14 dimes b. 4 pennies, 28 dimes
 c. 3 pennies, 21 dimes d. 5 pennies, 35 dimes
7. Jerry's age is three less than twice the age of Larry. The sum of 7. _____
 their ages is twenty-seven. **The age of each boy is** ____ .
 a. Jerry: 13, Larry: 8 b. Jerry: 15, Larry: 12
 c. Jerry: 17, Larry: 10 d. Jerry: 19, Larry: 8
8. Two boys who live 14 miles apart start at noon to walk toward 8. _____
 each other at rates of 3 mph and 4 mph respectively.
They will meet in ____ .
 a. 2 hrs. b. 3 hrs. c. $3 \frac{1}{2}$ hrs. d. 4 hrs.
9. A man bought two lots for the same price. He sold one at a profit 9. _____
 of \$3,000 and the other at a loss of \$1,500, receiving twice as much
 for the first lot as for the second. **Each lot cost** ____ .
 a. \$5,540 b. \$6,000 c. \$7,510 d. \$8,000
10. Brine is a solution of salt and water. If a tube contains 50 pounds 10. _____
 of a 5% solution of brine, **the amount of water that must**
evaporate to change it to an 8% solution is ____ .
 a. $2 \frac{1}{2}$ lbs. b. 8 lbs. c. $12 \frac{1}{2}$ lbs. d. $18 \frac{3}{4}$ lbs.



1. The sum of $3c^2d^3 + (-5c^2d^3) + 10c^2d^3$ is ____.
- a. $6c^2d^3$ b. $8c^2d^3$ c. $12c^2d^3$ d. $18c^2d^3$
1. _____
2. The polynomial $3 - 3x^2 + 4x + 8x^3$ arranged in descending powers of x is ____.
- a. $-3x^2 + 4x + 8x^3 + 3$ b. $3 + 4x - 3x^2 + 8x^3$
 c. $8x^3 - 3x^2 + 4x + 3$ d. $8x^3 + 4x - 3x^2 + 3$
2. _____
3. The difference of $8x^2 + 4x - 5$ less $2x^2 + 2x + 7$ is ____.
- a. $6x^2 + 2x - 12$ b. $10x^2 + 2x + 2$
 c. $6x^2 + 2x - 14$ d. $5x^2 - 6x + 2$
3. _____
4. The product of $-\frac{1}{2}p(4p^3 + 6)$ is ____.
- a. $2p^3 + 6p$ b. $-2p^4 - 3p$ c. $-2p^3 - 6p$ d. $2p^3 - 3p$
4. _____
5. The quotient of $-3d^3e^4f^5 \div 9d^5e^4f^3$ is ____.
- a. $\frac{ef^2}{3d^2}$ b. $\frac{-3d^2f}{e}$ c. $-\frac{f^2}{6d^2e}$ d. $-\frac{f^2}{3d^2}$
5. _____
6. The difference of $a - b$ less $b - c$ is ____.
- a. $a - c$ b. $-a + 2b - c$ c. $a - 2b + c$ d. $a + b - c$
6. _____
7. The expression $-6(-2a - 15)$ in simplified form is ____.
- a. $-12a - 12$ b. $12a - 90$ c. $-12a - 30$ d. $12a + 90$
7. _____
8. The expression $(5d + 10p) \div (-5)$ in simplified form is ____.
- a. $5d - 2p$ b. $-d - 2p$ c. $d + 2p$ d. $-d - \frac{1}{2}p$
8. _____
9. Simplify $3x [2(x + 5) - 7x] : \underline{\hspace{2cm}}$.
- a. $-15x^2 + 30x$ b. $-36x^2 + 15x$
 c. $-36x^2 + 30x$ d. $27x^2 + 15x$
9. _____
10. Simplify $(8z - 10) \div (-2) + 5(z - 1) : \underline{\hspace{2cm}}$.
- a. $z - 10$ b. $11z$ c. z d. $13z - 17$
10. _____



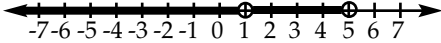
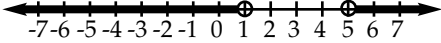
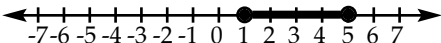
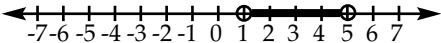
1. The greatest common factor of x^5y and x^4y^2 is _____.
 a. x^5y^2 b. x^4y c. xy d. x^2y 1. _____
2. The factorization of $14a + 7b$ is _____.
 a. $2(7a + 3b)$ b. $7(2a + b)$ c. $7a(2 + b)$ d. $14(a + b)$ 2. _____
3. Find the trinomial product of $(4x + 3)(-2x - 5)$: _____.
 a. $8x^2 + 14x - 15$ b. $6x^2 - 14x - 15$
 c. $-8x^2 - 26x - 15$ d. $12x^2 - 26x + 15$ 3. _____
4. Find the product of $(4a + 3)(4a - 3)$: _____.
 a. $12a^2 - 9$ b. $16a^2 - 9$ c. $8a^2 + 9$ d. $16a^2 + 2a - 9$ 4. _____
5. The binomial factors of $2x^2 + 7x + 3$ are _____.
 a. $(2x + 3)(x + 1)$ b. $(x + 3)(2x - 1)$
 c. $(x + 3)(2x + 1)$ d. $(2x - 1)(x - 3)$ 5. _____
6. Factor $81n^2 - 100$: _____.
 a. $(9n - 10)^2$ b. $(9n - 10)(9n + 10)$
 c. $(81n + 10)(n - 10)$ d. $(9n + 10)^2$ 6. _____
7. The factors of $2 - 98n^2$ are _____.
 a. $-2(7n - 1)(7n + 1)$ b. $-2(7n - 1)^2$
 c. $-2(1 - 7n)(1 + 7n)$ d. $-2(49n^2 - 1)$ 7. _____
8. The factors of $16y^3 + 68y^2 + 42y$ are _____.
 a. $2(4y + 7)(2y + 3)$ b. $4y(2y + 5)(2y + 2)$
 c. $(4y^2 + 14y)(4y + 3)$ d. $2y(2y + 7)(4y + 3)$ 8. _____
9. The formula for area is $A = lw$.
 If a rectangle has an area of $2x^2 + x - 3$, its dimensions are _____.
 a. l: $2x - 1$ w: $x + 3$ b. l: $2x + 1$ w: $x - 3$
 c. l: $2x - 3$ w: $x + 1$ d. l: $2x + 3$ w: $x - 1$ 9. _____
10. A person purchased $5k + 2$ items for a total cost of $35k^2 + 29k + 6$.
 The average cost per item was _____.
 a. $6k + 2$ b. $6k + 3$ c. $7k + 2$ d. $7k + 3$ 10. _____



1. The excluded value(s) for $\frac{y^2 - y + 5}{y + 4}$ is (are) ____.
- a. $y = -4$ b. $y = 0$ and $y = -1$
 c. $y = 4$ d. $y = 5$ and $y = 1$
2. Simplify the complex fraction $\frac{2 + \frac{1}{a}}{\frac{2}{2-a}}$ ____.
- a. $\frac{3}{2-a}$ b. $\frac{a+2}{a-2}$ c. $\frac{2+a}{2-a^2}$ d. $\frac{2a+1}{2-a^2}$
3. The indicated sum of $\frac{y}{3} + \frac{5y}{3} - \frac{4y}{3}$ is ____.
- a. y b. $\frac{2y}{3}$ c. $\frac{y}{3}$ d. $\frac{10y}{3}$
4. The indicated quotient of $(-\frac{1}{3xy}) \div (-3xy)$ is ____.
- a. $\frac{1}{3}$ b. 1 c. $-\frac{1}{9xy}$ d. $\frac{1}{9x^2y^2}$
5. Solve the literal equation $\frac{5a}{x} = \frac{5b}{x-1}$ for x : ____.
- a. $x = -\frac{a}{b-a}$ b. $x = \frac{b}{a} + 1$ c. $x = 5\sqrt{ab}$ d. $x = 0$
6. Solve the inequality $\frac{x}{2} + \frac{1}{3} \leq 0$: ____.
- a. $x \leq -\frac{1}{6}$ b. $x \geq \frac{1}{3}$ c. $x \leq -\frac{2}{3}$ d. $x \leq \frac{1}{6}$
7. The formula for Fahrenheit temperature F corresponding to Celsius temperature C is $F = \frac{9}{5}C + 32$.
 Rewritten with C as the subject is ____.
- a. $C = \frac{5F-32}{9}$ b. $C = \frac{9(F+32)}{5}$ c. $C = \frac{5}{9}(F-32)$ d. $C = 5(F+32)$

8. The formula for area A of a trapezoid with bases a and b and height h is $A = \frac{1}{2}(a + b)h$. 8. _____
Rewritten with a as the subject is ____.
- a. $a = \frac{2Ah}{b}$ b. $a = \frac{A}{2h} - b$ c. $a = \frac{2A+b}{h}$ d. $a = \frac{2A}{h} - b$
9. A person drives to a destination at a rate of thirty-five mph and returns over the same route at forty mph. If the round trip takes three hours, **the distance to the destination is ____.** 9. _____
a. 55 mi. b. 56 mi. c. 57 mi. d. 58 mi.
10. The present ages of a husband and wife are in the ratio of seven to six. Five years ago the ratio was six to five. 10. _____
Their ages now are ____.
a. h: 35 yrs w: 30 yrs b. h: 41 yrs w: 35 yrs
c. h: 49 yrs w: 42 yrs d. h: 56 yrs w: 49 yrs



1. Three examples of irrational numbers are ____.
- a. $4\frac{1}{5}$, 0.283, -81.7 b. $\frac{2}{9}$, $\sqrt{16}$, -6
- c. 0.1237285... , $\sqrt{26}$, $\frac{\pi}{2}$ d. $0.\overline{3}$, $-6.\overline{234}$, $\frac{1}{99}$
2. The decimal 0.292292229 rounded to the nearest thousandth is ____.
- a. 0.3 b. 0.29 c. 0.292 d. 0.2923
3. The graph of $1 < |k| < 5$ for integers is ____.
- a.  b. 
- c.  d. 
4. $\sqrt[3]{64a^6} = \underline{\hspace{2cm}}$.
- a. $4a^3$ b. $4a^2$ c. $8a^2$ d. undefined
5. The indicated sum and/or difference of $2\sqrt{x} - 3\sqrt{x^3} + 5\sqrt{x}$ is 5. ____.
- a. $7\sqrt{x} - 3x\sqrt{x}$ b. $4\sqrt{x}$
- c. $10\sqrt{x}$ d. $3\sqrt{x} - 3x\sqrt{x}$
6. The difference of $2\sqrt{18y^3} - 3\sqrt{8y^3}$ is ____.
- a. $-y\sqrt{y}$ b. $-2y\sqrt{y}$
- c. $4y^2\sqrt{3y} - 6y^2\sqrt{2y}$ d. 0
7. The simplified product of $(x + 2\sqrt{3})^2$ is ____.
- a. $x^2 + 4\sqrt{3}x + 12$ b. $x^2 + 12x + 12$
- c. $2x + 4\sqrt{3}$ d. $x^2 + 12$
8. The simplified quotient of $\frac{\sqrt{96x^3}}{\sqrt{2x}}$ is ____.
- a. $x\sqrt{48x}$ b. $4x\sqrt{3}$ c. $4\sqrt{5x}$ d. $4x\sqrt{3x}$

9. The exact irrational root (E) and the rational approximation (A) 9. _____

to the nearest tenth of $\sqrt[3]{8p} = 6$ are ____.

a. E: $\frac{\sqrt{2}}{3}$ A: 0.5 b. E: $4\sqrt{3}$ A: 6.9

c. E: $12\sqrt{2}$ A: 17.0 d. E: $\frac{3\sqrt{2}}{2}$ A: 2.1

10. Solve $a - 1 = \sqrt{2b + 3}$ for b : ____.

a. $b = \frac{a^2 - 2a - 2}{2}$ b. $b = \frac{a\sqrt{2} + 2}{2}$

c. $b = \frac{a^2 - 4}{2}$ d. $b = \frac{a - \sqrt{2}}{4}$



1. Three ordered-pair solutions for $3x - 2y = -1$ are ____.

a. $(-6, -\frac{17}{2}), (0, \frac{1}{2}), (5, 8)$ b. $(1, 2), (3, 5), (8, 12)$

c. $(-3, -4), (2, 4), (6, \frac{19}{2})$ d. $(-2, -3), (-1, -1), (9, 15)$

1. _____

2. Three ordered pair solutions for $y = \frac{x}{2}$ are ____.

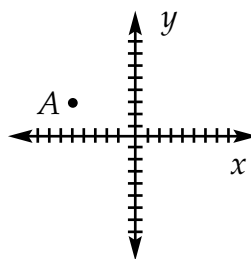
a. $(-1, -1), (5, \frac{5}{2}), (3, 6)$ b. $(-6, -3), (2, 4), (5, 10)$

c. $(-3, -\frac{3}{2}), (0, \frac{1}{2}), (2, 4)$ d. $(-4, -2), (0, 0), (3, \frac{3}{2})$

2. _____

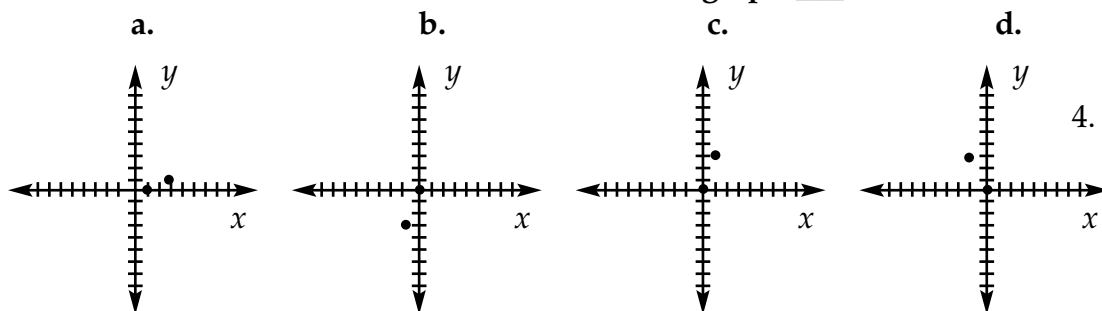
3. The ordered pair number for point A on the graph is ____.

a. $(5, 3)$ b. $(5, -3)$
c. $(-5, 3)$ d. $(-5, -3)$



3. _____

4. Points $(0, 0)$ and $(1, 3)$ are located on graph ____.



4. _____

5. Using x and y , the translation for the ordinate is two more than the abscissa is ____.

a. $y = x + 2$ b. $y = 2x$ c. $x = y + 2$ d. $y = x - 2$

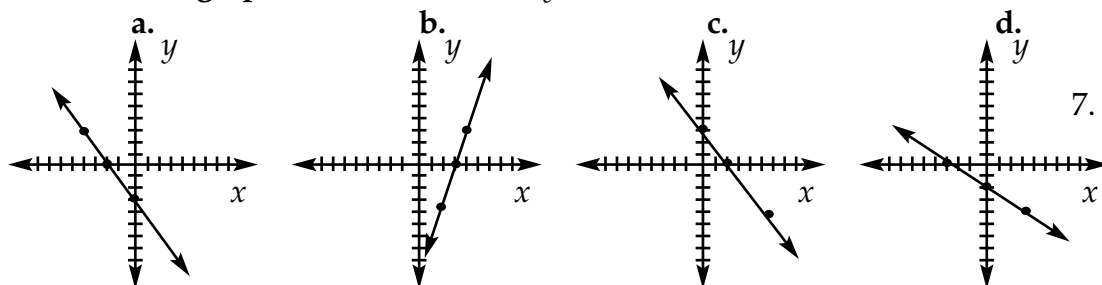
6. Using x and y , the translation for twice the abscissa increased by three times the ordinate is ten is ____.

a. $x + 2 + y + 3 = 14$ b. $2x + 3y = 10$
c. $2y + 3x = 10$ d. $2x - 3y = 12$

5. _____

6. _____

7. The graph of the line $2x + 3y + 6 = 0$ is ____.

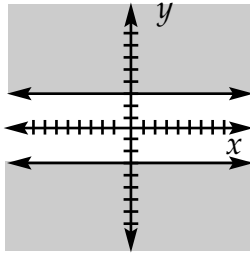


7. _____

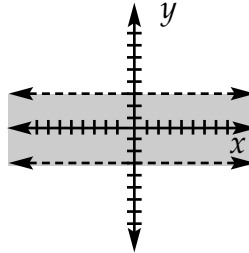
8. The graph of the line $|y| - 3 \geq 0$ is ____.

8. _____

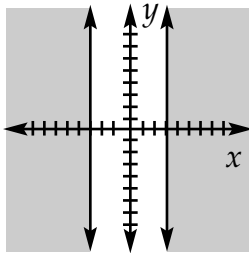
a.



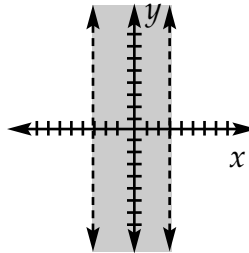
b.



c.



d.



9. A line passes through two points, $(-3, -4)$ and $(2, 5)$.
The equation of the line is ____.

9. _____

a. $7x + 9y + 57 = 0$

b. $5x + 5y - 35 = 0$

c. $9x - 5y - 43 = 0$

d. $9x - 5y + 7 = 0$

10. The equation of a line that passes through $(2, 2)$ and $(2, -3)$ is ____.

10. _____

a. $x - 1 = 0$

b. $2x - 3y = 0$

c. $x - 2 = 0$

d. $x + 3 = 0$

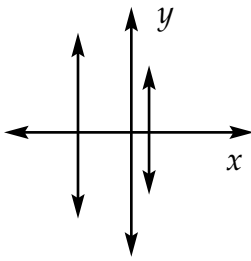


The equations of the following systems are ____.

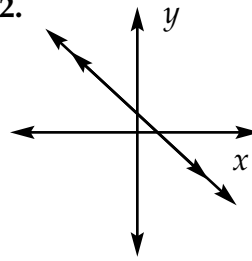
- a. not algebraic b. consistent c. equivalent d. inconsistent

1. _____

1.



2.



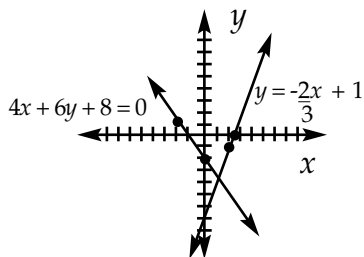
2. _____

3. The graph of the solution to the system is ____.

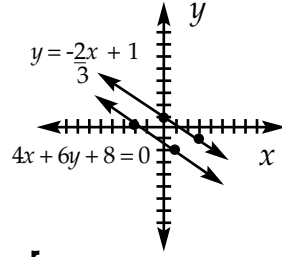
$$\begin{cases} y = -\frac{2}{3}x + 1 \\ 4x + 6y + 8 = 0 \end{cases}$$

3. _____

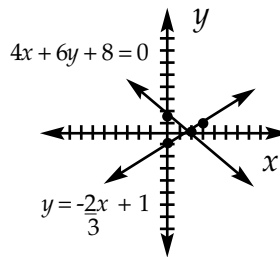
a.



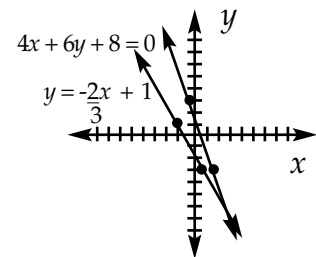
b.



c.



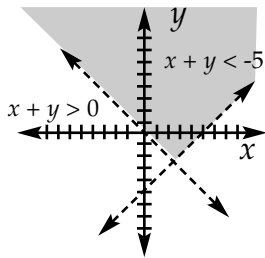
d.



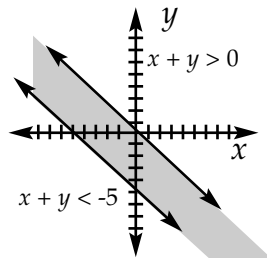
4. The graph of $\begin{cases} x + y > 0 \\ x + y < -5 \end{cases}$ is ____.

4. _____

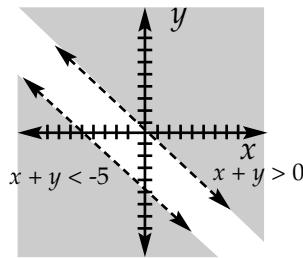
a.



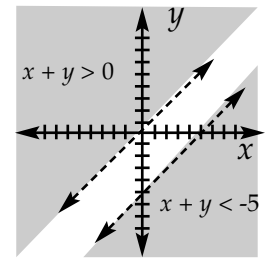
b.



c.



d.



5. Using the opposite-coefficients method, the solution set for the system $\begin{cases} 2x + 6y + 3 = 0 \\ x - 4y - 9 = 0 \end{cases}$ is ____.

5. _____

- a. $\{(6, -\frac{5}{2})\}$ b. $\{(-4, -\frac{5}{4})\}$ c. $\{(3, -\frac{3}{2})\}$ d. inconsistent equations

6. Using the opposite-coefficients method, the solution for the system $\begin{cases} x - 9y = 2 \\ 3x - 3y = -10 \end{cases}$ is ____.

6. _____

- a. $\{(-7, -1)\}$ b. $\{(-4, -\frac{2}{3})\}$ c. $\{(11, 1)\}$ d. inconsistent equations

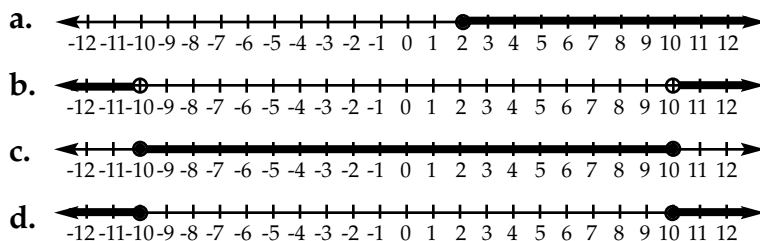
7. Using the comparison method, **the solution set for the system** $\begin{cases} 2x + y = 1 \\ 9x + 3y = -3 \end{cases}$ **is** _____. 7. _____
- a. $\{(0, 1)\}$ b. $\{(2, -7)\}$ c. $\{(-2, 5)\}$ d. inconsistent equations
8. Using the substitution method, **the solution set for the system** $\begin{cases} 3x + y = 1 \\ y = 5x - 4 \end{cases}$ **is** _____. 8. _____
- a. $\{(\frac{5}{8}, -\frac{7}{8})\}$ b. $\{(1, 1)\}$ c. $\{(2, -5)\}$ d. inconsistent equations
9. A school sold 480 tickets to its play. The adult tickets cost \$2.00, and the children's tickets cost \$1.50 each. If \$820 was collected, **the number of each type of ticket that was sold was** _____. 9. _____
- a. A: 200 C: 280 b. A: 180 C: 300
c. A: 160 C: 320 d. A: 150 C: 330
10. The sum of \$12,000 was invested, part at 12% interest and part at 8% interest. Twice as much money was invested at 8% as at 12%. **The amount of money invested at each rate was** _____. 10. _____
- a. 8%: \$9,000 12%: \$3,000 b. 8%: \$8,000 12%: \$4,000
c. 8%: \$4,000 12%: \$8,000 d. 8%: \$6,000 12%: \$6,000



1. Solve the equation by completing the square: $x^2 + 5x - 5 = 0$ 1. _____
- a. $\frac{-5 \pm 3\sqrt{5}}{2}$ b. $\frac{5\sqrt{-3}}{5}$ c. $\frac{-5-3\sqrt{-3}}{3}$ d. $\frac{-1+5\sqrt{-5}}{2}$
2. Solve the equation using the quadratic formula: $2x^2 + x = 15$ 2. _____
- a. $\{\frac{3}{5}, -15\}$ b. $\{\frac{5}{2}, -3\}$ c. $\{\frac{15}{2}, 1\}$ d. $\{\frac{5}{3}, -2\}$
3. Solve the equation by factoring: $6x^2 - 24 = 0$ 3. _____
- a. $\{(-4, -6)\}$ b. $\{(-2, 2)\}$ c. $\{(-4, 4)\}$ d. $\{(2)\}$
4. Solve: $4(3y - 2) + 5(y + 8) = 0$ 4. _____
- a. $y = 2\frac{14}{17}$ b. $y = 1\frac{2}{3}$ c. $y = \frac{2}{3}$ d. $y = -1\frac{15}{17}$
5. Find the quotient: $(36x^3 - 24x^2 - 18x) \div 6x$ 5. _____
- a. $6x^2 - 4x - 3$ b. $6x^3 - 4x^2 - 3x$
 c. $6x^3 + 4x^2 + 3x$ d. $36x^3 - 24x^2 - 3$
6. Solve. $\frac{d-3}{6d} + \frac{d^2+4d+2}{18d^2} = \underline{\hspace{2cm}}$ 6. _____
- a. $\frac{d^2+4d+2}{3d}$ b. $\frac{d^2+4d-1}{18d^2}$
 c. $\frac{d^2+7d-7}{18d^2}$ d. $\frac{4d^2-5d+2}{18d^2}$
7. Simplify: $\frac{4-\sqrt{3}}{\sqrt{15}}$ 7. _____
- a. $4\sqrt{-3}(15)$ b. $60\sqrt{-45}$
 c. $\frac{4\sqrt{15}-3\sqrt{5}}{15}$ d. $\frac{4\sqrt{15}+3\sqrt{15}}{15}$
8. Solve this system by the most convenient algebraic method. 8. _____
- $x = -2y + 6$
 $3x = 4y + 8$
 a. $\{(4, 1)\}$ b. $\{(-1, 4)\}$ c. $\{(6, -3)\}$ d. $\{(4, 8)\}$

9. Which graph is the solution of $|x| - 8 > 2$?

9. _____

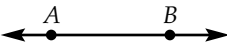
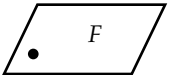


10. The area of a triangle is one-half times the base times the height.
If the area is 54 sq. in. and the height is 12 in, what is the base?

10. _____

- a. 21 in. b. 6 in. c. 9 in. d. 15 in.



1. The name for  is ____.
- a. point A b. \vec{A} c. plane AB d. \vec{AB}
1. _____
2. The name for  is ____.
- a. point F b. \vec{F} c. plane P d. plane F
2. _____
3. The name for $K \bullet$ is ____.
- a. point K b. line K c. dot K d. plane K
3. _____
4. The set of all possible points is ____.
- a. space b. collinear points
c. coplanar points d. betweenness of points
4. _____
5. Point B is between A and C if A , B , and C are collinear and the equation $AB + BC = AC$ is true.
This sentence is the definition of ____.
- a. space b. collinear points
c. coplanar points d. betweenness of points
5. _____
6. A statement accepted without proof is a ____.
- a. bisector b. theorem c. postulate d. ray
6. _____
7. A general statement that can be proved is a(n) ____.
- a. axiom b. theorem c. postulate d. ray
7. _____
8. The following statement is an example of a theorem: ____.
- a. Through any two different points, exactly one line exists.
b. Exactly one plane contains a given line and a given point not on the line.
c. If two planes intersect, then their intersection is a line.
d. One and only one of the following is true. $a = b, a > b, a < b$
8. _____
9. The line through A and B is \vec{AB} . The length of segment \overline{AB} is AB .
The ray starting at A and passing through B is \vec{AB} .
These descriptions are of ____.
- a. undefined terms b. defined terms
c. postulates d. theorems
9. _____
10. For any two points, only one line can be drawn containing them.^{10.} _____
A line is straight. Two planes cannot intersect in a point, but in a line.
These descriptions are of ____.
- a. undefined terms b. defined terms
c. postulates d. theorems



1. Some roses are red or some violets are blue **is an example of** ____ . 1. _____
 a. conjunction b. disjunction c. conditional d. intersection

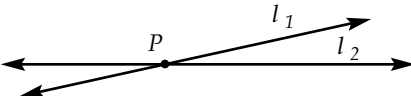
2. If a point lies on a line, then the line contains the point. 2. _____
 The converse of this statement is "If a line contains a point, then the point lies on the line."

Using the truth table, this statement is ____.

- a. true
- b. false
- c. sometimes true or false
- d. neither true nor false

Converse		
p	q	$q \rightarrow p$
T	T	T
T	F	T
F	T	F
F	F	T

3. Choose from (a. deductive reasoning b. inductive reasoning). 3. _____ /
 1) _____ reasoning is making a general conclusion based on specific examples, and 2) _____ is making a conclusion by fitting a specific example into a general statement.

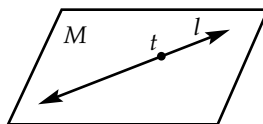
4. Given:  4. _____

Conclusion: l_1 and l_2 intersect only at point P .

The general principle that justifies the conclusion is ____.

- a. definition of midpoint
- b. definition of bisector
- c. theorem: if two lines intersect, their intersection is one point
- d. postulate: if a plane contains a line, it contains the point on the line

5. Given: l is in plane M 5. _____
 t is on line l



Conclusion: t is in plane M .

The general principle that justifies the conclusion is ____.

- a. postulate: a line contains at least two points
- b. postulate: if a plane contains a line, it contains the point of the line
- c. theorem: if two lines intersect, then one plane contains both lines
- d. definition of line segment

6. In a two column proof, the statement of the theorem is ____ . 6. _____
 a. not essential to the proof b. preceded by *then*
 c. includes a lettered figure d. written in *if-then* form

7. The given conditions of a proof are ____ . 7. _____
 a. the part you want to prove b. always postulates
 c. the hypothesis of the statement; the part that follows the *if* d. not expressed in terms of letters or numerals used in the figure

8. The to prove part of a proof is the ____ . 8. _____
 a. part that follows *if* b. second part of a 2-column proof
 c. follows the word *then*; the part you want to prove d. actual proof

9. **Given:** $a = b$

$$a \neq c$$

Prove: $b \neq c$

The indirect proof is ____.

- a. Suppose $b = c$. Then $a = c$ by the transitive property. But we know that $a \neq c$. This statement is a contradiction. Therefore, our supposed relationship is false, and its negation is true.
- b. Suppose $a = c$. Then $b = c$. But we know that $a = b$ and not $a \neq c$. Therefore, $b \neq c$.
- c. Suppose $a > 25$, such as $a = 26$. Then $2(26) < 51$ or $52 < 51$. This is a contradiction, so $a > 25$ is false and $a < 25$ is true.
- d. Suppose $a = 2$. Then $(2)^2 + 2 = 8$, which means $6 = 8$. This is a contradiction because $8 = 8$. Therefore, $a = 2$ is false and $a \neq 2$ is true.

9. _____

10. A triangle cannot have two right angles. Suppose a triangle has two right angles. Then the sum of the angles would be more than 180° , but this fact contradicts the fact that the sum is 180° .


Therefore, that a triangle cannot have two right angles is true.

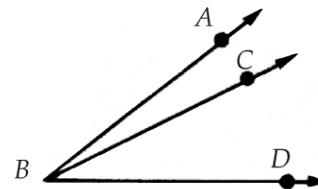
The theorem for this indirect proof is ____.

- a. Given: an isosceles triangle
To Prove: an isosceles triangle cannot have two right angles
- b. Given: the sum of the angles of a triangle equals 180° ,
and a right angle equals 90°
To Prove: a right triangle cannot have two right angles
- c. Given: a triangle
To Prove: a triangle has 180°
- d. Given: the sum of the angles of a triangle equals 180°
To Prove: a right angle equals 90°

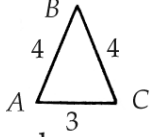
10. _____

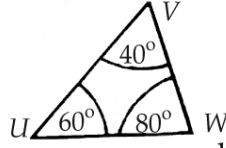


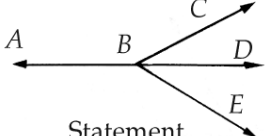
1. The angle  is a(n) ___ angle.
 a. 80° b. obtuse c. right d. acute
2. In the diagram, $m \angle ABC = 15^\circ 10' 12''$
 and $m \angle CBD = 31^\circ 52' 48''$.
 The measure of $\angle ABD =$ ____.



- a. $16^\circ 42' 36''$ b. $47^\circ 2' 50''$ c. $47^\circ 3'$ d. $47^\circ 13'$
3. $\angle A$ and $\angle B$ are supplementary. If $\angle A = 55^\circ 28'$,
 then $\angle B =$ ____.
 a. $35^\circ 28'$ b. $44^\circ 32'$ c. $124^\circ 32'$ d. $125^\circ 28'$
4. $\angle V$ and $\angle W$ are vertical angles. If $\angle V = 72^\circ$, then $\angle W =$ ____.
 a. 18° b. 28° c. 72° d. 108°
5. Planes that have no point in common are called ___ planes.
 a. equivalent b. perpendicular c. similar d. parallel
6. A line that intersects two or more coplanar lines in different
 points is called a ____.
 a. transversal b. perpendicular c. parallel d. skew line

7. Triangle ABC is
 a(n) ___ triangle.
- 
- a. scalene b. equilateral c. right d. isosceles

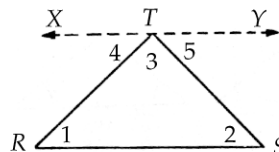
8. $\triangle UVW$ is a(n) ___ triangle.
- 
- a. equilateral b. acute c. obtuse d. right

9. Given: $m \angle CBD = m \angle DBE$
 Prove: $m \angle ABC + m \angle DBE = 180^\circ$
 The proof is ____.
- 

Statement	Reason	Statement	Reason
a. 1. \overrightarrow{BC} and \overrightarrow{BE} intersect at B	1. Given	b. 1. $\overrightarrow{DB} \perp \overrightarrow{CE}$	1. Given
2. $\angle ABC, \angle CBD$ are supplementary	2. Exterior sides in opposite rays	2. $\angle CBD, \angle DBE$ rt \angle 's	2. \perp 's form rt. \angle 's
3. $m \angle CBD = m \angle DBE$	3. Two \angle 's supplementary to same $\angle =$.	3. $m \angle CBD = m \angle DBE$	3. all rt. \angle 's
4. $\angle CBD, \angle ABE$ are supplementary	4. Same as Step 2	4. $\angle ABC, \angle CBD$ supplementary	4. Exterior sides in opposite rays
5. $m \angle ABC = m \angle ABE$	5. Same as Step 3	5. $m \angle ABC + m \angle CBD = 180^\circ$	5. Definition of supplementary \angle 's
		6. $m \angle ABC + m \angle DBE = 180^\circ$	6. Substitution

Statement	Reason	Statement	Reason
c. 1. $m\angle CBD = \angle DBE$	1. Given	d. 1. $m\angle CBD = m\angle DBE$	1. Given
2. $\angle ABE, \angle DBE$ are supplementary	2. Exterior sides in opposite rays	2. $\angle ABC, \angle CBD$ are supple- mentary	2. Exterior sides in opposite rays
3. $m\angle ABE$ $+ m\angle DBE$ $= 180^\circ$	3. Definition of supplementary \angle 's	3. $m\angle ABC$ $+ m\angle CBD$ $= 180^\circ$	3. Definition of supple- mentary \angle 's
4. $m\angle ABE$ $+ m\angle CBD = 180^\circ$	4. Substitution	4. $m\angle ABC$ $+ m\angle DBE = 180^\circ$	4. Substitution

10. **Given:** $\triangle RST$
Prove: $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$
The proof is ____.

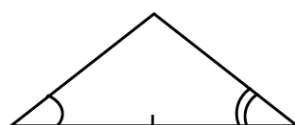
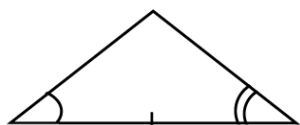


10. _____

Statement	Reason	Statement	Reason
a. 1. Through T draw $\overleftrightarrow{XY} \parallel \overline{RS}$	1. Auxiliary line	b. 1. Through T draw $\overleftrightarrow{XY} \parallel RS$	1. Auxiliary line
2. $m\angle XTS$ $+ m\angle 5 = 180^\circ$	2. Exterior sides in opposite rays	2. rt. isosceles $\triangle RST$	2. Given
3. $m\angle XTS$ $= m\angle 4$ $+ m\angle 3$	3. Angle addition theorem	3. $RT = ST$	3. Definition of isosceles \triangle
4. $m\angle 4 +$ $m\angle 3 +$ $m\angle 5 = 180^\circ$	4. Substitution	4. $\angle 3$ is rt $\angle = 90^\circ$	4. Definition of rt \angle
5. $m\angle 1 =$ $m\angle 4$ $m\angle 2 =$ $m\angle 5$	5. If lines \parallel then alternate interior \angle 's =.	5. $m\angle 1 =$ $m\angle 2$	5. Base \angle 's of isosceles $\triangle =$
6. $m\angle 1 + m$ $\angle 2 + m\angle 3 = 180^\circ$	6. Substitution	6. $\angle 1, \angle 2$ are comple- mentary	6. Acute \angle 's of rt. \triangle are comple- mentary
Statement	Reason	Statement	Reason
c. 1. $\triangle RST$ with exterior \angle 's 4 and 5	1. Given	d. 1. Through T draw $\overleftrightarrow{XY} \parallel RS$	1. Auxiliary line
2. $m\angle 1 + m$ $\angle 2 + m\angle 3$ $= 180^\circ$	2. Sum of measures of \angle 's of $\triangle = 180^\circ$	2. $m\angle 1 = m$ $\angle 4, m\angle 2$ $= m\angle 5$	2. If two \parallel lines are cut by a transversal, then correspond- ing \angle 's are = .
3. $m\angle 3 + m$ $\angle 4 + m\angle 5$ $= 180^\circ$	3. Exterior sides in opposite rays	3. $m\angle XTS +$ $m\angle 5 = 180^\circ$	3. Exterior sides in opposite rays
		4. $m\angle XTS +$ $m\angle 2 = 180^\circ$	4. Substitution
		5. $\angle XTS =$ $\angle 4 + \angle 3$	5. Angle addition theorem
		6. $\angle 2 + \angle 3$ $+ \angle 4 = 180^\circ$	6. Substitution



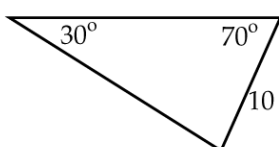
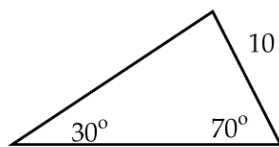
1. The method used to prove the two triangles are congruent is ____.



- a. SSS b. SAS c. ASA d. AAS

1. _____

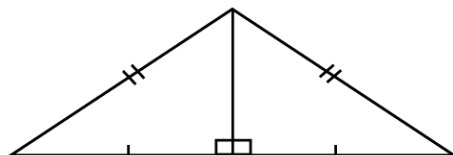
2. The method used to prove the two triangles are congruent is ____.



- a. SSS b. SAS c. ASA d. AAS

2. _____

3. The congruence statement to use that would show the right triangles congruent is ____.



- a. HH b. LL c. HA d. LA

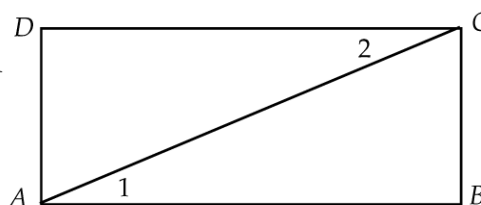
3. _____

4. **Given:** $\angle D, \angle B$ are rt \angle 's

$DC \parallel AB$

Prove: $\triangle ADC \cong \triangle CBA$

The proof is ____.



4. _____

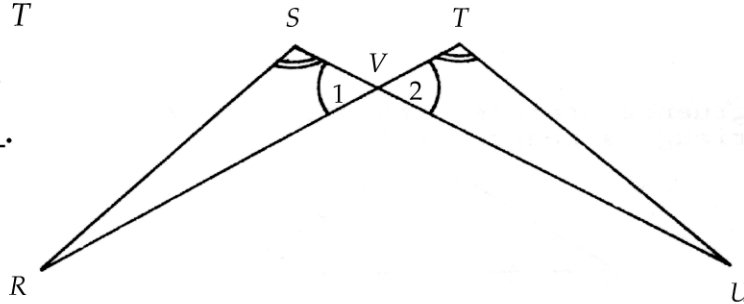
Statement	Reason
a. 1. $CD \perp DA$ $CD \perp BC$ $DC = AB$	1. Given
2. $\angle D, \angle B$ are rt \angle 's	2. \perp 's form rt \angle 's
3. $AC = AC$	3. Reflexive
4. $\triangle ADC \cong \triangle CBA$	4. LL

Statement	Reason
b. 1. $\angle D, \angle B$ are rt \angle 's $DA = BC$	1. Given
2. $CA = CA$	2. Reflexive
3. $\triangle ADC \cong \triangle CBA$	3. HL

Statement	Reason
c. 1. $\angle D, \angle B$ are rt. \angle 's $DC \parallel AB$	1. Given
2. $\angle 1 = \angle 2$	2. If lines \parallel , then alt. interior \angle 's =.
3. $AC = AC$	3. Reflexive
4. $\triangle ADC \cong \triangle CBA$	4. HA

Statement	Reason
d. 1. $\angle D, \angle B$ are rt. \angle 's $DC \parallel AB$	1. Given
2. $\angle D = \angle B$ $\angle A = \angle C$	2. Rt. \angle 's =
3. $AC = AC$	3. Reflexive
4. $\triangle ADC \cong \triangle CBA$	4. ASA

5. **Given:** $\angle S = \angle T$
 $RV = UV$
Prove: $SR = TU$
The proof is ____.

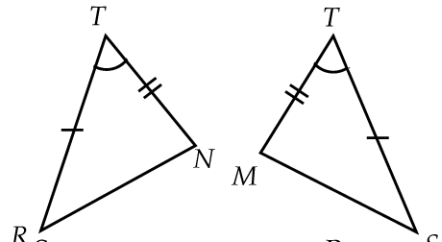
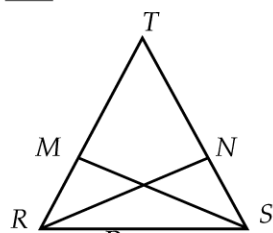


5. _____

Statement	Reason	Statement	Reason
a. 1. $\angle S, \angle T$ are rt. \angle 's $SV = TV$	1. Given	b. 1. $\angle S = \angle T$ $RV = UV$	1. Given
2. $\angle 1 = \angle 2$	2. Vertical \angle 's are =.	2. $\angle 1 = \angle 2$	2. Vertical \angle 's are =.
3. $\triangle RSU \cong \triangle TUV$	3. LA	3. $\triangle RSV \cong \triangle UTV$	3. AAS
4. $SR = TU$	4. CPCTE	4. $SR = TU$	4. CPCTE
Statement	Reason	Statement	Reason
c. 1. $\angle S = \angle T$ V is midpoint of RT	1. Given	d. 1. $\angle S = \angle T$ $RV = UV$ $US \perp SR$ $RT \perp TU$	1. Given
2. $\angle 1 = \angle 2$	2. Vertical \angle 's are =.	2. $\angle S$ is rt. \angle $\angle T$ is rt. \angle	2. \perp lines form rt \angle 's.
3. $RV = TV$	3. Definition of midpoint	3. $\angle S = \angle T$	3. All rt \angle 's =.
4. $\triangle RSV \cong \triangle UTV$	4. SSA	4. $\angle 1 = \angle 2$	4. Vertical \angle 's are =.
5. $SR = TU$	5. CPCTE	5. $\triangle RSV \cong \triangle UTV$	5. HA
		6. $SR = TU$	6. CPCTE

6. **Given:** $RT = ST$ $MT = NT$
Prove: $\angle RNT = \angle SMT$
The proof is ____.

6. _____



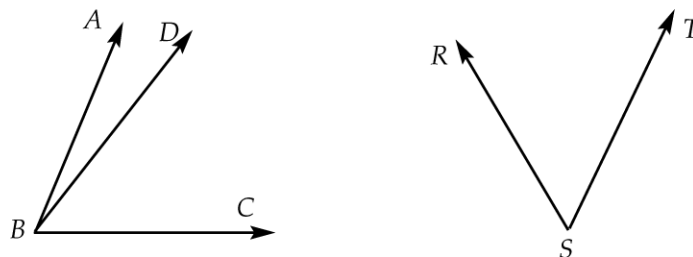
Statement	Reason	Statement	Reason
a. 1. $RT = ST$ $SM \perp TR$ $RN \perp TS$	1. Given	b. 1. $RT = ST$ $\angle TRN = \angle TSM$	1. Given
2. $\angle TMS$ is rt. \angle . $\angle TNR$ is rt. \angle .	2. \perp lines form rt. \angle 's	2. $\angle T = \angle T$	2. Reflexive
3. $\angle T = \angle T$	3. Reflexive	3. $\triangle RTN \cong \triangle STM$	3. AAS
4. $\triangle RTN \cong \triangle STM$	4. HA	4. $\angle RNT = \angle SMT$	4. CPCTE
5. $\angle RNT = \angle SMT$	5. CPCTE		
Statement	Reason	Statement	Reason
c. 1. $MT = NT$ $RN = SM$	1. Given	d. 1. $RT = ST$ $MT = NT$	1. Given
2. $\angle T = \angle T$	2. Reflexive	2. $\angle T = \angle T$	2. Reflexive
3. $\triangle RTN \cong \triangle STM$	3. SSA	3. $\triangle RTN \cong \triangle STM$	3. SAS
4. $\angle RNT = \angle SMT$	4. CPCTE	4. $\angle RNT = \angle SMT$	4. CPCTE

7. **Given:** $\angle DBC = \angle RST$

Prove: $\angle ABC > \angle RST$

The proof is ____.

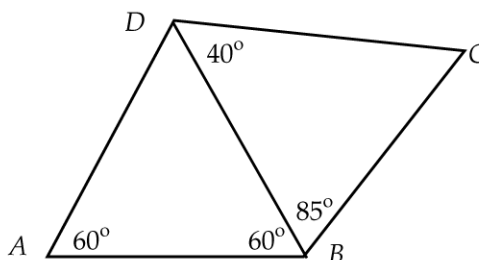
7. _____



Statement	Reason	Statement	Reason
a. 1. $\angle DBC = \angle RST$	1. Given	b. 1. $\angle DBC = \angle RST$	1. Given
2. $\angle ABC = \angle DBC + \angle ABD$	2. \angle addition theorem	2. $\angle ABC = \angle DBC + \angle ABD$	2. \angle addition theorem
3. $\angle ABC > \angle DBC$	3. If $a = b + c$ and $c > 0$, then $a > b$.	3. $\angle ABD < \angle RST$	3. Substitution
4. $\angle ABC > \angle RST$	4. Substitution		
Statement	Reason	Statement	Reason
c. 1. $\angle DBC = \angle RST$	1. Given	d. 1. $\angle DBC = \angle RST$	1. Given
2. $\angle ABC = \angle ABD + \angle DBC$	2. \angle addition theorem	2. $\angle ABC = \angle ABD + \angle DBC$	2. \angle addition theorem
3. $\angle ABC > \angle ABD$	3. If $a = b + c$ and $c > 0$, then $a > b$.	3. $\angle ABC = \angle ABD + \angle RST$	3. Substitution
		4. $\angle ABD < \angle RST$	4. If $a = b + c$ and $c > 0$, then $a > b$.

8. **The longest segment shown in the figure is** ____.

8. _____



- a. \overline{AB} b. \overline{BD} c. \overline{DC} d. \overline{BC}

9. **A true statement about a parallelogram is** ____.

9. _____

- a. A parallelogram is not a quadrilateral.
 b. The diagonals of a parallelogram bisect each other.
 c. No two angles of a parallelogram are equal.
 d. A parallelogram is a type of trapezoid.

10. **A true statement about a trapezoid is** ____.

10. _____

- a. A trapezoid can be a rectangle.
 b. A trapezoid has eight midpoints.
 c. A trapezoid always has perpendicular diagonals.
 d. A trapezoid has two bases that are parallel, two legs that are not parallel, and a median.



1. The ratio 15:25:35 in simplest form is ____.
- a. 3:4:6 b. 3:5:7 c. 3:6:9 d. 5:8:12

1. _____

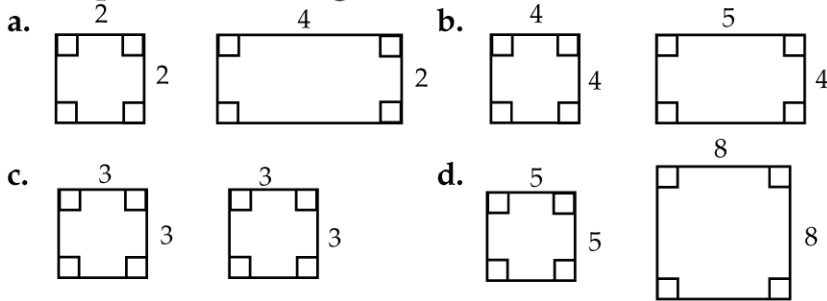
2. The property of proportion that is illustrated by

if $\frac{a}{b} = \frac{c}{d}$, then $ad = bc$ is the ____ property.

- a. Cross Product b. Equivalent Forms
 c. Denominator Sum d. Numerator-Denominator Sum

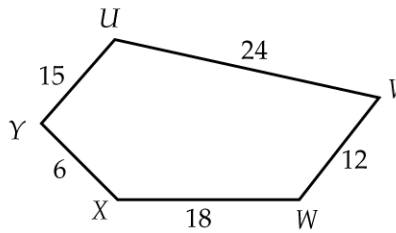
2. _____

3. The square and rectangle that are similar are ____.

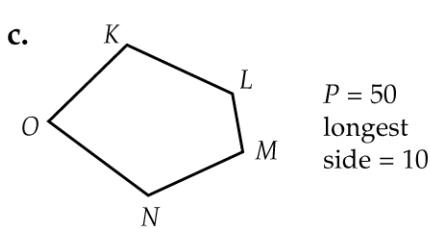
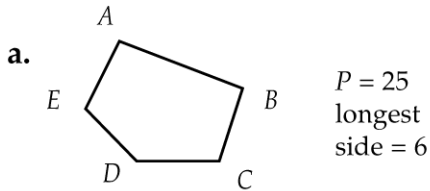


3. _____

4. The polygon similar to polygon UVWXY is ____.

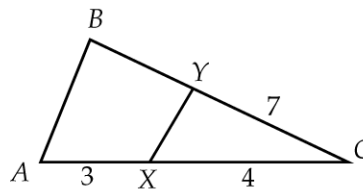


4. _____



5. Based on the figure, the measurement of BY is ____.

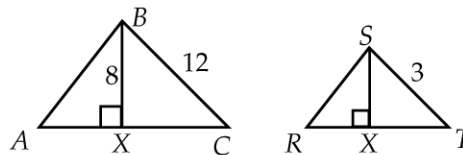
- a. $1\frac{5}{7}$ b. $5\frac{1}{4}$
 c. 6 d. $9\frac{1}{3}$



5. _____

6. Based on the given similar triangles, the measure of SX is ____.

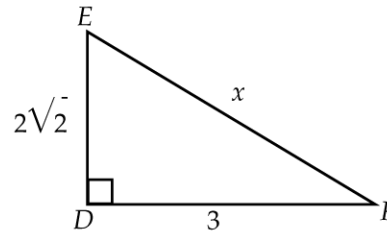
- a. $\frac{1}{4}$ b. 1
 c. $1\frac{1}{2}$ d. 2



6. _____

7. $\triangle DEF$ is a right triangle.
The length of hypotenuse x is ____.

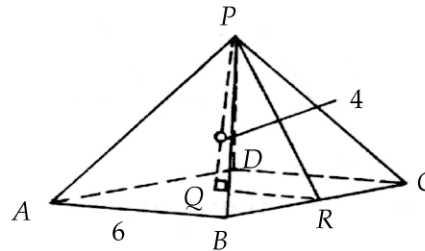
- a. 4 b. $5\sqrt{2}$
c. $11\sqrt{2}$ d. $\sqrt{17}$



7. _____

8. Given the square pyramid,
the measure of PR is ____.

- a. $2\sqrt{13}$ b. 3
c. 5 d. 7



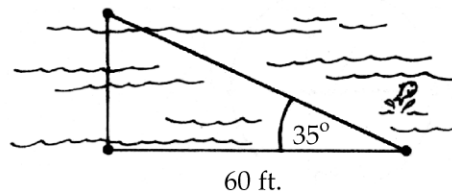
8. _____

9. A boy walks 8 miles due north and 6 miles due east.
His distance from the starting point is ____.

- a. 10 mi. b. 12 mi. c. 14 mi. d. 16 mi.

9. _____

10. Given that $\tan 35^\circ = 0.7002$, the width of the river is ____.



- a. 85.7 ft. b. 68.4 ft. c. 50.8 ft. d. 42.0 ft.

10. _____



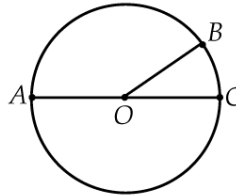
1. The characteristics of a sphere are that it ____.
- a. has four equal sides
 - b. has two end points
 - c. is in a plane and has a radius and a diameter
 - d. is not in a plane and has a radius and a diameter

1. _____

2. A line in the plane of a circle that intersects the circle in one point is a ____.
- a. chord
 - b. tangent line
 - c. secant
 - d. arc

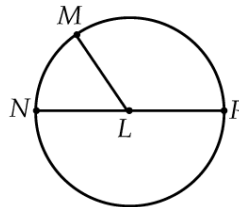
2. _____

3. The measure of \widehat{BC} is 30° .
The measure of $\angle BOC$ is ____.
- a. 30°
 - b. 45°
 - c. 60°
 - d. 150°



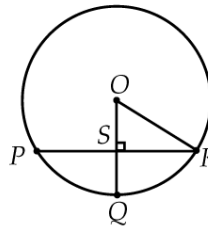
3. _____

4. The measure of $\angle L$ is 130° .
The measure of \widehat{MN} is ____.
- a. 30°
 - b. 50°
 - c. 90°
 - d. 130°



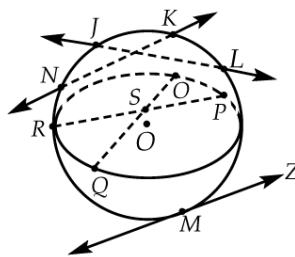
4. _____

5. If $PS = 4$, the measure of chord PR is ____.
- a. 2
 - b. 4
 - c. 8
 - d. 16



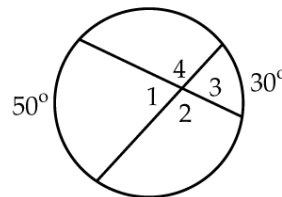
5. _____

6. The secant(s) shown is (are) ____.
- a. OQ, RP
 - b. Z
 - c. RS, SP, OS, SQ
 - d. JL, NK



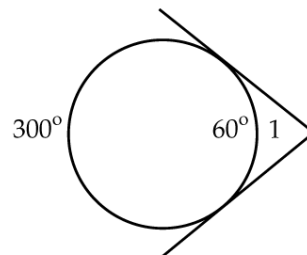
6. _____

7. The measure of $\angle 2 =$ ____.
- a. 40°
 - b. 80°
 - c. 100°
 - d. 140°



7. _____

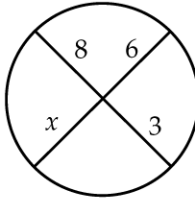
8. The measure of $\angle 1 =$ ____.
- a. 30°
 - b. 60°
 - c. 120°
 - d. 180°



8. _____

9. The length of x is ____.

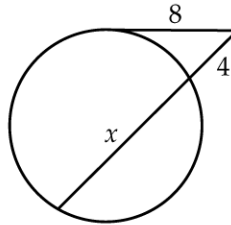
- a. 1
- b. $2\frac{1}{4}$
- c. 3
- d. 4



9. _____

10. The length of x is ____.

- a. 4
- b. 8
- c. 10
- d. 12



10. _____



1. The correctly constructed bisector of the given arc is ____.



1. _____

a. b. c. d.

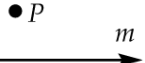
2. The correctly constructed perpendicular to L through A is ____.



2. _____

a. b. c. d.

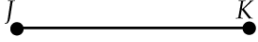
3. Given point P off line m , the correctly constructed parallel to m through P is ____.



3. _____

a. b. c. d.

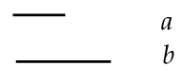
4. The correct construction of JK divided into three parts is ____.



4. _____

a. b. c. d.

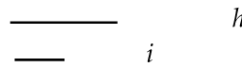
5. Given a and b , the correct construction of x such that $\frac{a}{x} = \frac{x}{b}$ is ____.



5. _____

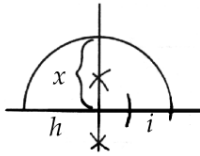
a. b. c. d.

6. The geometric mean x between h and i is ____.

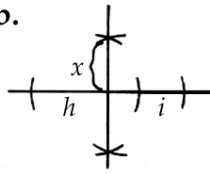


6. _____

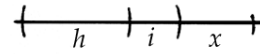
a.



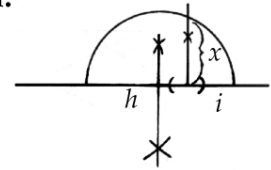
b.



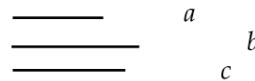
c.



d.

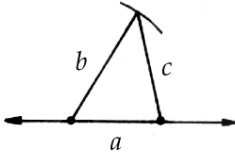


7. Given a , b , and c are sides of a triangle, the correctly constructed triangle is ____.

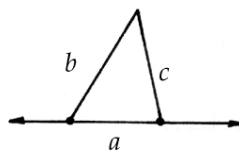


7. _____

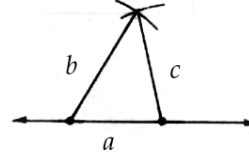
a.



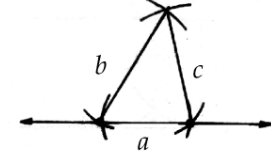
b.



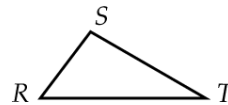
c.



d.

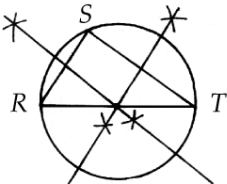


8. The correctly circumscribed circle about triangle RST is ____.

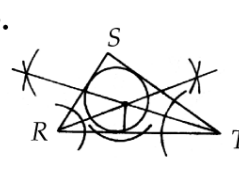


8. _____

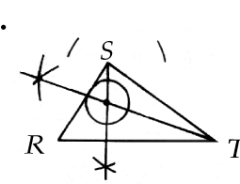
a.



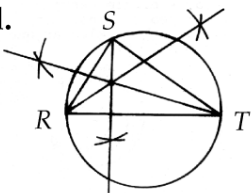
b.



c.



d.

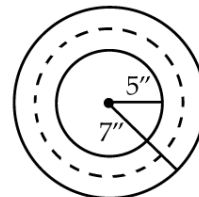
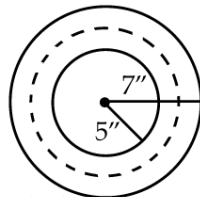


9. Given two circles with radii of $5''$ and $7''$, the locus of points in the plane of the two circles and equidistant from them is ____.

a. A circle concentric with the given circles with radius of $6''$

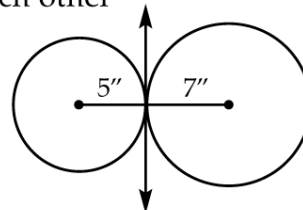
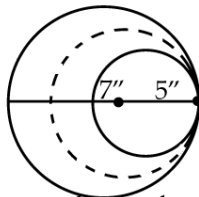
b. A circle concentric with the given circles with radius of $3''$

9. _____

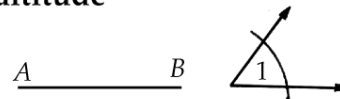


c. A circle between the two circles, tangent to both circles at one point

d. A line internally tangent to both circles, which are tangent to each other

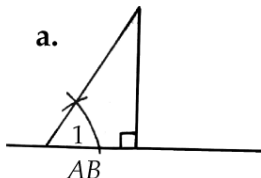


10. The correct construction of a right triangle with acute angle equal to $\angle 1$ and the altitude to the hypotenuse equal to AB is ____.

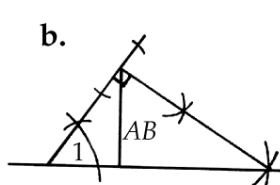


10. _____

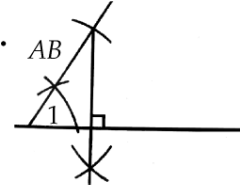
a.



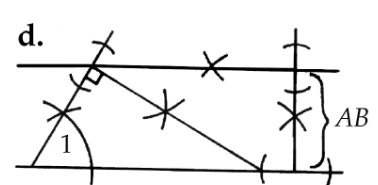
b.



c.

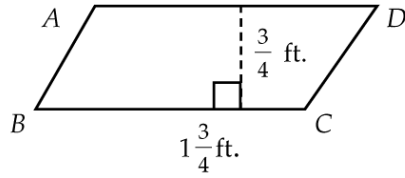


d.





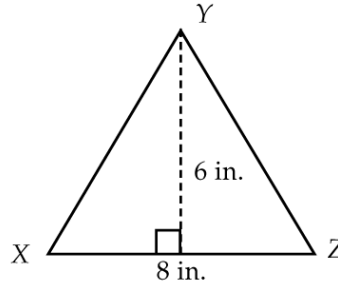
1. The area of $\square ABCD$ is ____.



- a. $1 \frac{5}{16} \text{ ft.}^2$ b. $1 \frac{9}{16} \text{ ft.}^2$ c. $2 \frac{1}{2} \text{ ft.}^2$ d. $2 \frac{5}{8} \text{ ft.}^2$

1. _____

2. The area of $\triangle XYZ$ is ____.



- a. 14 in.^2 b. 24 in.^2
c. 32 in.^2 d. 48 in.^2

2. _____

3. The exact circumference of a circle with radius $2 \frac{1}{4} \text{ in.}$ is ____.

- a. $2 \frac{1}{4} \pi \text{ in.}$ b. $3 \frac{1}{2} \pi \text{ in.}$ c. $4 \frac{1}{2} \pi \text{ in.}$ d. $5 \frac{1}{16} \pi \text{ in.}$

3. _____

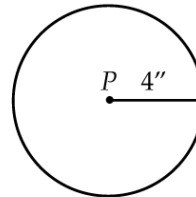
4. Using $\pi = 3.14$, the approximate circumference of a circle with radius 6.2 cm is ____.

- a. 9.7 cm b. 38.9 cm c. 114.7 cm d. 120.7 cm

4. _____

5. The exact area of circle P is ____.

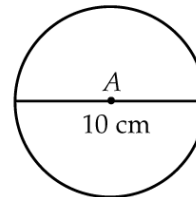
- a. $2\pi \text{ in.}^2$ b. $4\pi \text{ in.}^2$
c. $8\pi \text{ in.}^2$ d. $16\pi \text{ in.}^2$



5. _____

6. The approximate area ($\pi = 3.14$) of circle A is ____.

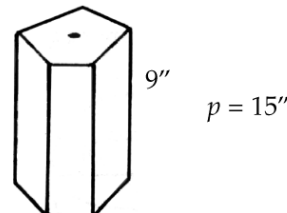
- a. 314 cm^2 b. 157 cm^2
c. 78.5 cm^2 d. 31.4 cm^2



6. _____

7. The lateral area of the given prism is ____.

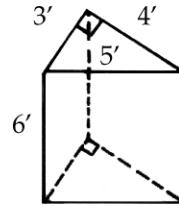
- a. 105 in.^2 b. 115 in.^2
c. 125 in.^2 d. 135 in.^2



7. _____

8. The total area of the given prism is ____.

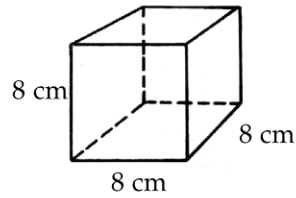
- a. 72 ft.^2 b. 84 ft.^2
c. 96 ft.^2 d. 108 ft.^2



8. _____

9. The volume of the given cube is ____.

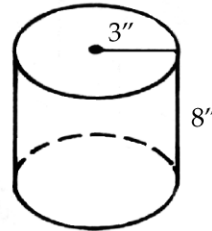
- a. 512 cm^3 b. 508 cm^3
c. 384 cm^3 d. 128 cm^3



9. _____

10. The volume of the given cylinder is ____.

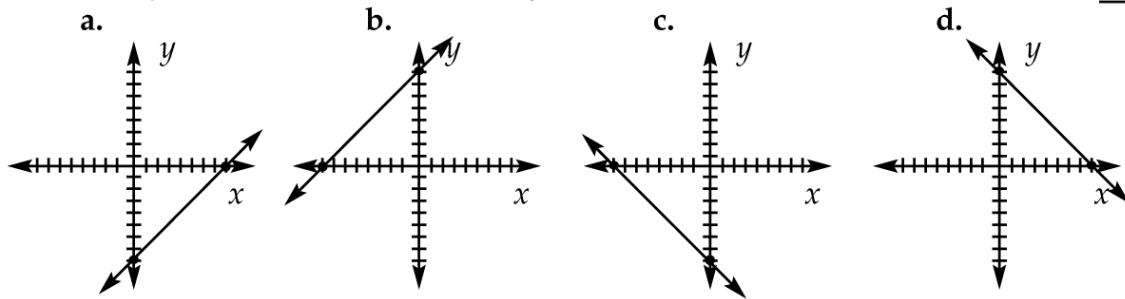
- a. $72\pi \text{ cu. in.}$ b. 60 cu. in.
c. 48 cu. in. d. $24\pi \text{ cu. in.}$



10. _____

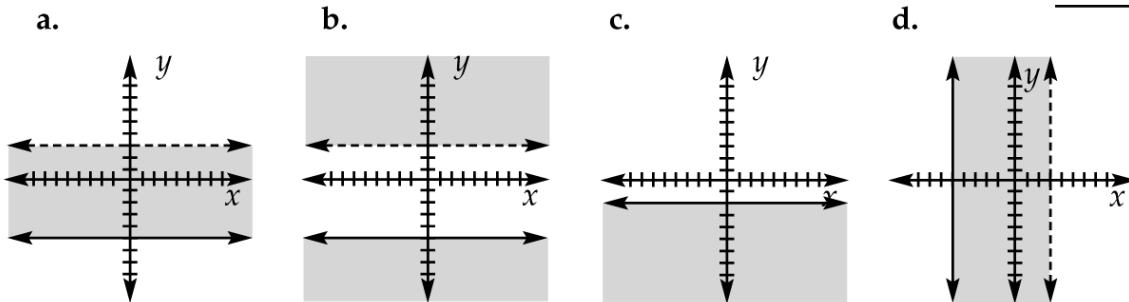


1. The graph of the equation $x + y = 8$ is ____.



1. _____

2. The graph of the inequality $-5 \leq y < 3$ is ____.



2. _____

3. The distance between the points $(-3, 0)$ and $(0, \sqrt{7})$ is ____.

- a. $\sqrt{2}$ b. $-3 + \sqrt{7}$ c. 4 d. 16

3. _____

4. The coordinates of the midpoint of the segment whose end points are $(3, 5)$ and $(-2, 0)$ are ____.

- a. $(-\frac{5}{2}, -\frac{5}{2})$ b. $(\frac{1}{2}, \frac{5}{2})$ c. $(\frac{1}{2}, \sqrt{30})$ d. $(1, 5)$

4. _____

5. The equation of the circle with center at $(5, 2)$ and radius of 3 is ____.

- a. $(x - 5)^2 + (y - 2)^2 = 9$ b. $(x + 5)^2 + (y + 2)^2 = 9$
c. $x^2 + y^2 = 3$ d. $x^2 + y^2 = 9$

5. _____

6. The equation in standard form of the line passing through the points $P(6, 2)$ and $Q(8, -4)$ is ____.

- a. $x - y = 4$ b. $x + 3y = 12$ c. $3x + y = 8$ d. $3x + y = 20$

6. _____

7. The slope of the line that contains the points $A(3, 2)$ and $B(7, 8)$ is ____.

- a. $-\frac{2}{3}$ b. $-\frac{1}{2}$ c. 1 d. $\frac{3}{2}$

7. _____

8. Lines $p, q, r,$ and s have slopes of $2, -3, -\frac{1}{2},$ and 3 respectively.

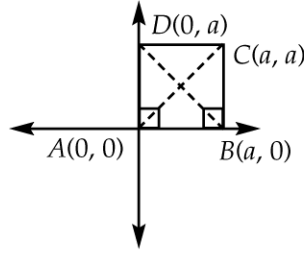
The pair of lines that are perpendicular are ____.

- a. p and q b. q and s c. p and r d. r and s

8. _____

9. **Prove:** The diagonals of a square are perpendicular.

The proof is ____.



9. _____

a. $AD = \sqrt{c^2 + d^2}$
 $BC = \sqrt{(b + c - b)^2 + d^2} = \sqrt{c^2 + d^2}$
 $AB = \sqrt{b^2} = b$
 $CD = \sqrt{(b + c - c)^2 + (d - d)^2} = \sqrt{b^2} = b$

b. $AC = \sqrt{(-a)^2 + b^2} = \sqrt{a^2 + b^2}$
 $BD = \sqrt{a^2 + b^2}$

c. $m_{AC} = \frac{a-0}{a-0} = 1$ $m_{AC} \cdot m_{BD} = -1$
 $m_{BD} = \frac{a-0}{0-a} = -1$ $\therefore \overline{AC} \perp \overline{BD}$

d. M is midpoint of \overline{AC} and midpoint of \overline{BD} .

$$m_{AD} = \frac{2k}{2j-b} \qquad m_{AB} = 0$$

$$m_{BC} = \frac{2k}{2j-b} \qquad m_{DC} = \frac{2k-2k}{2j-2j+b} = 0$$

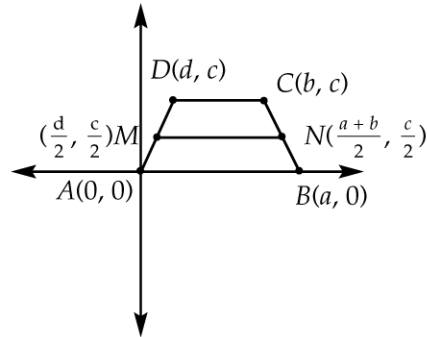
$$\overline{AD} \parallel \overline{BC} \qquad \overline{AB} \parallel \overline{DC}$$

$\therefore ABCD$ is a parallelogram.

10. **Prove:** The median of a trapezoid equals half the sum of its bases.

10. _____

The proof is ____.



a. $m_{AB} = \frac{0}{a} = 0$

$$m_{CD} = \frac{0}{b-d} = 0$$

Slopes are equal, \therefore segments \parallel .

b. $MN = \sqrt{\left(\frac{a+b}{2} - \frac{d}{2}\right)^2} = \frac{a+b-d}{2}$

$$AB = \sqrt{a^2} = a$$

$$CD = \sqrt{(b-d)^2} = b-d$$

$$MN = \frac{1}{2}(AB + CD) = \frac{1}{2}(a + b - d)$$

c. $AM = \sqrt{a^2 + b^2}$

$$BC = \sqrt{4a^2 + 4b^2} = \sqrt{4(a^2 + b^2)} = 2\sqrt{a^2 + b^2}$$

$$\sqrt{a^2 + b^2} = \frac{1}{2}(2\sqrt{a^2 + b^2})$$

$$AM = \frac{1}{2}(BC)$$

d. $m_{AC} = \frac{c}{a+b} \quad a^2 = b^2 + c^2$

$$m_{BD} = \frac{c}{b-a} \quad a = \sqrt{b^2 + c^2}$$

$$AB = a$$

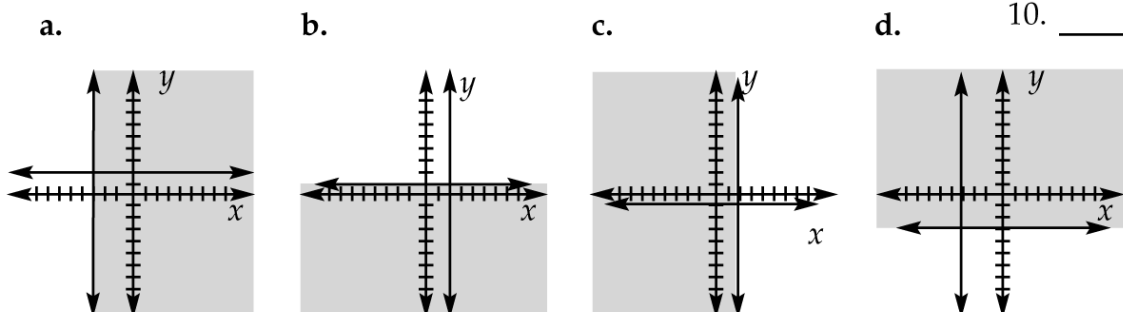
$$\frac{c}{a+b} = -\frac{b-a}{c} \quad BC = \sqrt{b^2 + c^2}$$

$$c^2 = a^2 - b^2$$

$\therefore AB = BC$ and $ABCD$ is a rhombus.



1. The midpoint of the segment joining points (a, b) and (j, k) is _____. 1. _____
 a. $(j - a, k - b)$ b. $(\frac{j-a}{2}, \frac{k-b}{2})$ c. $(j + a, k + b)$ d. $(\frac{j+a}{2}, \frac{k+b}{2})$
2. The area of a square is 36. The length of the diagonal of the square is _____. 2. _____
 a. $36\sqrt{2}$ b. $6\sqrt{2}$ c. $3\sqrt{2}$ d. 6
3. Point T is the midpoint of \overline{JH} . The coordinate of T is $(0, 5)$ and the coordinate of J is $(0, 2)$. The coordinate of H is _____. 3. _____
 a. $(0, 8)$ b. $(0, 3)$ c. $(0, 7)$ d. $(0, 11)$
4. The measures of the angles of a quadrilateral are $x, x, x + 15^\circ$, and $x + 45^\circ$. $x =$ _____. 4. _____
 a. 75° b. 105° c. 100° d. 95°
5. The complement of an acute angle is a(n) ____ angle. 5. _____
 a. obtuse b. straight c. 90° d. acute
6. If $\frac{a}{b} = \frac{2}{5}$, then _____. 6. _____
 a. $\frac{a}{b} = \frac{5}{2}$ b. $\frac{b}{a} = \frac{2}{5}$ c. $\frac{b}{a} = \frac{5}{2}$ d. $2a = 5b$.
7. For statements p and q , " $p \rightarrow q$ " is false; " p or q " is true. Which of the statements must be false? 7. _____
 a. p b. q c. p and q d. neither p or q
8. Find the equation of a line through point $(2, 5)$ and having a slope of $\frac{3}{7}$. 8. _____
 a. $3x - 7y = -29$ b. $3x + 7y = 29$
 c. $7x - 3y = 15$ d. $7y + 3y = 15$
9. Find the area of a 120° sector of a circle whose radius is 6. 9. _____
 a. 15π b. 12π c. 18π d. 10π
10. The graph of $\{(x, y): x = 2 \text{ and } y \leq 1\}$ is _____. 10. _____

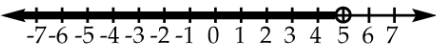
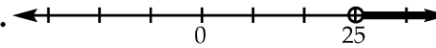
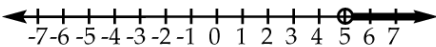
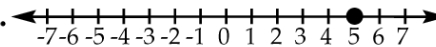
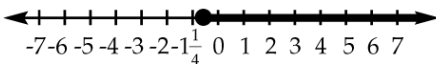
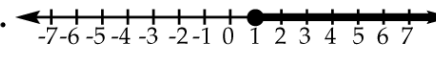
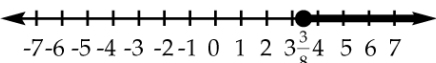
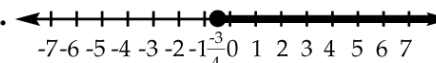
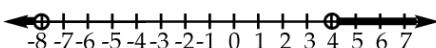
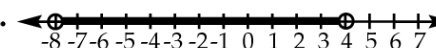
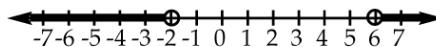
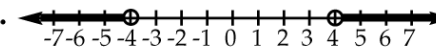
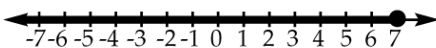
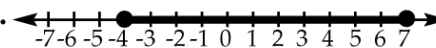
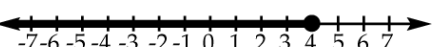
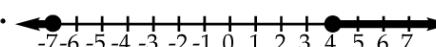


1101



1. Given $A = \{1, 2, 3, 4, 5\}$ and $B = \{2, 4, 6, 8, 10\}$, $A \cap B$ is ____.
- a. $\{1, 2, 3, 4, 5, 6, 8, 10\}$ b. $\{1, 3, 5\}$
 c. $\{2, 4\}$ d. $\{6, 8, 10\}$
2. Given $C = \{x \mid x \text{ is a whole number}\}$ and
 $D = \{x \mid x \text{ is a perfect square} < 100\}$, $C \cup D$ is ____.
- a. the set of all whole numbers
 b. the set of perfect squares < 100
 c. $\{1, 4, 9, 16, 25, 36, 49\}$
 d. $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
3. $10 \div 5 + 6 \div 3 =$ ____.
- a. $\frac{10}{33}$ b. 1 c. 4 d. $2\frac{2}{3}$
4. $3 + 4 \div 2 + 6(9 - 3) \div 12 + 1 =$ ____.
- a. $3\frac{8}{13}$ b. $4\frac{7}{24}$ c. $7\frac{1}{2}$ d. 9
5. The domain of set $E = \{(4, 5), (6, 7), (8, 9)\}$ is ____.
- a. $\{4, 6, 8\}$ b. $\{5, 7, 9\}$ c. $\{4, 6, 9\}$ d. $\{5, 6, 7, 9\}$
6. Given that $f(x) = 2x^2 + 3$, $f(3) =$ ____.
- a. 29 b. 21 c. 15 d. 9
7. $5c \cdot 5c \cdot c \cdot c$ written in exponential notation is ____.
- a. 5^2c^4 b. $25c^3$ c. $2 \cdot 5 \cdot 4 \cdot c$ d. 5^3c^3
8. $4^0 =$ ____.
- a. 0 b. 1 c. 4 d. 40
9. The fraction $\frac{1}{6^3}$ written with a negative exponent is ____.
- a. 1^{-6} b. 6^{-3} c. 3^{-6} d. $(\frac{1}{6})^{-3}$
10. $\frac{a^3b^2}{a^{-1}b^{-3}} =$ ____.
- a. ab b. a^2b^{-1} c. a^4b^5 d. $\frac{b}{a^2}$



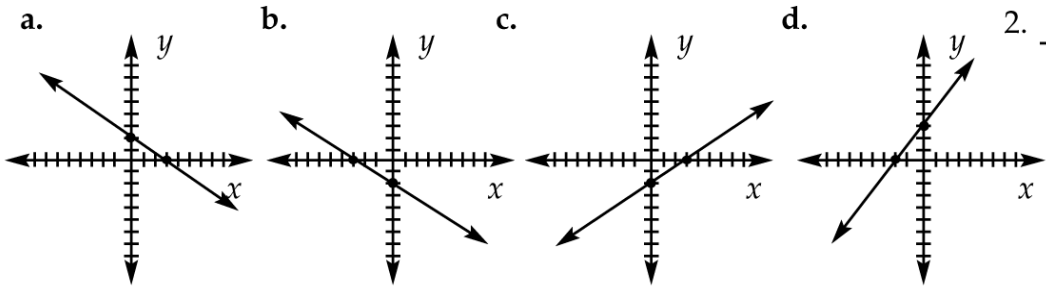
1. $|-4| = \underline{\hspace{1cm}}$.
 a. -4 b. 0 c. 1 d. 4 1.
2. $(-105) \div (-5) = \underline{\hspace{1cm}}$.
 a. -21 b. -20 c. 20 d. 21 2.
3. The solution of $\frac{x}{8} = 42$ is .
 a. $x = 336$ b. $x = 210$ c. $x = 5\frac{1}{4}$ d. $x = 0.2$ 3.
4. The solution of $4(7 - 3x) = 7(4 - 2x)$ is .
 a. $x = -5$ b. $x = -2$ c. $x = 0$ d. $x = 3$ 4.
5. The graph of $5x > 25$ is .
 a.  b. 
 c.  d.  5.
6. The graph of $3(2x + 5) \geq 2(x + 6)$ is .
 a.  b. 
 c.  d.  6.
7. The graph of $|y + 2| > 6$ is .
 a.  b. 
 c.  d.  7.
8. The graph of $|2x - 3| \leq 11$ is .
 a.  b. 
 c.  d.  8.
9. At 10:00 AM, two airplanes leave an airport. If the northbound airplane flies at 280 mph and the southbound at 320 mph, they will be 1,000 miles apart at .
 a. 11:30 AM b. 11:40 AM c. 12:00 noon d. 1:20 PM 9.
10. Mrs. Martin bought \$200 worth of travelers' checks in \$10 and \$20 denominations. If she has 12 travelers' checks in all, she has .
 a. \$10: 5 b. \$10: 6 c. \$10: 3 d. \$10: 4
 \$20: 7 \$20: 6 \$20: 9 \$20: 8 10.



1. Three solutions to $y = \frac{x}{5} + 1$ are ____.
- a. $(-20, 4), (10, 2), (15, 4)$ b. $(-15, -2), (-10, -1), (0, 2)$
 c. $(-10, -1), (5, 2), (10, 3)$ d. $(-5, 0), (5, 3), (20, 5)$

1. _____

2. The graph of $2x + 3y = 6$ is ____.



2. _____

3. The equation of the line that passes through point $(-6, 8)$ and that has a slope of $-\frac{2}{3}$ is ____.

3. _____

- a. $y = -\frac{2}{3}x + 12$ b. $y = -\frac{2}{3}x + 4$
 c. $x = -\frac{2}{3}y + \frac{34}{3}$ d. $y = -\frac{2}{3}x + 8$
4. The equation for the line that passes through the origin and is parallel to $x + y = 6$ is ____.
- a. $x + y = 1$ b. $x = 0$ c. $y = -x$ d. $x = y$

4. _____

5. The solution to $x + y = k$ by multiplying and adding is ____.

5. _____

- a. $(k + 1, 2k - 1)$ b. $(k - 1, 2k + 1)$
 c. $(2k - 1, k - 1)$ d. $(2k - 1, 1 - k)$

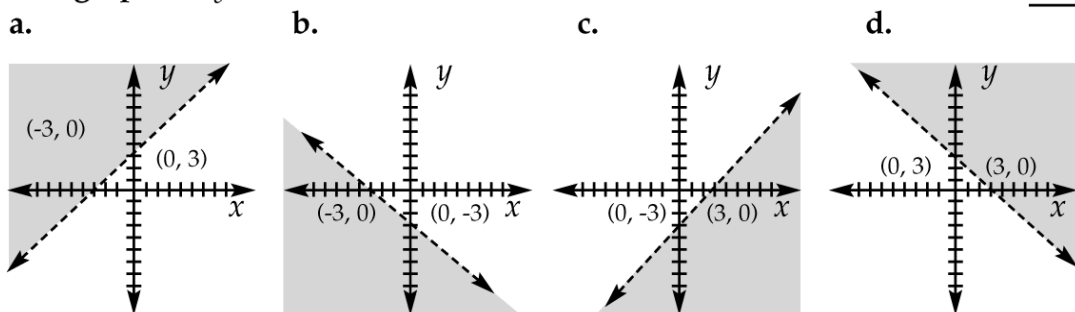
6. The solution to $8y - 1 = x$ by substitution is ____.

6. _____

- a. $(-4, -\frac{3}{8})$ b. $(\frac{1}{23}, \frac{3}{46})$ c. $(\frac{1}{11}, \frac{3}{22})$ d. $(\frac{5}{11}, \frac{2}{11})$

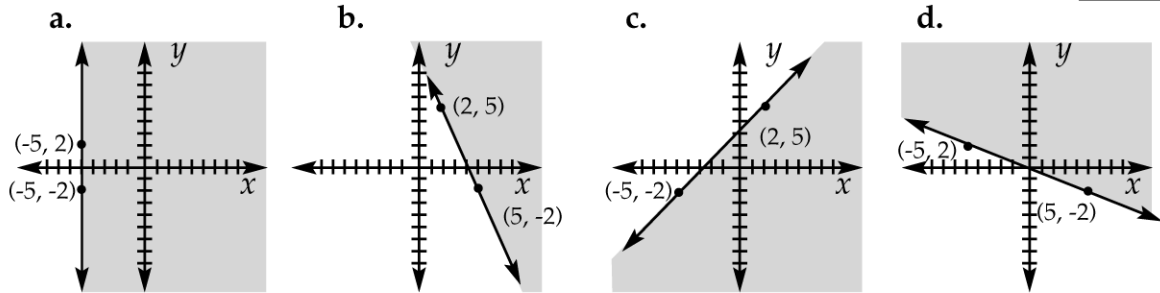
7. The graph of $y < x - 3$ is ____.

7. _____



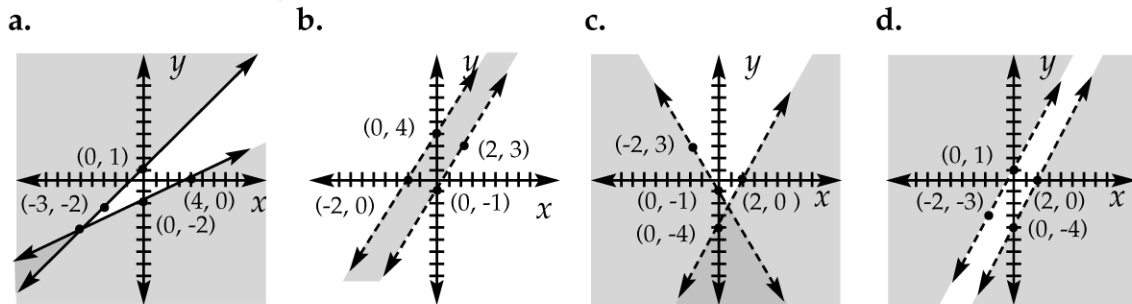
8. The graph of $2x + 5y \geq 0$ is ____.

8. _____



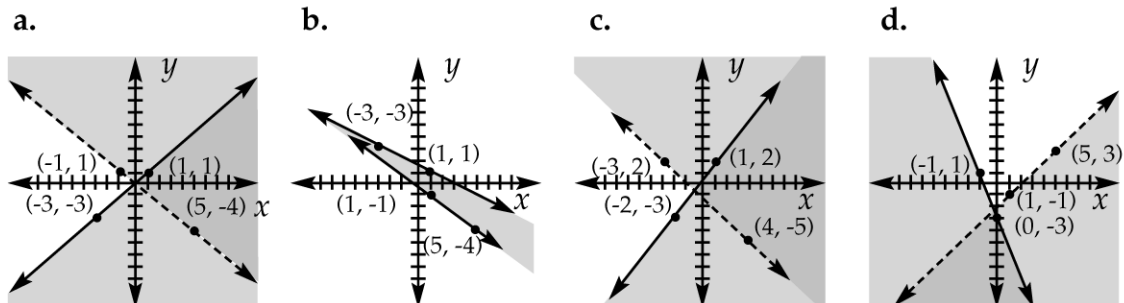
9. The graph of $2x - y > 4$ is ____.
 $2x - y < -1$

9. _____



10. The graph of $5x + 6y > 1$ is ____.
 $y - x \leq 0$

10. _____





1. The indicated product of $(a^5)^7$ is _____.
 - a. a^2
 - b. $7a^5$
 - c. a^{12}
 - d. a^{35}
2. The indicated product of $(ab - 9)(ab + 8)$ is _____.
 - a. $2ab - 72$
 - b. $ab^2 - ab + 72$
 - c. $a^2b^2 - ab - 72$
 - d. $a^2b^2 - 17ab - 72$
3. The indicated product of $(x + 2y)^2$ is _____.
 - a. $x^2 + 4xy + 4y^2$
 - b. $x^2 + 2xy + 4y^2$
 - c. $x^2 + 2xy + 2y^2$
 - d. $x^2 + 4xy + 2y^2$
4. The factors of $9x^2 - y^2$ are _____.
 - a. $(3x - y)^2$
 - b. $(3x - y)(3x + y)$
 - c. $(3x + y)^2$
 - d. $3(x - y)^2$
5. The sum of $(6x^2 + 2x - 9) + (3x^2 - 5x + 12)$ is _____.
 - a. $9x^2 - 3x + 3$
 - b. $9x^2 + 7x - 3$
 - c. $3x^2 - 3x + 3$
 - d. $9x^2 - 3x - 3$
6. The difference of $2x^2 + 5x - 10$ is _____.

$$\frac{x^2 - 6x + 8}{}$$
 - a. $3x^2 - x - 2$
 - b. $x^2 + 11x - 18$
 - c. $x^2 - x - 2$
 - d. $-x^2 - 11x - 18$
7. The quotient of $(4x^2 - 11x - 20) \div (x - 4)$ is _____.
 - a. $4x - 5$
 - b. $2x + 5$
 - c. $4x + 5$
 - d. $2x - 4$
8. The quotient of $(a^{2n} - a^n - 6) \div (a^n + 8)$ is _____.
 - a. $a^n - 9 + \frac{72}{a^n + 8}$
 - b. $a^n - 9 + \frac{66}{a^n + 8}$
 - c. $a^{2n} - 2 + \frac{10}{a^n + 8}$
 - d. $a^n + 7 + \frac{-62}{a^n + 8}$
9. If x varies directly as y and $x = 7\frac{1}{2}$ when $y = 10$, the value of x when $y = 4$ is _____.
 - a. $1\frac{7}{8}$
 - b. 3
 - c. $5\frac{1}{3}$
 - d. $18\frac{3}{4}$
10. The volume of a right circular cone varies jointly as the altitude and the square of the radius of the base. If the volume of the cone is 154 cu. in. when its altitude is 12 in. and the radius of the base is $3\frac{1}{2}$ in., when the volume of the cone is 77 cu. in. and the radius of the base is $2\frac{1}{2}$ in., the altitude is ____ inches.
 - a. $5\frac{4}{9}$ in.
 - b. 6 in.
 - c. $10\frac{2}{7}$ in.
 - d. $13\frac{1}{2}$ in.



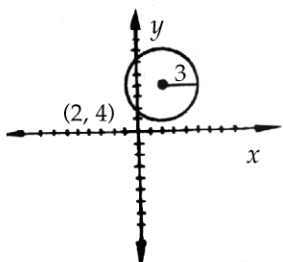
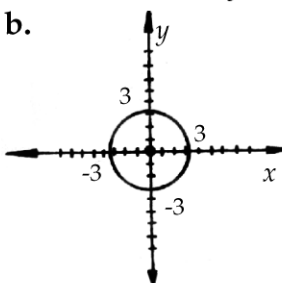
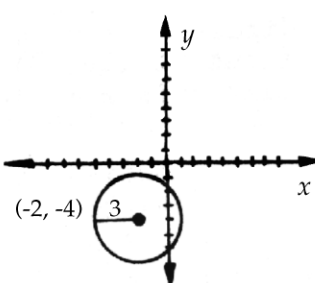
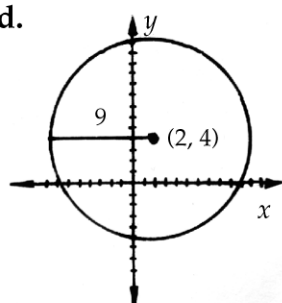
1. The value of $\frac{4}{2x^0}$ is _____. 1. _____
 a. 2 b. $\frac{2}{x}$ c. 4 d. $4x$
2. The variable $(\frac{3a^2}{5})^{-3}$ expressed with positive exponents is _____. 2. _____
 a. $\frac{9a^6}{15}$ b. $\frac{5}{3a}$ c. $5(3a^2)^3$ d. $\frac{5^3}{3^3a^6}$
3. Divide: $\frac{5}{2x+3y} \div \frac{10}{4x^2-9y^2} =$ _____. 3. _____
 a. $4x+6y$ b. $\frac{2x-3y}{2}$ c. $\frac{2x+3y}{2}$ d. $\frac{1}{2(2x-3y)}$
4. Simplify: $\frac{2y^2-7y-15}{3y^2-8y-3} \cdot \frac{9y^2-1}{4y^2-9} \div \frac{y^2+3y-10}{2y^2-9y+9} =$ _____. 4. _____
 a. $\frac{(y-5)(3y-1)}{(y+5)(y-2)}$ b. $\frac{-(3y-1)(2y-3)}{y-2}$
 c. $\frac{3y-1}{y-2}$ d. $\frac{9y^2-1}{(3y+1)(2y-3)}$
5. $\frac{x+6}{x^2+8x+15} + \frac{3x}{x+5} - \frac{x-3}{x+3} =$ _____. 5. _____
 a. $\frac{2x+2}{x+5}$ b. $\frac{2x^2+9x-9}{(x+5)(x+3)}$
 c. $\frac{2x^2+8x+21}{(x+5)(x+3)}$ d. $\frac{2x^2+16x+15}{(x+5)(x+3)}$
6. $1 + 2x + \frac{1}{2x} =$ _____. 6. _____
 a. $4x+1$ b. $\frac{2x+4x^2+1}{2x}$ c. $\frac{4x^2+3}{2x}$ d. $\frac{6x+1}{2x}$
7. The solution to $\frac{5}{2x+6} - 2 = \frac{1-8x}{4x}$ is _____. 7. _____
 a. $x = -3\frac{1}{2}$ b. $x = -1$ c. $x = \frac{1}{3}$ d. $x = 2$

8. The solution to $\frac{3x-1}{9x-5} = \frac{x+1}{3x+1}$ is ____.
- a. $x = 1$ b. $x = 2$ c. $x = 3$ d. $x = 4$
9. A dairyman has 300 pounds of milk testing 3% butterfat. The number of pounds of skimmed milk he must remove to have milk testing 3.6% butterfat is ____ pounds.
- a. 46.5 b. 48 c. 50 d. 51.4
10. John can type $\frac{2}{3}$ of a manuscript in 8 hours. If Laura joins him, they can complete the typing in 4 hours. The number of hours Laura would take to type the manuscript alone would be ____ hours.
- a. 3 b. 4 c. 5 d. 6



1. The number -8.64 is a(n) ___ number. 1. _____
 a. rational b. irrational c. radical d. imaginary
2. The number $0.123456789\dots$ is a(n) ___ number. 2. _____
 a. rational b. irrational c. radical d. imaginary
3. Rationalize the denominator and simplify: $\frac{3\sqrt{2}-2\sqrt{3}}{3\sqrt{2}+2\sqrt{3}} = \underline{\hspace{2cm}}$. 3. _____
 a. $\frac{4-\sqrt{6}}{2}$ b. $5-\sqrt{2}$ c. $5-2\sqrt{6}$ d. $1-2\sqrt{6}$
4. The solution to $\sqrt[3]{x-5}-2=0$ is _____. 4. _____
 a. $x=7$ b. $x=9$ c. $x=11$ d. $x=13$
5. The solution to $10t^2-29t=-10$ by factoring is _____. 5. _____
 a. $t=\frac{5}{2}, \frac{2}{5}$ b. $t=\frac{5}{2}, -2$ c. $t=-3, 2$ d. $t=\frac{1}{2}, 5$
6. The solution to $c^2+11c=12$ by completing the square is _____. 6. _____
 a. $c=\frac{1}{2}, 12$ b. $c=-1, 1$ c. $c=1, -12$ d. $c=2, 6$
7. The quadratic formula is _____. 7. _____
 a. $x = \frac{b \pm \sqrt{b^2 + 4ac}}{2a}$ b. $x = \frac{-b \pm \sqrt{a^2 - 4ac}}{2b}$
 c. $x = \frac{a \pm \sqrt{a^2 - 4ab}}{2c}$ d. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
8. Using the quadratic formula, the solution to $(3-y)(y+4)=3y-5$ is _____. 8. _____
 a. $y = -2 \pm \sqrt{21}$ b. $y = -1 \pm 3\sqrt{2}$
 c. $y = \frac{-3 \pm \sqrt{77}}{2}$ d. $y = \frac{2 \pm \sqrt{21}}{4}$
9. An imaginary number _____. 9. _____
 a. does not exist b. equals -1
 c. is the square root of any negative number d. has no practical and real applications
10. $i^{12} + 2 = \underline{\hspace{2cm}}$. 10. _____
 a. $i+2$ b. $-i+2$ c. 1 d. 3



1. The distance between the points $(0, 0)$ and $(6, -8)$ is ____.
- a. $\sqrt{2}$ b. $\sqrt{14}$ c. 5 d. 10
1. _____
2. The distance between the points $(1, 5)$ and $(1, -4)$ is ____.
- a. 1 b. 6 c. 9 d. $\sqrt{85}$
2. _____
3. The graph of the circle with equation $(x - 2)^2 + (y - 4)^2 = 9$ is ____.
3. _____
- a. 
- b. 
- c. 
- d. 
4. The equation of the circle with center at $(5, 6)$ and radius of 7 is ____.
- a. $x^2 - y^2 = 49$ b. $(x - 5)^2 + (y - 6)^2 = 49$
- c. $(x - 5)^2 - (y - 6)^2 = 49$ d. $(x + 5)^2 + (y + 6)^2 = 49$
4. _____
5. The essential elements of the parabola with equation $x = \frac{1}{16}y^2$ are ____.
5. _____
- a. focus at $(4, 0)$ b. focus at $(16, 0)$
directrix $x = -4$ directrix $x = -16$
- c. focus at $(0, 8)$ d. focus at $(0, \frac{1}{16})$
directrix $y = -8$ directrix $y = -\frac{1}{16}$
6. The equation of the hyperbola with foci $(5, 0)$, $(-5, 0)$ and vertices $(4, 0)$, $(-4, 0)$ is ____.
6. _____
- a. $\frac{x^2}{25} - \frac{y^2}{1} = 1$ b. $\frac{y^2}{16} - \frac{x^2}{25} = 1$
- c. $\frac{x^2}{16} - \frac{y^2}{9} = 1$ d. $\frac{x^2}{9} + \frac{y^2}{25} = 1$
7. The equation $x^2 + 2y^2 = 2$ is an equation of a(n) ____.
- a. circle b. ellipse c. parabola d. hyperbola
7. _____

8. The solution set to the system $4x^2 + 9y^2 = 72$ is _____. 8. _____
 $2x - y = 4$
- a. $\{(-2, -8), (\frac{1}{2}, -3)\}$ b. $\{(0, 2\sqrt{2}), (\frac{2}{3}, -2\frac{2}{3})\}$
- c. $\{(1, -2), (\frac{3}{4}, -2\frac{1}{2})\}$ d. $\{(3, 2), (\frac{3}{5}, -2\frac{4}{5})\}$
9. Let y = safe load in pounds and x = depth in inches for a certain type of rectangular horizontal beam. A constant of proportionality exists such that $y = kx^2$ (y varies directly as x^2). **For a beam with $y = 1,000$ pounds and $x = 5$ inches, the constant k and the equation of the parabola for the beam are _____.** 9. _____
- a. $k = 0.000005$ lbs. b. $k = 40$ lbs.
 $y = 0.000005x^2$ $y = 40x^2$
- c. $k = 5,000$ lbs. d. $k = 25,000$ lbs.
 $k = xy$ $k = x^2y$
10. The Jones family plans a 300-mile trip. Let y = time traveled (in hours) and x = average speed (in miles per hour). **The equation for the rectangular hyperbola that expresses the relationship between time traveled (y) and average speed (x) is _____.** 10. _____
- a. $300 = xy$ b. $y = \frac{x}{300}$ c. $x = 300y$ d. $300 = x^2 + y^2$



1. $\frac{2ab^{-1}}{3e^{-3}d} = \underline{\hspace{2cm}}$.

1.

- a. $\frac{3e^3d}{2ab}$ b. $\frac{2ae^3}{3d^2}$ c. $\frac{6e^3}{abd}$ d. $\frac{2ae^3}{3bd}$

2. $\left(\frac{27}{8}\right)^{-\frac{2}{3}} = \underline{\hspace{2cm}}$.

2.

- a. $-\frac{9}{4}$ b. $\frac{2\sqrt{6}}{9}$ c. $\frac{4}{9}$ d. $\frac{3}{2}$

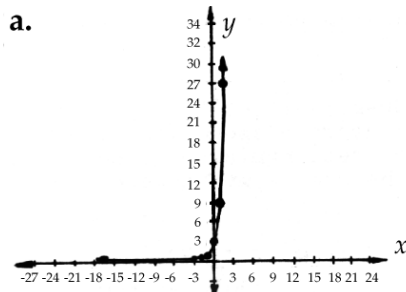
3. The solution of $3^x = \frac{1}{27}$ is $\underline{\hspace{2cm}}$.

3.

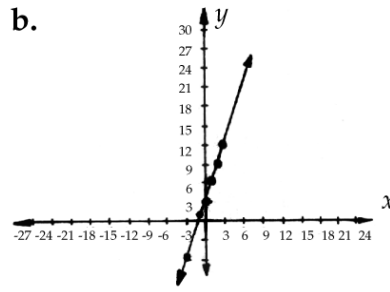
- a. $x = -3$ b. $x = 2$ c. $x = 3$ d. $x = 9$

4. The graph of $y = 3^{x+1}$ is $\underline{\hspace{2cm}}$.

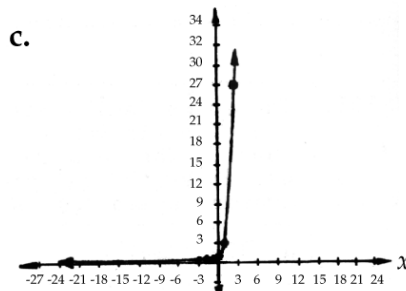
4.



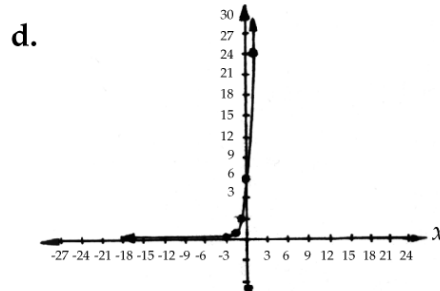
x	0	1	2	3	-1	-2	-3
y	3	9	27	81	1	$\frac{1}{3}$	$\frac{1}{9}$



x	0	1	2	3	-1	-2	-3
y	3	6	9	12	1	-3	-6



x	0	1	2	3	-1	-2	-3
y	1	3	9	27	$\frac{1}{3}$	$\frac{1}{9}$	$\frac{1}{27}$



x	0	1	2	3	-1	-2	-3
y	9	27	81	243	3	1	$\frac{1}{3}$

5. Evaluate $\log_5 125$: $\underline{\hspace{2cm}}$.

5.

- a. 0.04 b. 3 c. 5 d. 25

6. Using the common logarithm table (next page), $\log 4.75 = \underline{\hspace{2cm}}$.

6.

- a. 0.5740 b. 0.6675 c. 0.6767 d. 0.6857

7. The number 0.283 expressed in scientific notation is ____.
- a. $2,830 \times 10^{-4}$ b. 283×10^{-3}
 c. 28.3×10^{-2} d. 2.83×10^{-1}

7. _____

8. Using the common logarithm table, antilog 3.2625 = ____.
- a. 0.5132 b. 1.83 c. 1,830 d. 1,860

8. _____

9. The sum of $\begin{pmatrix} 2 & 1 & 0 \\ 4 & 0 & 1 \end{pmatrix} + \begin{pmatrix} 1 & 1 & 5 \\ 2 & 3 & 4 \end{pmatrix}$ is ____.

9. _____

- a. $\begin{pmatrix} 6 & 4 & 0 \\ 12 & 0 & 9 \end{pmatrix}$ b. $\begin{pmatrix} 3 & 2 & 5 \\ 6 & 3 & 5 \end{pmatrix}$ c. $\begin{pmatrix} 2 & 1 & 5 \\ 6 & 0 & 4 \end{pmatrix}$ d. $\begin{pmatrix} 2 & 1 & 0 \\ 8 & 0 & 4 \end{pmatrix}$

10. Mr. Jones buys two pens, one package of lined paper, and three boxes of staples. The respective prices are 60¢, 70¢, and 45¢ for each unit. On his way home, Mr. Jones remembers that he will have some extra needs, so he returns to the same store and buys three times the same order. **The matrices and the amount of Mr. Jones bill are ____.**

- a. $(8 \ 4 \ 12) \begin{pmatrix} 0.60 \\ 0.70 \\ 0.45 \end{pmatrix}$ b. $(6 \ 3 \ 9) (0.60 \ 0.70 \ 0.45)$
 Mr. Jones spent \$9.75.

Mr. Jones spent \$13.

- c. $(2 \ 1 \ 3) \begin{pmatrix} 1.20 \\ 0.70 \\ 1.35 \end{pmatrix}$ d. $\begin{pmatrix} 7 \\ 4 \\ 11 \end{pmatrix} (0.60 \ 0.70 \ 0.45)$

Mr. Jones spent \$7.15.

Mr. Jones spent \$13.

COMMON LOGARITHMS OF NUMBERS

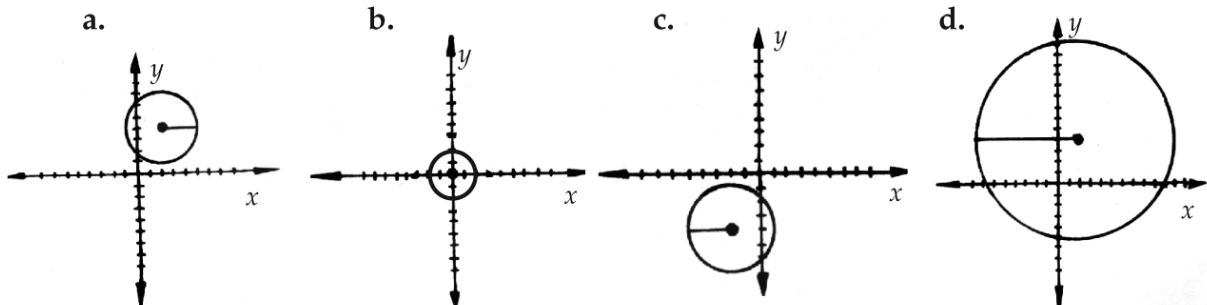
N	0	1	2	3	4	5	6	7	8	9
10	0000	0043	0086	0128	0170	0212	0253	0294	0334	0374
11	0414	0453	0492	0531	0569	0607	0645	0682	0719	0755
12	0792	0828	0864	0899	0934	0969	1004	1038	1072	1106
13	1139	1173	1206	1239	1271	1303	1335	1367	1399	1430
14	1461	1492	1523	1553	1584	1614	1644	1673	1703	1732
15	1761	1790	1818	1847	1875	1903	1931	1959	1987	2014
16	2041	2068	2095	2122	2148	2175	2201	2227	2253	2279
17	2304	2330	2355	2380	2405	2430	2455	2480	2504	2529
18	2553	2577	2601	2625	2648	2672	2695	2718	2742	2765
19	2788	2810	2833	2856	2878	2900	2923	2945	2967	2989
20	3010	3032	3054	3075	3096	3118	3139	3160	3181	3201
21	3222	3243	3263	3284	3304	3324	3345	3365	3385	3404
22	3424	3444	3464	3483	3502	3522	3541	3560	3579	3598
23	3617	3636	3655	3674	3692	3711	3729	3747	3766	3784
24	3802	3820	3838	3856	3874	3892	3909	3927	3945	3962
25	3979	3997	4014	4031	4048	4065	4082	4099	4116	4133
26	4150	4166	4183	4200	4216	4232	4249	4265	4281	4298
27	4314	4330	4346	4362	4378	4393	4409	4425	4440	4456
28	4472	4487	4502	4518	4533	4548	4564	4579	4594	4609
29	4624	4639	4654	4669	4683	4698	4713	4728	4742	4757
30	4771	4786	4800	4814	4829	4843	4857	4871	4886	4900
31	4914	4928	4942	4955	4969	4983	4997	5011	5024	5038
32	5051	5065	5079	5092	5105	5119	5132	5145	5159	5172
33	5185	5198	5211	5224	5237	5250	5263	5276	5289	5302
34	5315	5328	5340	5353	5366	5378	5391	5403	5416	5428
35	5441	5453	5465	5478	5490	5502	5514	5527	5539	5551
36	5563	5575	5587	5599	5611	5623	5635	5647	5658	5670
37	5682	5694	5705	5717	5729	5740	5752	5763	5775	5786
38	5798	5809	5821	5832	5843	5855	5866	5877	5888	5899
39	5911	5922	5933	5944	5955	5966	5977	5988	5999	6010
40	6021	6031	6042	6053	6064	6075	6085	6096	6107	6117
41	6128	6138	6149	6160	6170	6180	6191	6201	6212	6222
42	6232	6243	6253	6263	6274	6284	6294	6304	6314	6325
43	6335	6345	6355	6365	6375	6385	6395	6405	6415	6425
44	6435	6444	6454	6464	6474	6484	6493	6503	6513	6522
45	6532	6542	6551	6561	6571	6580	6590	6599	6609	6618
46	6628	6637	6646	6656	6665	6675	6684	6693	6702	6712
47	6721	6730	6739	6749	6758	6767	6776	6785	6794	6803
48	6812	6821	6830	6839	6848	6857	6866	6875	6884	6893
49	6902	6911	6920	6928	6937	6946	6955	6964	6972	6981
50	6990	6998	7007	7016	7024	7033	7042	7050	7059	7067
51	7076	7084	7093	7101	7110	7118	7126	7135	7143	7152
52	7160	7168	7177	7185	7193	7202	7210	7218	7226	7235
53	7243	7251	7259	7267	7275	7284	7292	7300	7308	7316
54	7324	7332	7340	7348	7356	7364	7372	7380	7388	7396



1. An example of an arithmetic series is _____. 1. _____
- a. $1 + 2 + 3 + 4 + \dots + 10$ b. $\frac{3}{2} + \frac{3}{4} + \frac{3}{8} + \frac{3}{16} + \frac{3}{32}$
- c. $5 + 10 + 15 + 20 \dots 5n$ d. $2 + 4 + 8 + 10 + 14 + 16$
2. An example of a geometric series is _____. 2. _____
- a. $\frac{1}{2} + 1 + 1 + \frac{1}{2} + 2 + 2 + \frac{1}{2}$ b. $5 + 10 + 20 + 25 + 30$
- c. $2 + 4 + 6 + 8 + 10$ d. $\frac{2}{3} + \frac{2}{6} + \frac{2}{12} + \frac{2}{24} + \frac{2}{48}$
3. $5! =$ _____. 3. _____
- a. 5 b. 20 c. 60 d. 120
4. $\frac{8! \cdot 4!}{7! \cdot 3!} =$ _____. 4. _____
- a. $1 \frac{11}{21}$ b. 14 c. 32 d. 96
5. A representative from each of 7 nations is to sit at a round table to discuss trade relations. **The number of ways the representatives can be seated is _____.** 5. _____
- a. 7 b. $7^2 = 49$ c. $6! = 720$ d. $7! = 5,040$
6. **The number of permutations that exist of the letters W, X, Y, and Z, taking three at a time, is _____.** 6. _____
- a. 12 b. 4 c. 24 d. 48
7. An agriculture researcher wants to test the effect of 9 soil additives by adding 4 at a time to different rows of the same plant. **The number of different combinations she can test is _____.** 7. _____
- a. 36 b. 120 c. 126 d. 15,120
8. **The number of different committees of 3 people that can be made from a group of 4 is _____.** 8. _____
- a. 4 b. 8 c. 12 d. 24
9. A certain event has the probability of $\frac{3}{4}$. **The probability that the event will not occur is _____.** 9. _____
- a. 1 b. $\frac{3}{4}$ c. $\frac{1}{2}$ d. $\frac{1}{4}$
10. The probability that a randomly selected person was born in June is $\frac{1}{12}$. **If five people are chosen at random and their birth months are noted, the probability that at least one has a June birthday is _____.** 10. _____
- a. $\frac{161,051}{248,832}$ b. $\frac{87,781}{248,832}$ c. $\frac{14,641}{248,832}$ d. $\frac{1}{248,832}$



1. The graph of the parabola $y = \frac{-x^2}{20}$ opens ____.
- a. upward b. downward c. to the right d. to the left
2. Evaluate $12x^2y^{-1}$ for $x = 3$ and $y = 4$.
- a. 23 b. 37 c. 27 d. 9
3. Subtract $2x^2 - 4x - 3$ from $x^2 - 5x - 8$.
- a. $-x^2 - x - 5$ b. $x^2 + 5x + 11$
 c. $-x^2 - 9x - 11$ d. $-2x^2 - x - 5$
4. Factor $8x^2 + 72x + 112$ completely.
- a. $2(x + 8) \cdot 4(x + 14)$ b. $8(x + 2)(x + 14)$
 c. $8(x + 9)(x + 14)$ d. $8(x + 7)(x + 2)$
5. Solve $\frac{y+4}{2y} + \frac{y-2}{3} = \frac{3y^2+10}{6y}$ for y .
- a. $y = 1, -2$ b. $y = 2, 1$ c. $y = 4, 2$ d. $y = -4, 2$
6. Evaluate $7i^4 - 12i^2$.
- a. 25 b. $-5i^2$ c. 17 d. 19
7. Add. $\begin{pmatrix} 2 & 8 \\ 7 & -4 \end{pmatrix} + \begin{pmatrix} 6 & -14 \\ 9 & 3 \end{pmatrix}$
- a. $\begin{pmatrix} 8 & -6 \\ 16 & -1 \end{pmatrix}$ b. $\begin{pmatrix} -4 & 6 \\ -2 & 1 \end{pmatrix}$ c. $\begin{pmatrix} 14 & -12 \\ 5 & 10 \end{pmatrix}$ d. $\begin{pmatrix} 11 & 11 \\ 13 & -18 \end{pmatrix}$
8. Find the 37th term of the sequence 2, 5, 8, 11, 14, ...
- a. 74 b. 110 c. 111 d. 69
9. What is the probability of drawing a yellow marble or a red marble from a bag containing 12 yellow marbles, 16 red marbles, and 15 green marbles?
- a. $\frac{12}{28}$ b. $\frac{16}{28}$ c. $\frac{28}{30}$ d. $\frac{28}{43}$
10. The graph of the conic $4x^2 + 4(y^2 - 4) = 0$ is ____.





1. The domain of the relation $\{(x, y) : y = \frac{2x-5}{13x}\}$ is _____.
 - a. $\{x: x = \frac{-5}{11}\}$
 - b. $\{y: y \in R\}$
 - c. $\{x: x \in R, x \neq 0\}$
 - d. $\{x: x \text{ is a positive number}\}$

2. The range of the relation $\{(x, y) : y = |x|\}$ is _____.
 - a. $\{x: x \in R\}$
 - b. $\{y: y \geq 0\}$
 - c. $\{y: y \in R\}$
 - d. $\{y: y \text{ is a positive number}\}$

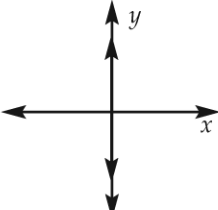
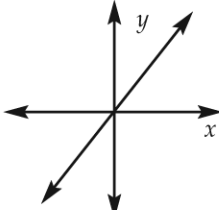
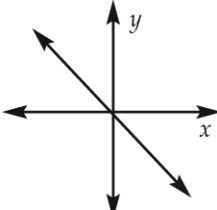
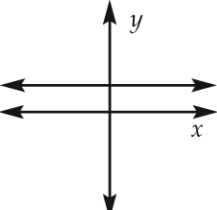
3. Given the function $G(x) = 2x^2 + 2x - 1$, $G(3) =$ _____.
 - a. 1 and -2
 - b. 17
 - c. 23
 - d. 41

4. Given the function $H(x) = x^2 - 3x + 5$, $H(a - b) =$ _____.
 - a. $x^2 - 3x + 5$
 - b. $a^2 - b^2 - 3a + 3b$
 - c. $a^2 - b^2 - 3a - 3b + 5$
 - d. $a^2 - 2ab + b^2 - 3a + 3b + 5$

5. Given $f(x) = x + 4$ and $g(x) = 3x - 1$, $(f \cdot g)(x) =$ _____.
 - a. $4x + 3$
 - b. $2x - 3$
 - c. $3x^2 + 12x + 3$
 - d. $3x + 11x - 4$

6. Given $f(x) = x + 2$ and $g(x) = \frac{1}{x-1}$, $\frac{[g(x)]^2}{2f(x)} =$ _____.
 - a. $\frac{2(x+2)}{(x-1)^2}$
 - b. $\frac{1}{2(x-1)^2(x+2)}$
 - c. $\frac{2(x-1)^2}{x+2}$
 - d. $\frac{(x+2)^2(x-1)}{2}$

7. Given $f(x) = x^2 + 6$ and $g(x) = 2x - 1$, $f[g(x)] =$ _____.
 - a. $2x^2 + 11$
 - b. $2x^2 + 18$
 - c. $4x^2 - 4x$
 - d. $4x^2 - 4x + 7$

8. The graph of the identity function, $I(x) = x$ is _____.
 - a. 
 - b. 
 - c. 
 - d. 

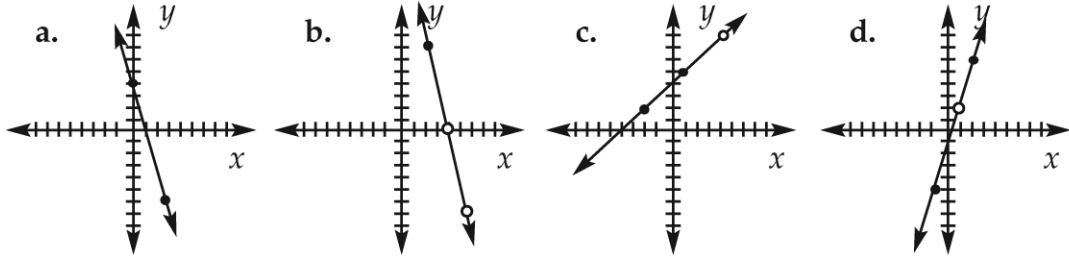
9. Given $J = 2x + 6$, $J^{-1} =$ _____.
 - a. -4
 - b. $-2x - 6$
 - c. $\frac{1}{2x+6}$
 - d. $\frac{x-6}{2}$

10. Given $H = x^2 + 8$, $H^{-1} =$ _____.
 - a. 9
 - b. $-x^2 - 8$
 - c. $\frac{1}{x^2+8}$
 - d. $\pm\sqrt{x-8}$



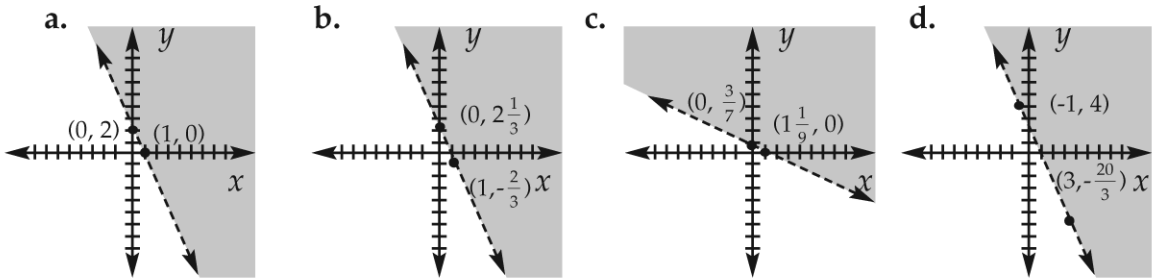
1. The graph of $h(x) = \frac{x^2 - 16}{x - 4}$ is ____.

1. _____



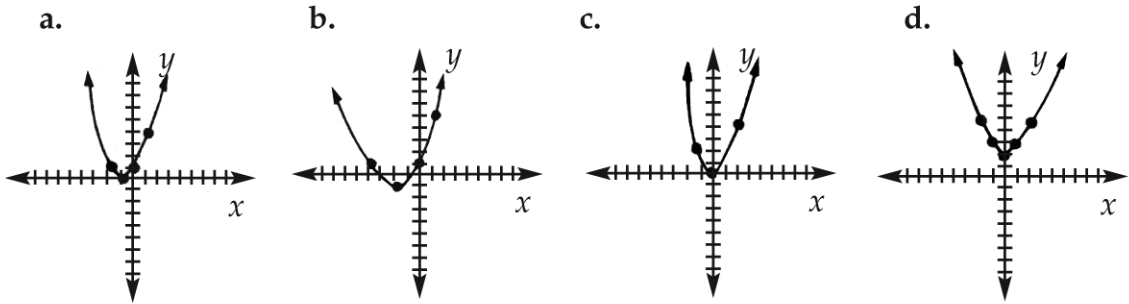
2. The graph of $9x + 3y - 7 > 0$ is ____.

2. _____



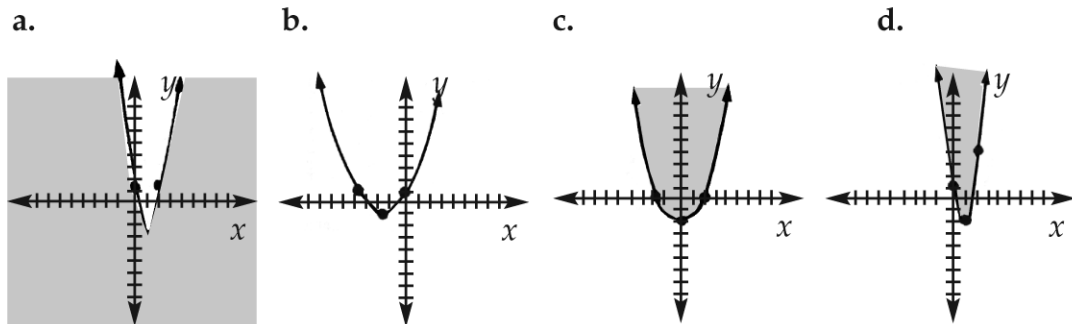
3. The graph of $y = x^2 + 2x + 1$ is ____.

3. _____



4. The graph of $D = \{ (x, y) : y \geq 2x^2 - 5x + 1 \}$ is ____.

4. _____



5. Using the factor theorem to determine whether $(3x + 1)$ is a factor of $f(x) = 9x^3 + 6x^2 + 4x + 2$ is shown by ____.

a.
$$\begin{array}{r} 3x^2 + x + 1 \quad R \ 1 \\ 3x + 1 \overline{) 9x^3 + 6x^2 + 4x + 2} \\ \underline{9x^3 + 3x^2} \\ 3x^2 + 4x \\ \underline{3x^2 + x} \\ 3x + 2 \\ \underline{3x + 1} \\ 1 \end{array}$$

b. $(3x + 1)(3x^2 + x + 1) + 1$

c.
$$\begin{aligned} f\left(-\frac{1}{3}\right) &= 9\left(-\frac{1}{3}\right)^3 + 6\left(-\frac{1}{3}\right)^2 \\ &\quad + 4\left(-\frac{1}{3}\right) + 2 \\ &= 9\left(-\frac{1}{27}\right) + 6\left(\frac{1}{9}\right) - \frac{4}{3} + 2 \\ &= -\frac{1}{3} + \frac{2}{3} - \frac{4}{3} + 2 \\ &= 1 \end{aligned}$$

d.
$$\begin{array}{r} -\frac{1}{3} \overline{) 9 + 6 + 4 + 2} \\ \underline{-6 - 5 - 3 - 1} \\ 3 + 1 + 1 + 1 \end{array}$$

6. Using synthetic division to find $g(3)$ if $g(x) = 2x^3 - 3x^2 - 5x - 12$ is shown by ____.

a.
$$\begin{aligned} g(3) &= 2(3)^3 - 3(3)^2 - 5(3) - 12 \\ &= 2(27) - 3(9) - 15 - 12 \\ &= 54 - 27 - 27 \\ &= 0 \end{aligned}$$

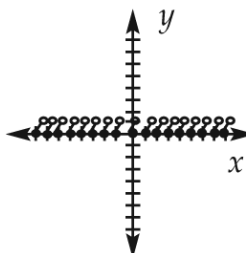
b.
$$\begin{array}{r} 2x^2 + 3x + 4 \\ x - 3 \overline{) 2x^3 - 3x^2 - 5x - 12} \\ \underline{2x^3 - 6x^2} \\ 3x^2 - 5x \\ \underline{3x^2 - 9x} \\ 4x - 12 \\ \underline{4x - 12} \\ 0 \end{array}$$

c.
$$\begin{array}{r} 3 \overline{) 2 - 3 - 5 - 12} \\ \underline{0 + 6 + 9 + 12} \\ 2 + 3 + 4 + 0 \end{array}$$

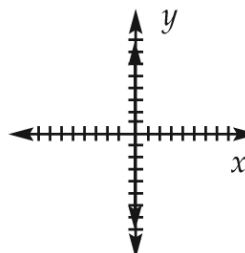
d. $(x - 3)(2x^2 + 3x + 4)$

7. The graph of the greatest integer function $F(x) = x - [x]$ is ____.

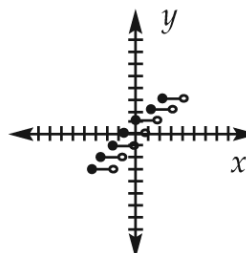
a.



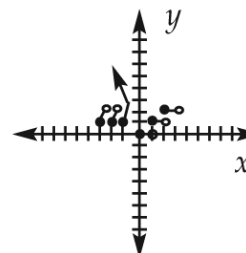
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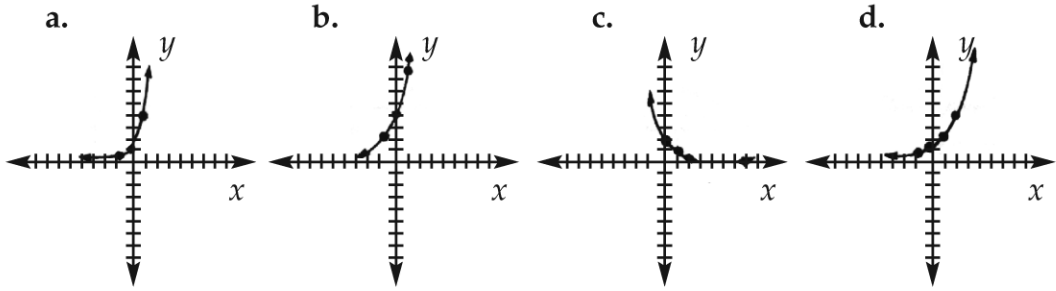
c.



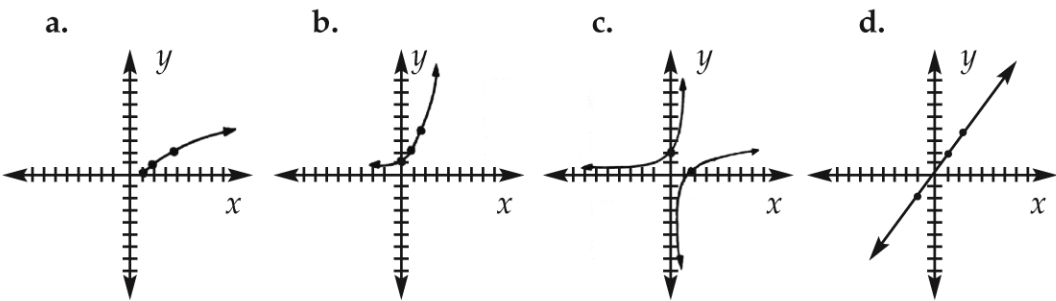
d.



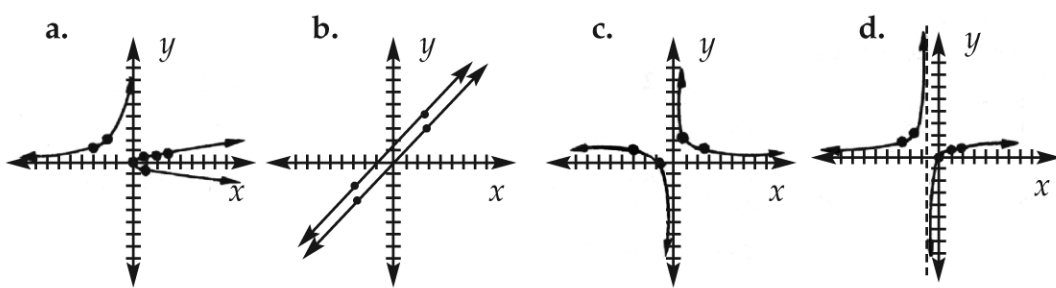
8. The graph of the exponential function $y = 2^{2x}$ is _____. 8. _____



9. The graph of the logarithmic function $F(x) = \log_2 x$ is _____. 9. _____



10. Given $j(x) = x$ and $k(x) = x + 1$, the graph of $\frac{j}{k}$ is _____. 10. _____





- a. $(\theta, \frac{v}{r})$: ___ $\theta = \frac{v}{r}$ b. $(\theta, \frac{u}{r})$: ___ $\theta = \frac{u}{r}$
 c. $(\theta, \frac{r}{v})$: ___ $\theta = \frac{r}{v}$ d. $(\theta, \frac{v}{u})$: ___ $\theta = \frac{v}{u}$

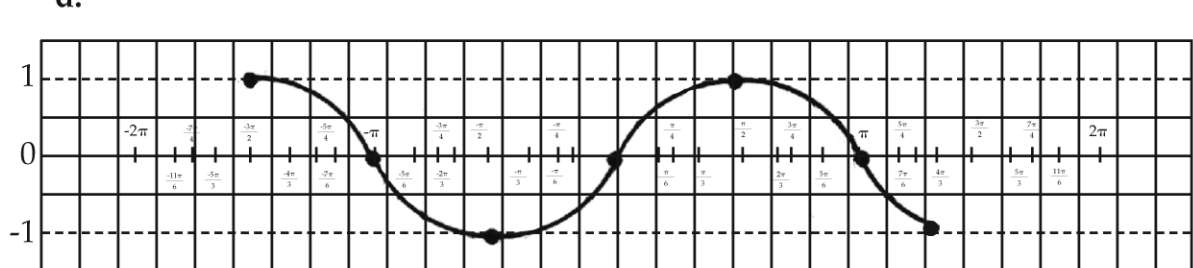
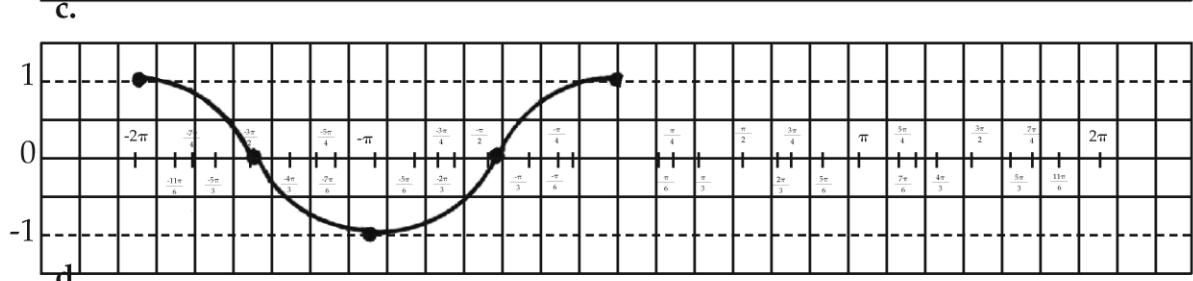
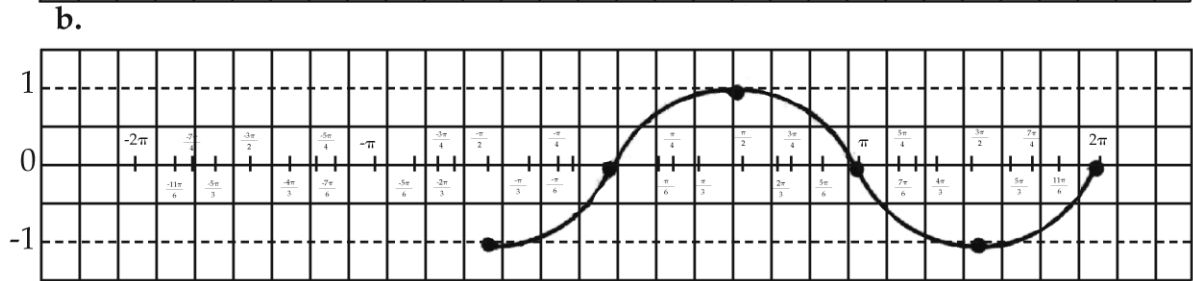
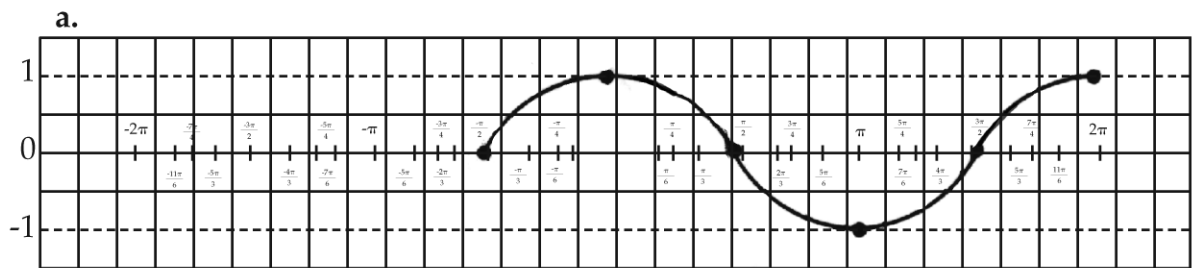
1. Substituting *sin*, *cos*, or *tan* on the blank lines in the above selections, choose the correct definition for
- a. \sin ___ b. \cos ___ c. \tan ___.
- 1a. _____
 b. _____
 c. _____
2. Using the trigonometric table (p. 84), if $\tan \theta = 5.769$, $\theta =$ ____.
- a. $9^\circ 50'$ b. $29^\circ 59'$ c. $80^\circ 10'$ d. $81^\circ 10'$
2. _____
3. Using the trigonometric table, the value of $\sec 48^\circ 24'$ is ____.
- a. 1.337 b. 1.502 c. 1.506 d. 1.507
3. _____
4. The value of $\tan 330^\circ 20'$ is ____.
- a. -0.5696 b. -0.5930 c. 0.5696 d. 1.756
4. _____
5. The value of $\csc 210^\circ 17'$ is ____.
- a. -1.983 b. -1.158 c. -0.5285 d. 0.8643
5. _____
6. The value of $(2 \cos 90^\circ) \cdot (\sin 270^\circ) + (\tan 180^\circ) \cdot (\cot 90^\circ)$ is ____.
- a. 0 b. 1 c. -2 d. undefined
6. _____
7. The value of $\cot 90^\circ + (\sec 180^\circ) \cdot (\csc 270^\circ) - \tan 0^\circ$ is ____.
- a. 1 b. 0 c. -1 d. undefined
7. _____
8. The value of $(\csc 90^\circ \cdot \cos 180^\circ)^3$ is ____.
- a. -1 b. 0 c. 1 d. undefined
8. _____
9. The value of $\sin 60^\circ$ is ____.
- a. $\sqrt{2}$ b. $\frac{\sqrt{2}}{2}$ c. $\frac{1}{2}$ d. $\frac{\sqrt{3}}{2}$
9. _____
10. Express 36° in radians: ____.
- a. $\frac{5}{\pi}$ b. $\frac{\pi}{10}$ c. $\frac{\pi}{5}$ d. 5π
10. _____



1. The value of $\sin^2 \frac{\pi}{3}$ is _____. 1. _____
 - a. 0
 - b. $\frac{1}{4}$
 - c. $\frac{1}{2}$
 - d. $\frac{3}{4}$

2. The value of $\cos \frac{\pi}{6} + \sin \frac{5\pi}{6}$ is _____. 2. _____
 - a. 0
 - b. 1
 - c. $\sqrt{3}$
 - d. $\frac{\sqrt{3}+1}{2}$

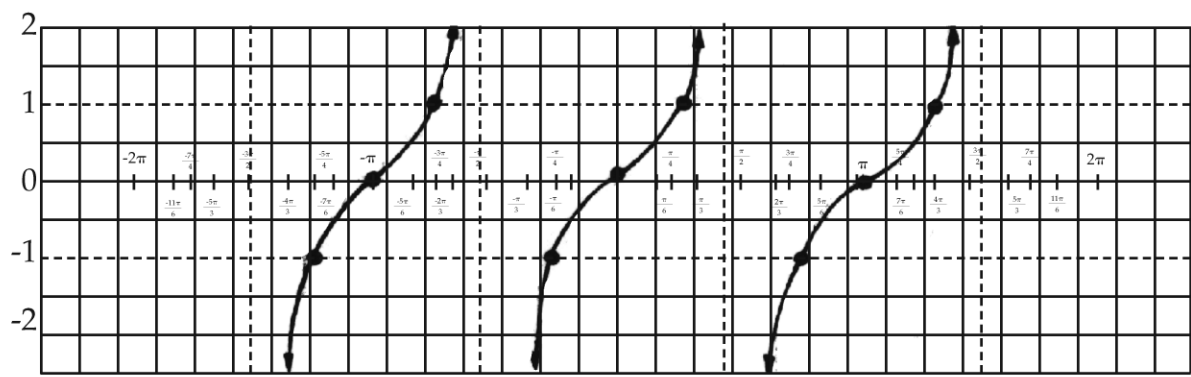
3. The graph of $y = \cos x$, $-\frac{\pi}{2} \leq x \leq 2\pi$ is _____. 3. _____



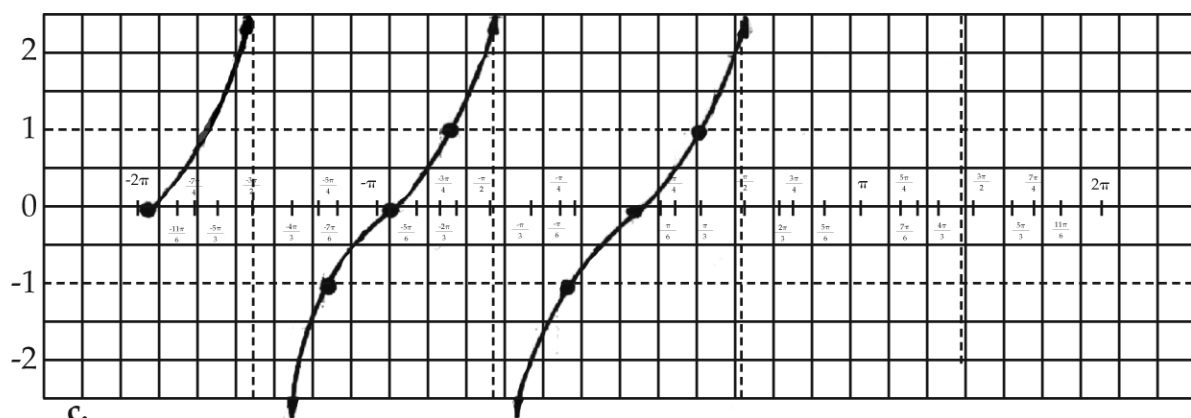
4. The graph of $y = \tan x, -2\pi \leq x \leq \frac{\pi}{2}$ is ____.

4. _____

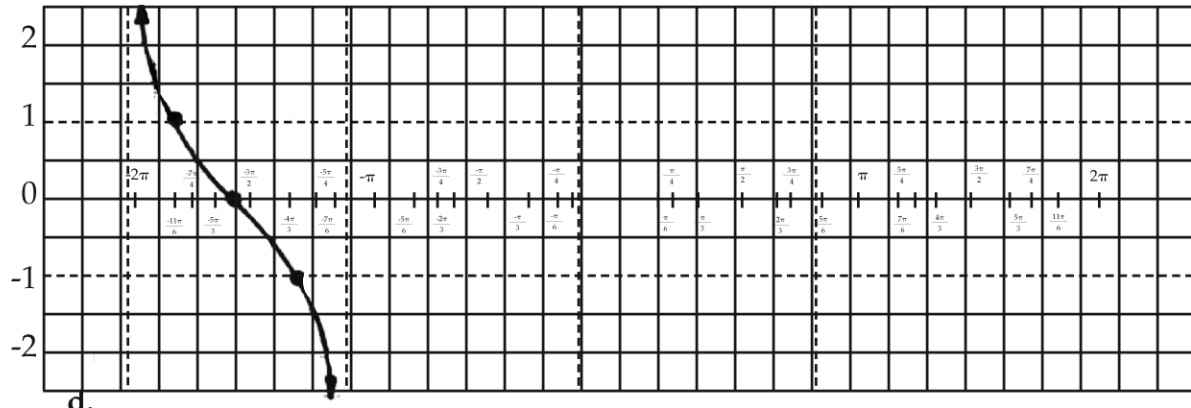
a.



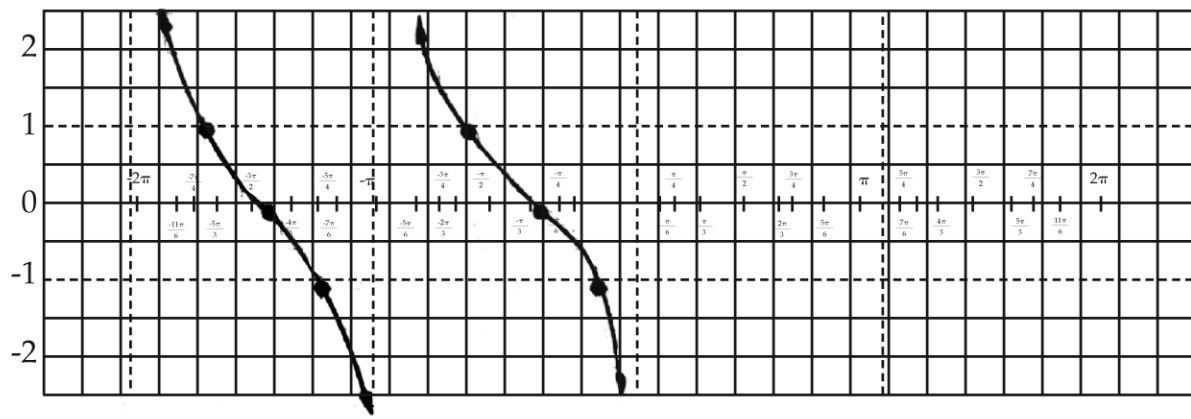
b.



c.



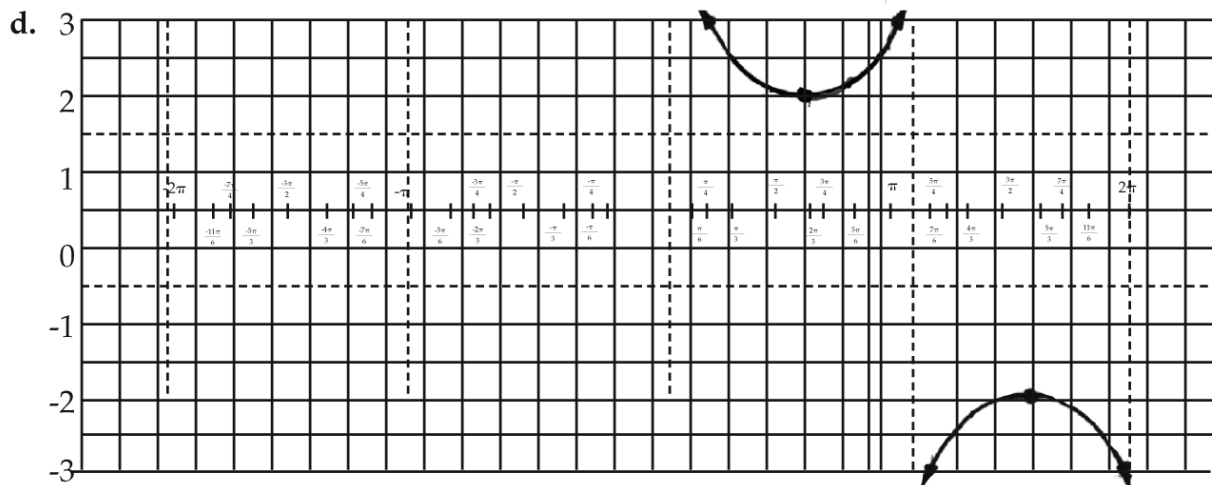
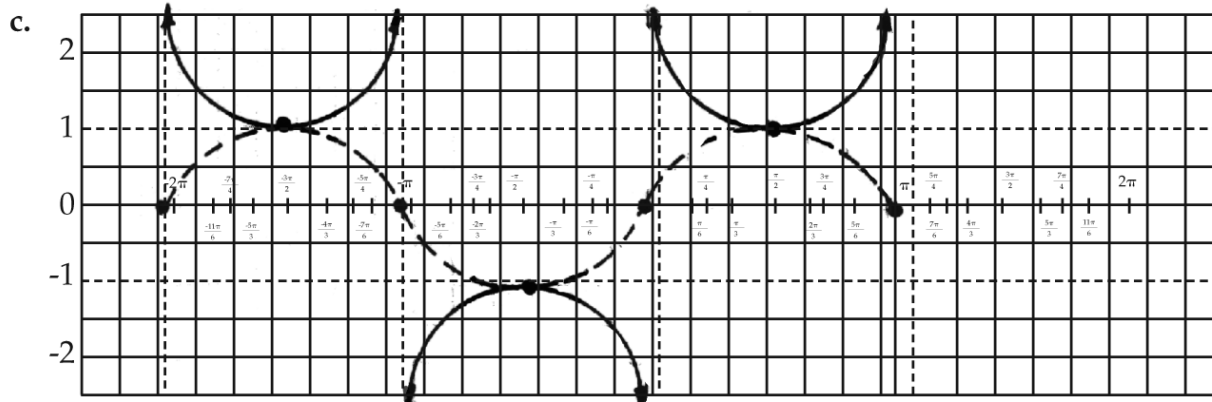
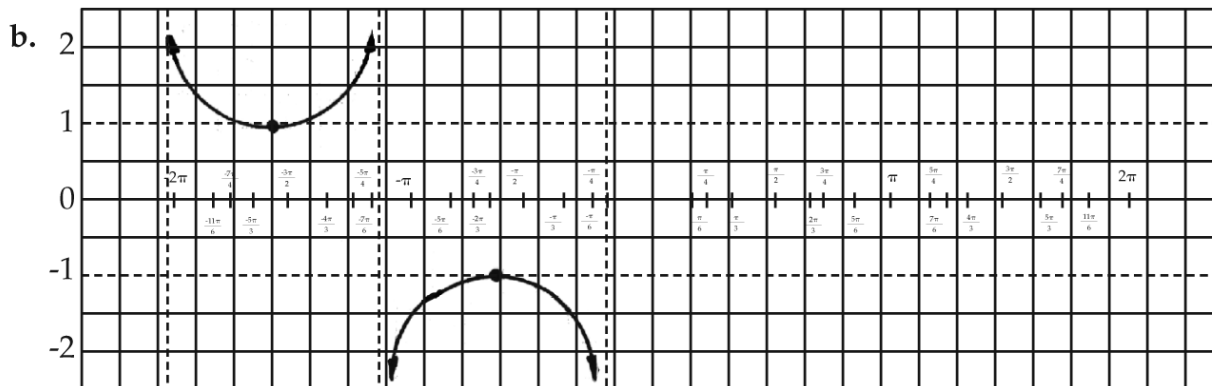
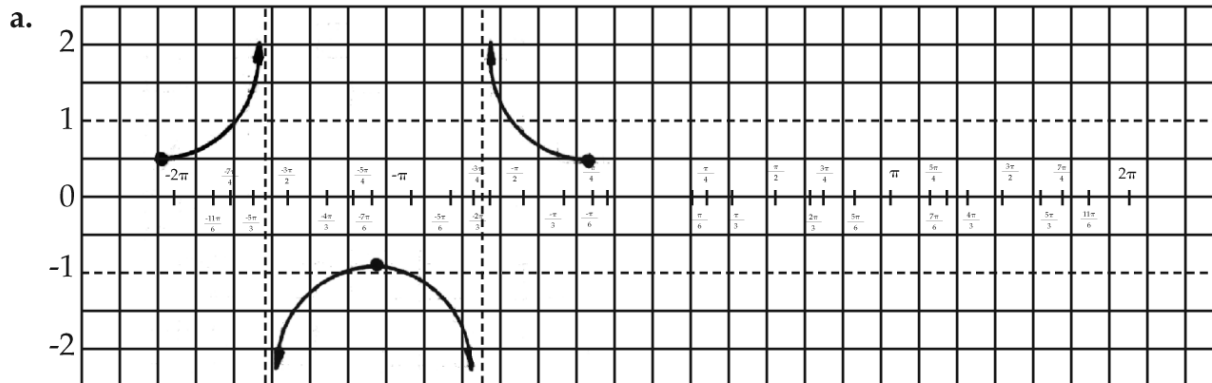
d.



5. The amplitude of $y = -3 \sin x$ is _____. 5. _____

- a. -3 b. 3 c. $\frac{-\pi}{2}$ d. 2π

6. The graph of $y = 2 \csc x$ is _____. 6. _____



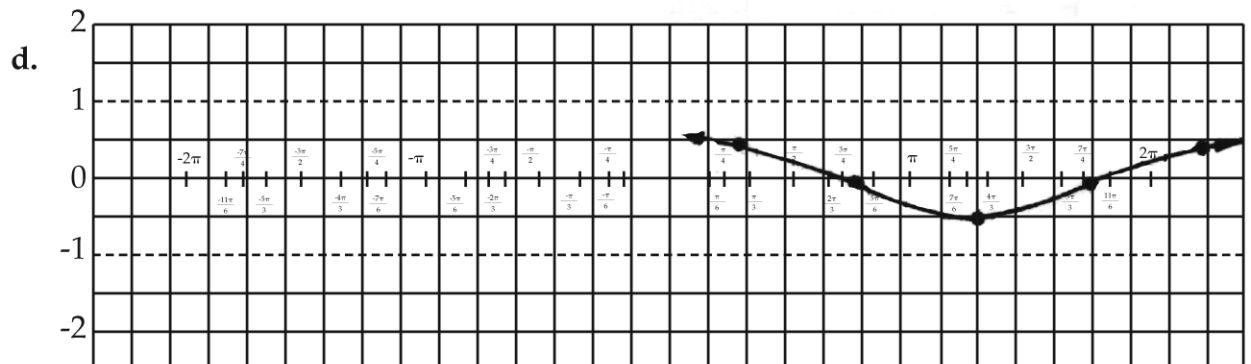
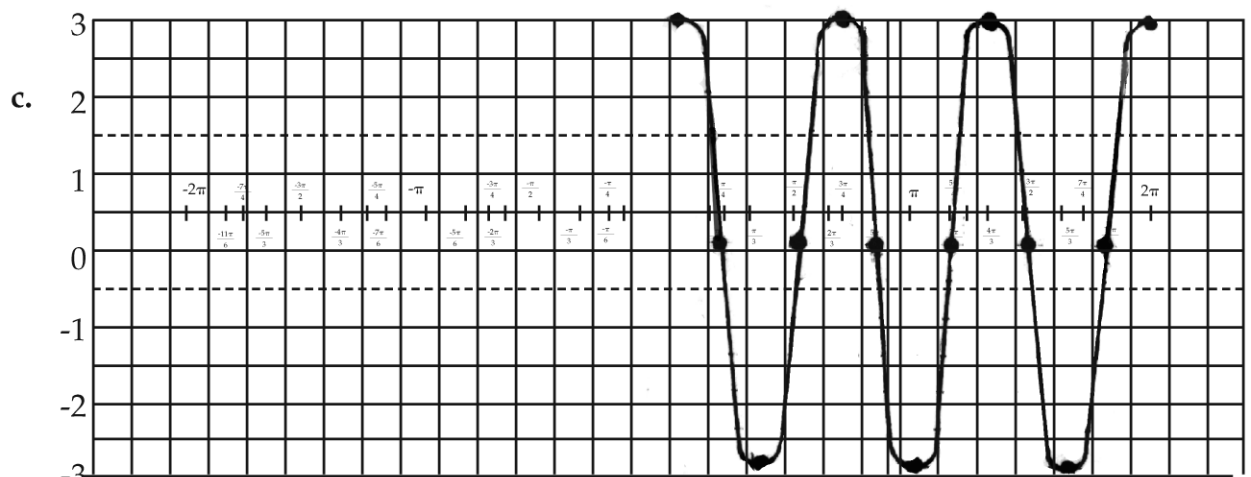
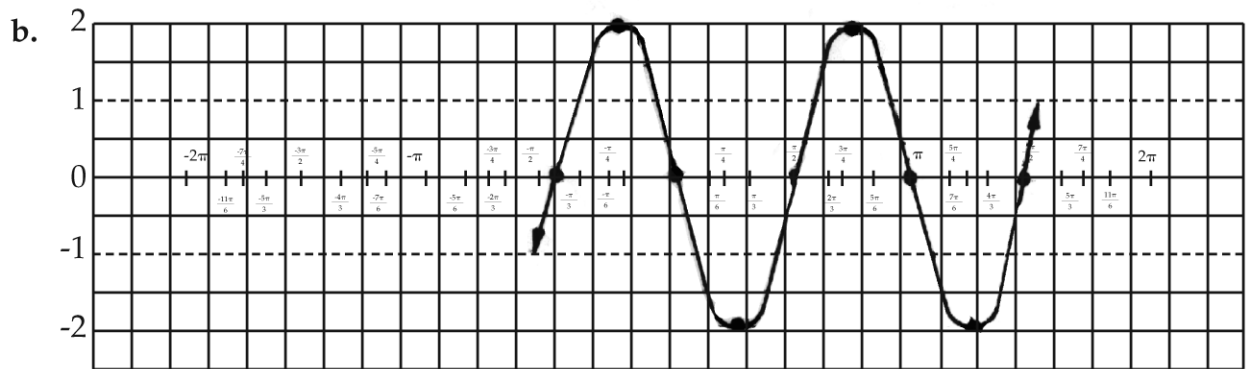
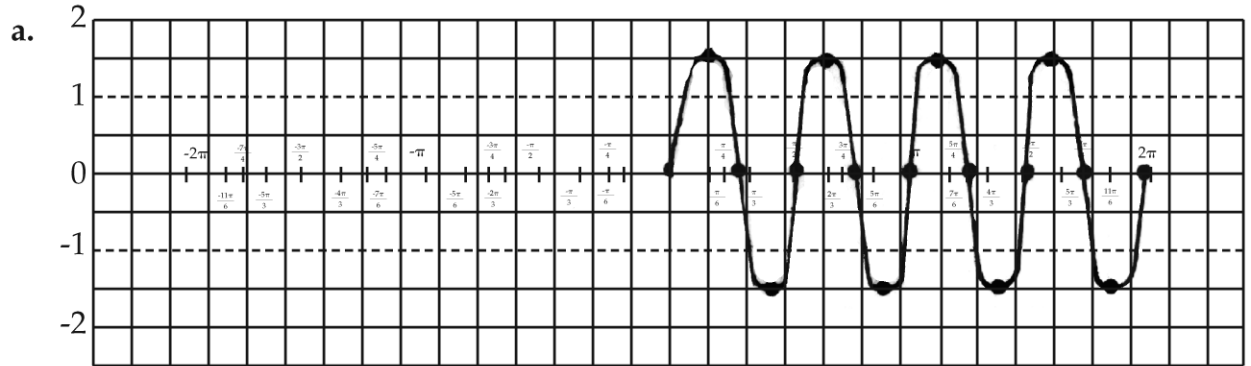
7. The period of $y = \sec \frac{x}{3}$ is ____.

7. _____

- a. $\frac{1}{6\pi}$ b. $\frac{\pi}{3}$ c. 3π d. 6π

8. The graph of $y = 3 \cos 3x, 0 < x < 2\pi$ is ____.

8. _____



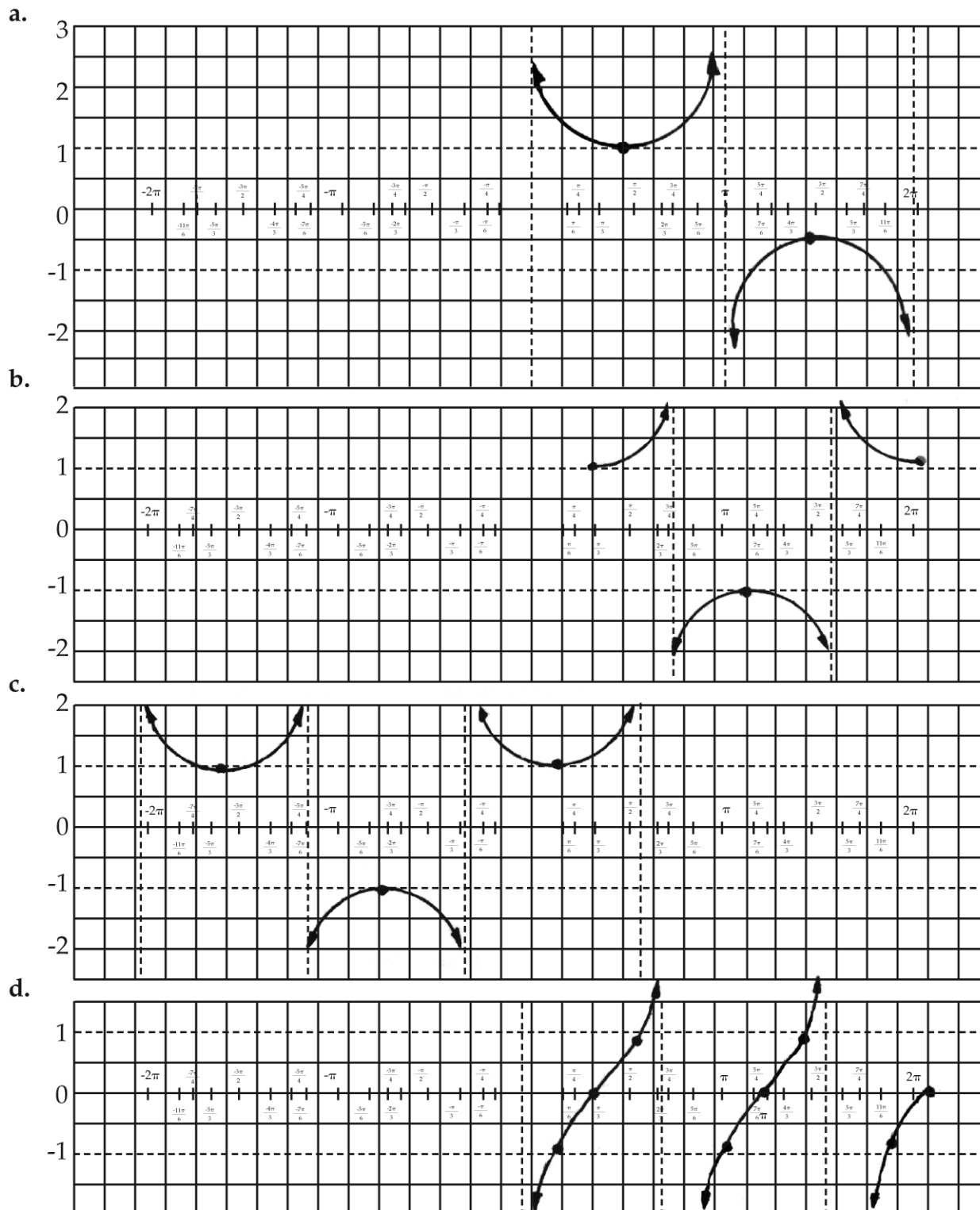
9. The phase shift of $F(x) = \cot(2x - 1)$ is ____.

9. _____

- a. $\frac{\pi}{2}$ units left
- b. 1 unit left
- c. $\frac{1}{2}$ unit right
- d. π units right

10. The graph of $G(x) = \sec(x - \frac{\pi}{2})$ is ____.

10. _____





1. The expression $1 + \tan \theta \cot \theta - \frac{\sin \theta \csc \theta}{2}$ simplifies to _____. 1. _____
- a. 0 b. 1 c. $1 \frac{1}{2}$ d. 2
2. The expression $\frac{\sin \theta}{\cos \theta} \cdot \csc \theta + \frac{1}{\sec \theta}$ equals _____. 2. _____
- a. $\sec \theta + \cos \theta$ b. $\frac{\sin^2 \theta}{\cos \theta}$ c. $\sin \theta + \cos \theta$ d. $2 \cos \theta$
3. Given that α and β are first-quadrant angles, $\sin \alpha = \frac{1}{2}$, and $\cos \beta = \frac{2}{3}$, the value of $\sin(\alpha - \beta)$ is _____. 3. _____
- a. $-\frac{41}{12}$ b. $\frac{4 - 3\sqrt{5}}{12}$
- c. $\frac{3\sqrt{3} + 4\sqrt{5}}{12}$ d. $\frac{2 - \sqrt{15}}{6}$
4. Given that θ and ϕ are first-quadrant angles, $\sin \theta = \frac{3}{5}$, and $\sin \phi = \frac{\sqrt{2}}{2}$, the value of $\tan(\theta + \phi)$ is _____. 4. _____
- a. -9 b. $-\frac{1}{7}$ c. 7 d. $\frac{4\sqrt{2} + 3}{4 - 3\sqrt{2}}$
5. Given that $\cos x = \frac{\sqrt{2}}{2}$ and x is a fourth-quadrant angle, the value of $\cos 2x$ is _____. 5. _____
- a. -1 b. 0 c. 1 d. 2
6. Given that $\cos \alpha = \frac{3}{5}$ and α is a first quadrant angle, the value of $\cos 2\alpha$ is _____. 6. _____
- a. $1 \frac{1}{5}$ b. $\frac{24}{25}$ c. 1 d. $-\frac{7}{25}$
7. Given that $\cos x = \frac{1}{2}$ and x is a fourth-quadrant angle, the value of $\cos \frac{x}{2}$ is _____. 7. _____
- a. $\frac{\sqrt{3}}{2}$ b. $\frac{1}{4}$ c. $\frac{\sqrt{2}}{2}$ d. $-\frac{1}{2}$

8. Given that $\sin \theta = \frac{12}{13}$ and θ is a second-quadrant angle, the value of $\sin \frac{\theta}{2}$ is ____.
- a. $-\frac{120}{169}$ b. $\frac{2\sqrt{13}}{13}$ c. $\frac{3\sqrt{13}}{13}$ d. $\frac{\sqrt{26}}{26}$
8. _____
9. $\frac{2 \tan x}{1 + \tan^2 x} =$ ____.
- a. $\tan 2x$ b. $2 \sin^2 x$ c. $2 \frac{\sin^3 x}{\cos x}$ d. $\sin 2x$
9. _____
10. The solution to $3 \cot x + \sqrt{3} = 0$ with domain $0^\circ \leq x \leq 360^\circ$ is ____.
- a. $x = \{60^\circ, 120^\circ\}$ b. $x = \{120^\circ, 300^\circ\}$
c. $x = \{150^\circ, 210^\circ\}$ d. $x = \{150^\circ, 330^\circ\}$
10. _____



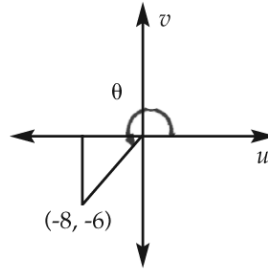
1. Given the ordered pair $(-5, 5)$, $\cos \theta = \underline{\hspace{2cm}}$.

- a. $-\frac{\sqrt{3}}{2}$ b. $-\frac{\sqrt{2}}{2}$ c. -1 d. $\frac{\sqrt{2}}{2}$

1.

2. From the figure, $\csc \theta = \underline{\hspace{2cm}}$.

- a. $-\frac{5}{3}$ b. $-\frac{4}{3}$
c. $-\frac{8}{5}$ d. $-\frac{6}{5}$



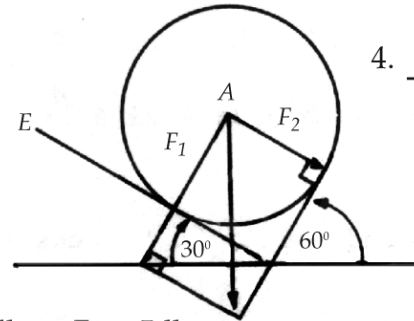
2.

3. When a boy pulls his sled with a rope, the rope makes an angle of 40° with the horizontal. If a pull of 18 pounds on the rope is needed to move the sled, the horizontal component is approximately .

- a. 12 lbs. b. 14 lbs. c. 18 lbs. d. 23.5 lbs.

3.

4. An iron ball weighing 10 pounds rests on two plane-surfaced boards that are inclined at 30° and 60° respectively to the horizontal. The pressure on each board is approximately .



4.

- a. $F_1 = 9$ lbs.; $F_2 = 2$ lbs. b. $F_1 = 9$ lbs.; $F_2 = 5$ lbs.
c. $F_1 = 12$ lbs.; $F_2 = 20$ lbs. d. $F_1 = 20$ lbs.; $F_2 = 12$ lbs.

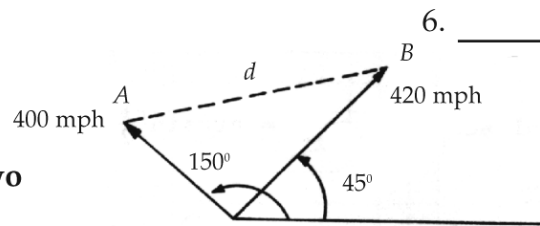
5. Given triangle ABC , $a = 3$, $b = 5$, and $c = 7$.

To the nearest degree, $\angle B = \underline{\hspace{2cm}}$.

- a. 22° b. 38° c. 120° d. 218°

5.

6. Two airplanes take off from an airport at the same time. One travels on a heading of 45° at 420 mph and the other on a heading of 150° at 400 mph. After two hours, the distance between the two planes is about miles.



6.

- a. 1,185.2 b. 1,252.5 c. 1,301.3 d. 1,515.2

7. Given triangle ABC , $c = 3$, $\angle A = 63^\circ$, $\angle C = 49^\circ$; $a \doteq \underline{\hspace{2cm}}$.

- a. 1 b. 4 c. 5 d. 8

7.

8. A vertical telegraph pole is supported by two guy wires, each running from the top of the pole to the ground. One wire is 70 feet long and makes an angle of 55° with the ground. If the second wire is 60 feet long, the angle it makes with the ground is .

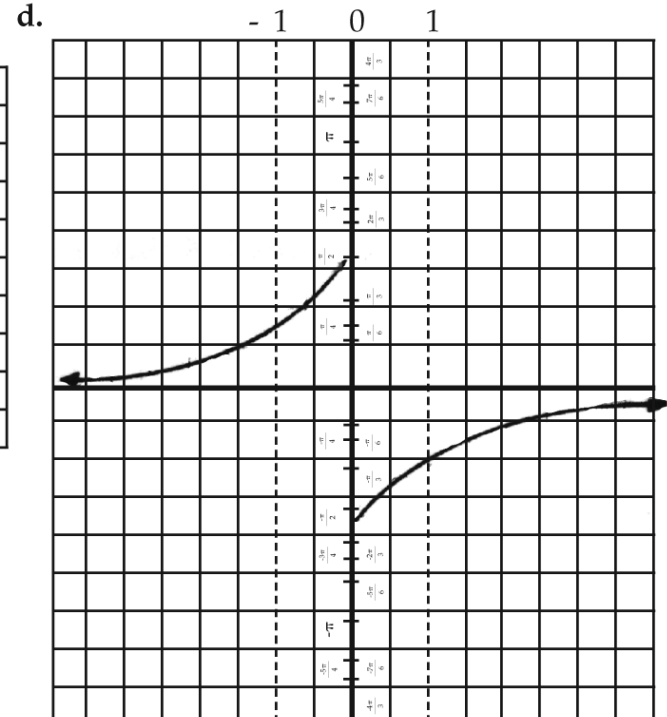
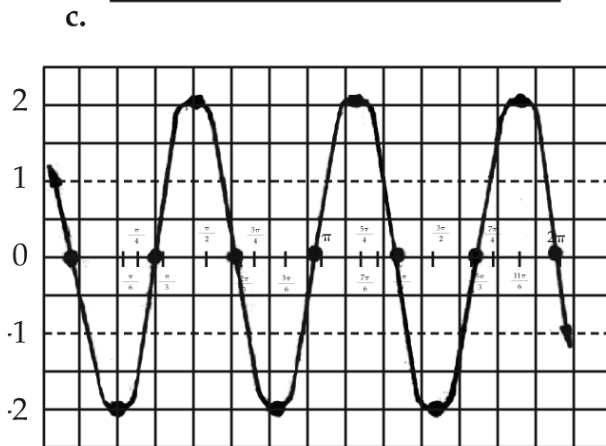
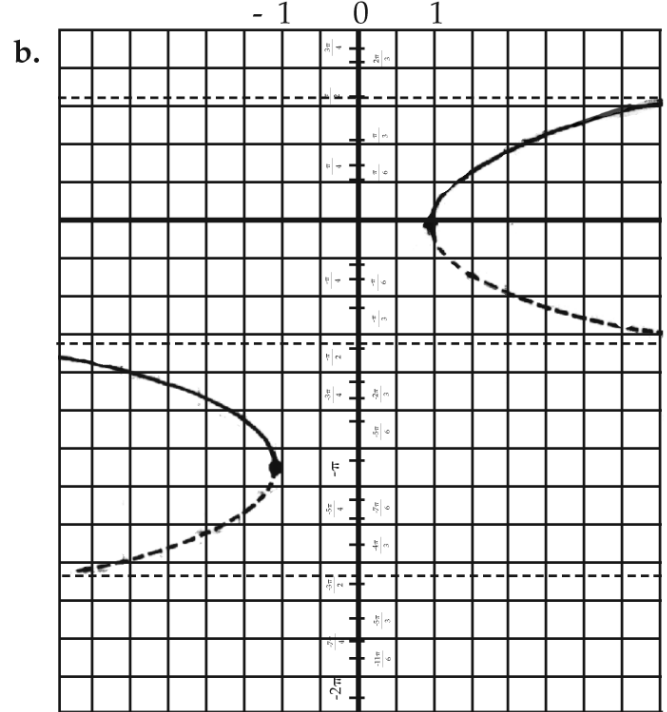
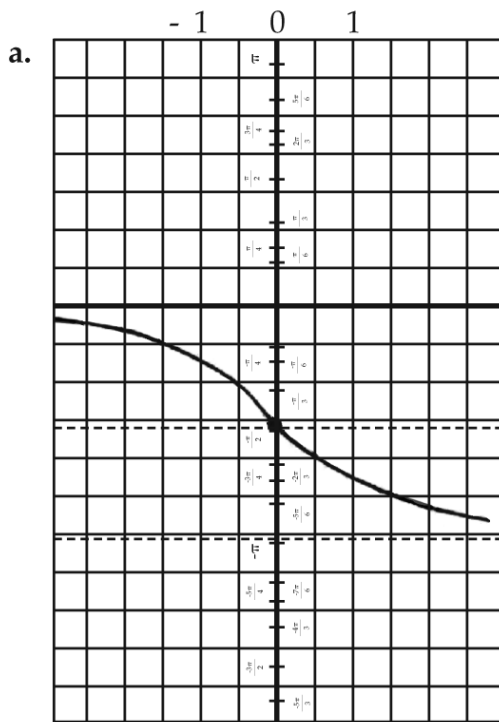
- a. 45° b. 48° c. 73° d. 82°

8.

9. The pilot wishes to fly on course 290° with an air speed of 300 knots when the wind blows from direction 224° at 18 knots. 9. _____
The wind correction angle is ____.
a. $3^{\circ} 8'$ b. $5^{\circ} 42'$ c. $11^{\circ} 59'$ d. $15^{\circ} 14'$
10. Two submarines, one cruising at 25 knots and the other at 20 knots, left a naval base at the same moment. Three hours later they were 100 nautical miles apart. 10. _____
The measure of the angle between their courses was ____.
a. 26° b. 95° c. 154° d. 175°

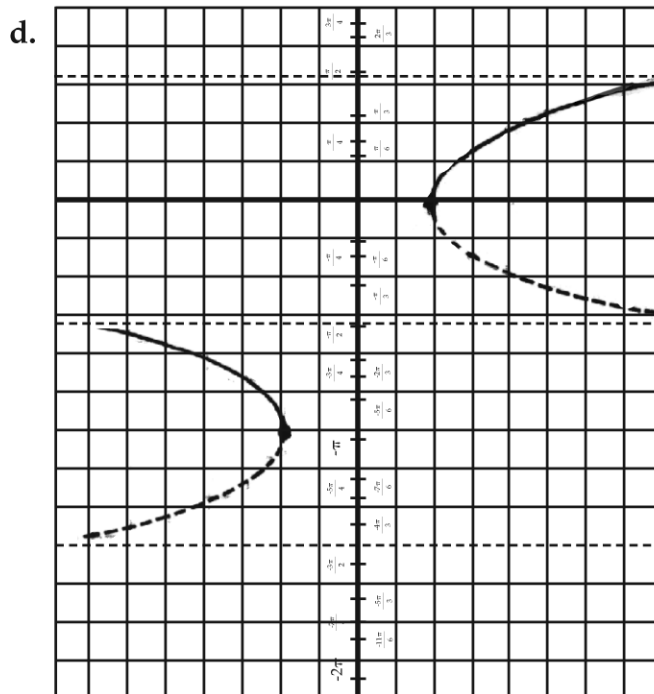
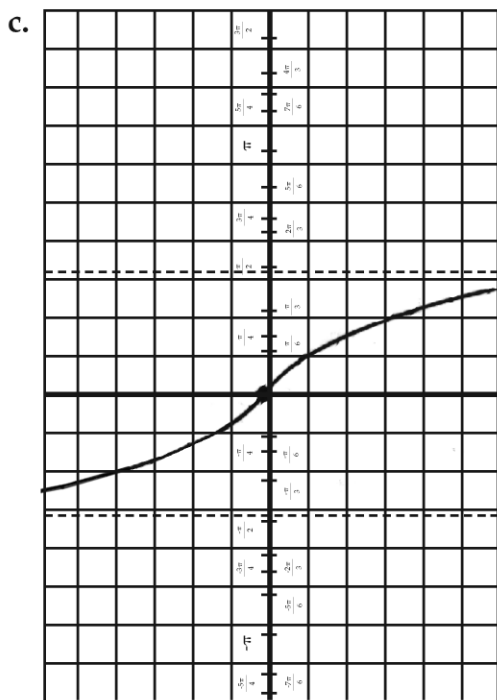
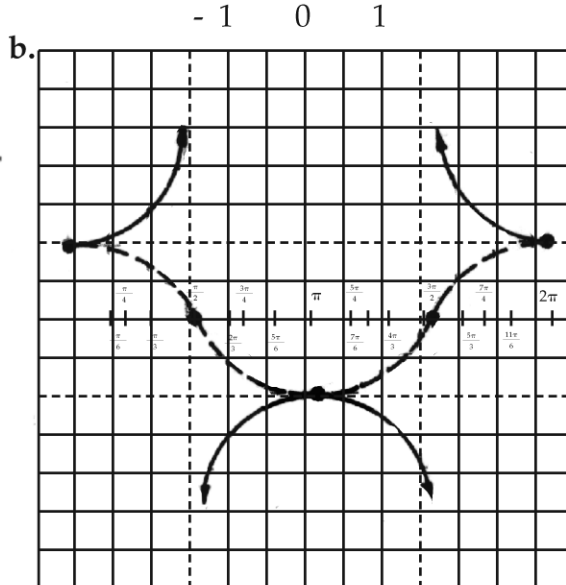
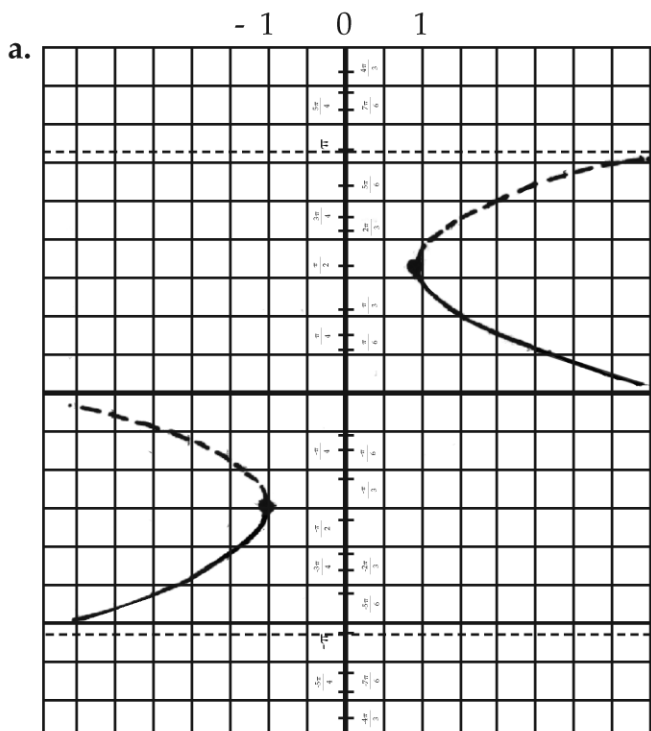


1. The general solution to $y = \cos^{-1} 1$ is _____. 1. _____
- a. $\pm 2\pi K$ b. $\frac{\pi}{2} \pm 2\pi K$ or $\frac{3\pi}{2} \pm 2\pi K$
- c. $\pm \frac{\pi}{6} \pm 2\pi K$ d. $\frac{\pi}{4} \pm \pi K$ or $\frac{3\pi}{4} \pm \pi K$
2. The general solution to $\arctan 0.7002$ is _____. 2. _____
- a. $35^\circ \pm 360^\circ K$ or $215^\circ \pm 360^\circ K$ b. $35^\circ \pm 360^\circ K$ or $305^\circ \pm 360^\circ K$ c. $38^\circ 40' \pm 360^\circ K$ or $218^\circ 40' \pm 360^\circ K$ d. $55^\circ \pm 360^\circ K$ or $235^\circ \pm 360^\circ K$
3. The graph of $y = \arctan x, 0 \leq x \leq \pi$ is _____. 3. _____



4. The graph of $y = \operatorname{arcsec} x$ is ____.

4. _____



5. The polar coordinates $(3, \frac{-3\pi}{4})$ expressed as Cartesian coordinates are ____.

5. _____

a. $(-\frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2})$

b. $(-\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2})$

c. $(\frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2})$

d. $(\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2})$

6. The Cartesian coordinates $(-\frac{\sqrt{3}}{2}, \frac{1}{2})$ expressed as polar coordinates are ____.

- a. $(1, \frac{\pi}{6})$ b. $(1, \frac{5\pi}{6})$ c. $(2, \frac{\pi}{3})$ d. $(4, \frac{4\pi}{3})$

7. The polar equation $r \sin \theta = 4$ converted to a Cartesian equation is ____.

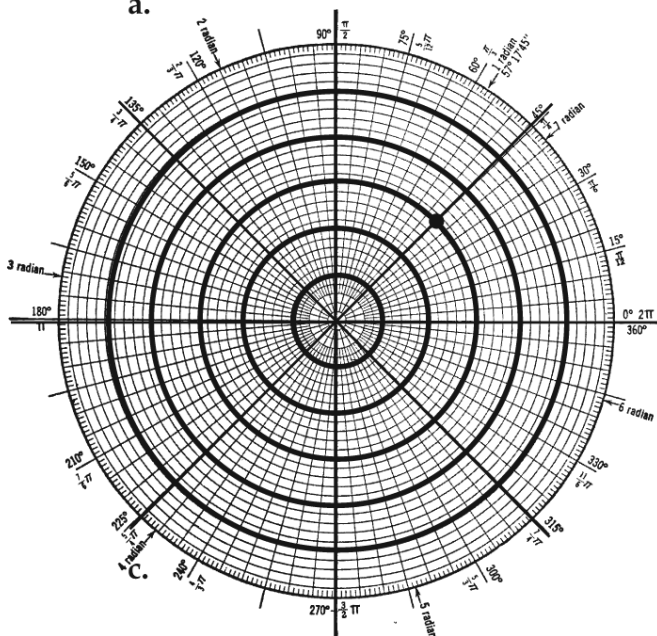
- a. $x = 4$ b. $y = 4$ c. $x^2 + y^2 = 2$ d. $x^2 + y^2 = 4$

8. The Cartesian equation $x^2 + y^2 - 4x = 0$ converted to a polar equation is ____.

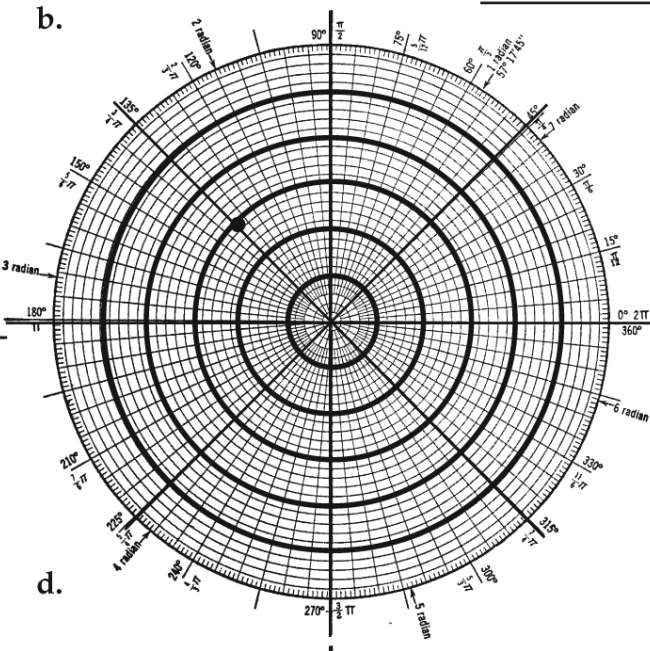
- a. $4 \cos \theta = 0$ b. $4 \cos \theta = 1$
 c. $r = 4 \sin \theta$ d. $r = 4 \cos \theta$

9. The graph of $(3, \frac{7\pi}{4})$ is ____.

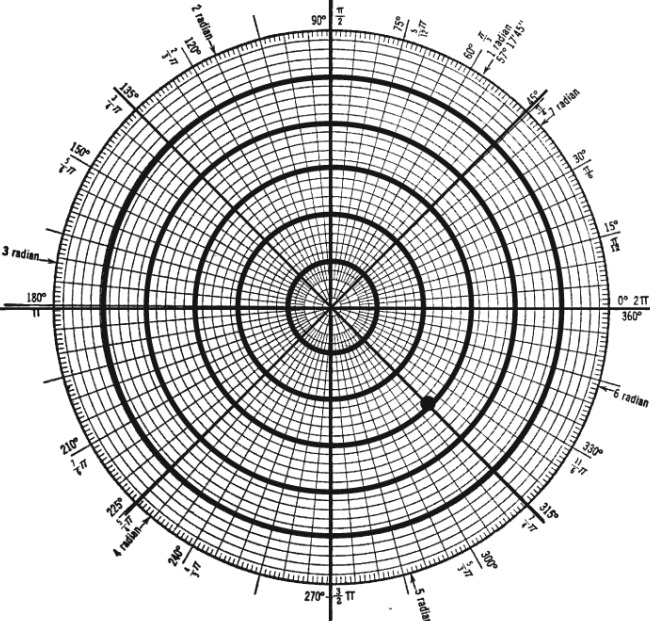
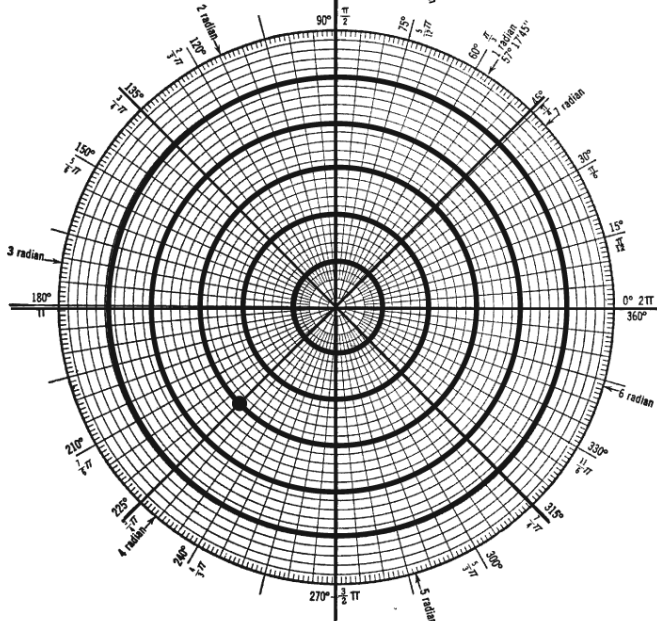
a.



b.



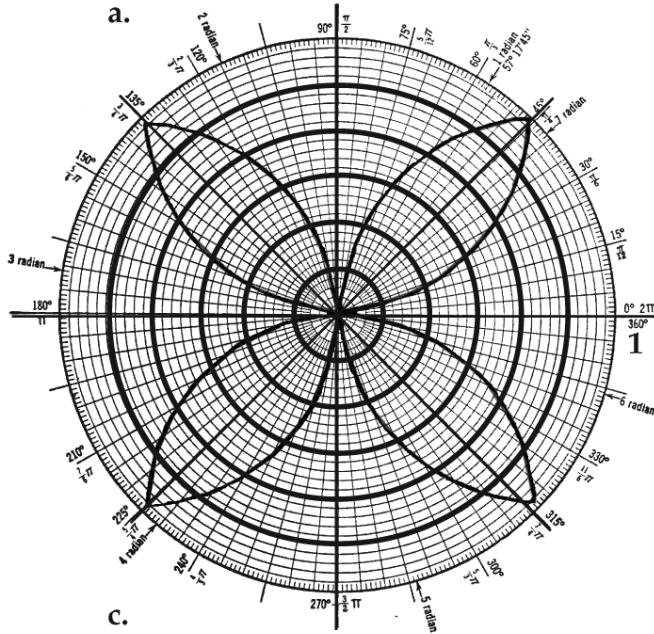
d.



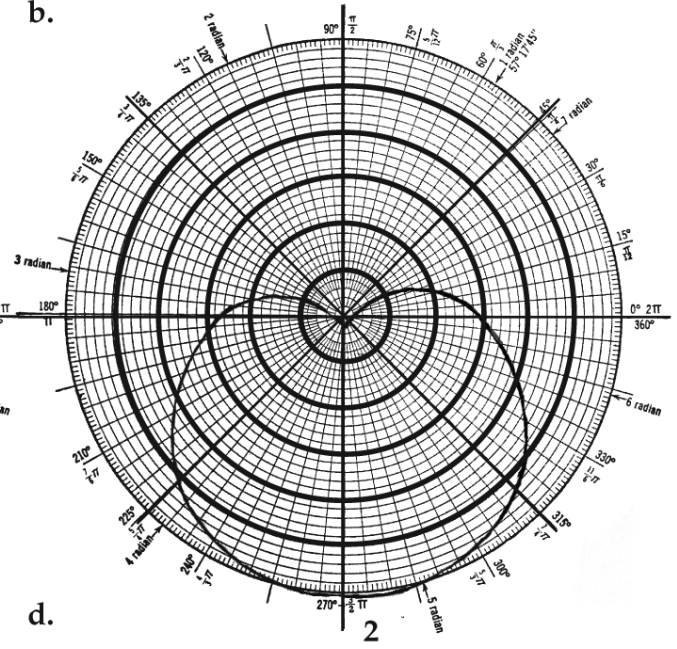
10. The graph of $r = 1 + \cos \theta$ is ____.

10. _____

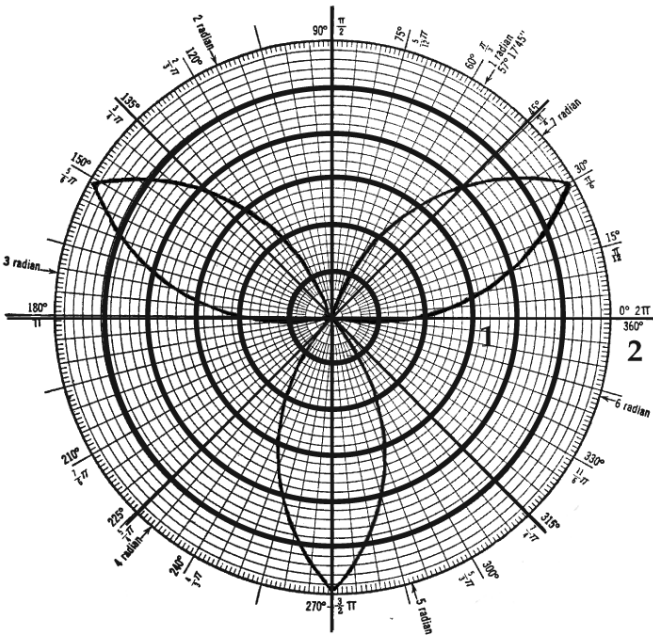
a.



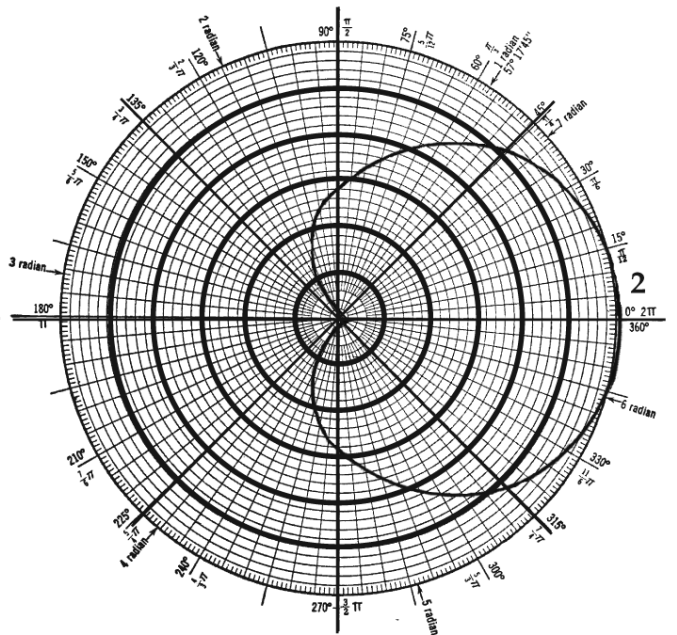
b.



c.



d.

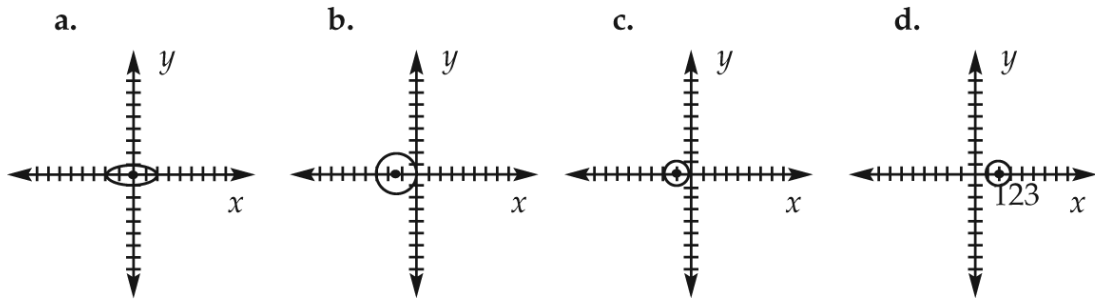




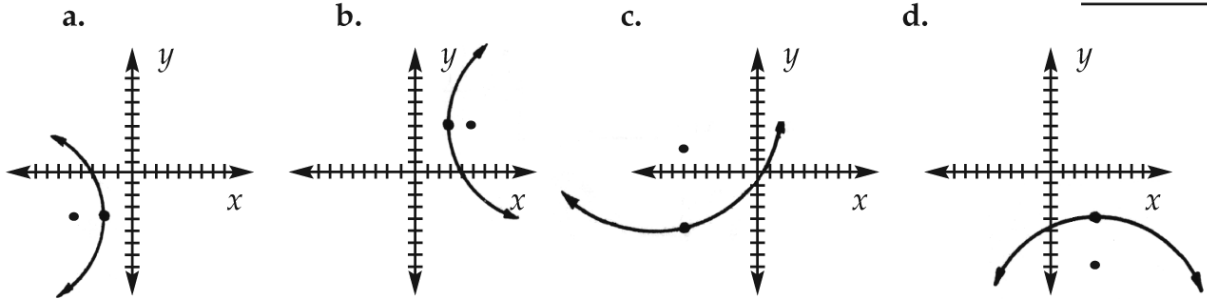
1. The equation of $3x^2 + 2x - 5y + 7 = 0$ is the equation of ____.
 a. a circle b. an ellipse c. a parabola d. a hyperbola 1. _____
2. The equation $13x^2 + 5y^2 - 6x + 3y - 5 = 0$ is the equation of ____.
 a. a circle b. an ellipse c. a parabola d. a hyperbola 2. _____
3. The vertex, focus, and directrix of the parabola whose equation is $y^2 = 4x$ are ____.
 a. $v = (4, 4)$ $f = (5, 4)$ $d: x = -5$ b. $v = (1, 2)$ $f = (4, 0)$ $d: y = -4$
 c. $v = (0, 0)$ $f = (4, 0)$ $d: x = -4$ d. $v = (0, 0)$ $f = (1, 0)$ $d: x = -1$ 3. _____
4. The center and values of a , b , and c of the hyperbola whose equation is $\frac{(x-1)^2}{9} - \frac{(y-3)^2}{4} = 1$ are ____.
 4. _____

- | | |
|---|---|
| a. center = (1, 3)
$a = 9, b = 4, c = \sqrt{97}$ | b. center = (1, 0)
$a = 1, b = 3, c = \sqrt{10}$ |
| c. center = (0, 0)
$a = 9, b = 4, c = \sqrt{13}$ | d. center = (1, 3)
$a = 3, b = 2, c = \sqrt{13}$ |

5. The graph of $x^2 + y^2 + 2x = 0$ is ____.
 5. _____



6. The graph of $(y + 4)^2 = -12(x + 2)$ is _____. (each mark = 4)
 6. _____



7. The translation of $2x^2 + 3y^2 - 8x + 6y - 7 = 0$ to its new center is ____.
 7. _____

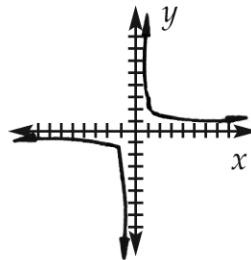
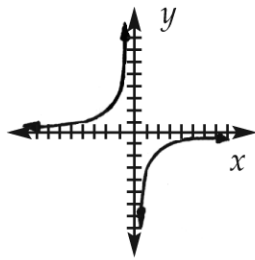
- | | |
|--|--|
| a. $\frac{(x')^2}{9} + \frac{(y')^2}{6} = 1$ | b. $\frac{(x')^2}{7} + \frac{(y')^2}{8} = 1$ |
| c. $2(x' - 2)^2 + 3(y' + 1)^2 = 6$ | d. $(x')^2 + (y')^2 = 1$ |

8. The graph of the translation of $2xy - x - y + 4 = 0$ is ____.

8. _____

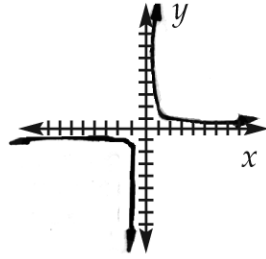
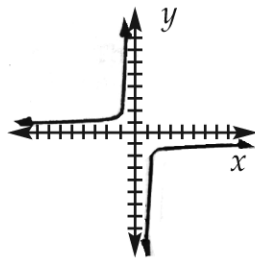
a. $2xy + 3 = 0$

b. $3x'y' - 4 = 0$



c. $4x'y' + 7 = 0$

d. $5x'y' - 6 = 0$



9. The equation $7x^2 - 6\sqrt{3}xy + 13y^2 = 16$, when rotated is ____.

9. _____

a. $7(x')^2 + 13(y')^2 = \frac{8\sqrt{3}}{9}$

b. $(x')^2 + 5(y')^2 = 16$

c. $(x')^2 + 4(y')^2 = 4$

d. $3(x')^2 - 2(y')^2 = 12$

10. The equation $x^2 + 4xy + y^2 = 16$, when transformed, is ____.

10. _____

a. $(x')^2 + 8(y')^2 = 1$

b. $(x')^2 - (y')^2 = 1$

c. $\frac{(x')^2}{6} + \frac{(y')^2}{2} = 1$

d. $\frac{(x')^2}{\frac{16}{3}} - \frac{(y')^2}{16} = 1$



1. A letter of the alphabet is chosen at random. **The probability that the letter chosen is a vowel is ___.** 1. _____
 a. $\frac{2}{13}$ b. $\frac{5}{21}$ c. $\frac{5}{26}$ d. 5
2. From an assortment containing seven blue light bulbs, four red bulbs, and three white bulbs, a bulb is chosen at random. **The probability that it will not be red is ___.** 2. _____
 a. 0.29 b. 0.40 c. 0.50 d. 0.71
3. An integer is chosen at random from the first 40 positive integers. **The probability that the integer chosen is divisible by 6 or 8 is ___.** 3. _____
 a. 0.050 b. 0.250 c. 0.275 d. 0.580
4. A certain class of 160 students has 50 honor students and 70 athletes. Sixty students in the class are not honor students and are not involved in sports. **If a student is selected at random to represent the class, the probability that he is an honor student or an athlete is ___.** 4. _____
 a. $\frac{1}{8}$ b. $\frac{1}{4}$ c. $\frac{7}{16}$ d. $\frac{5}{8}$
5. A job applicant estimates that his chance of passing a qualifying examination is $\frac{2}{3}$ and his chance of being appointed if he does pass is $\frac{1}{4}$. **The probability that he will receive the job is ___.** 5. _____
 a. 0.167 b. 0.343 c. 0.833 d. 0.917
6. One bag contains three green marbles and five blue marbles, and a second bag contains four green marbles and six blue marbles. A person draws one marble from each bag. **The probability that both marbles are blue is ___.** 6. _____
 a. 0.150 b. 0.375 c. 0.611 d. 1.225
7. **The value of ${}_7P_2$ is ___.** 7. _____
 a. 14 b. 25 c. 38 d. 42
8. **The number of ways 5 men and 5 women can be seated at a round table if the men and women alternate is ___.** 8. _____
 a. 240 b. 625 c. 2,500 d. 2,880
9. **The value of ${}_{10}C_{10}$ is ___.** 9. _____
 a. 1 b. 10 c. 100 d. 3,628,800
10. A research scientist is testing whether drugs interact, so that two drugs might be given simultaneously. **If he is concerned with ten drugs, the number of pairs he must consider is ___.** 10. _____
 a. 5 b. 20 c. 45 d. 90



1. Given that $f(x) = 3x^3 + x - 1$, evaluate the function: $f(-2)$ 1. _____
 a. 27 b. -27 c. 25 d. -21

2. Evaluate the limits: $\lim_{x \rightarrow -2} \frac{1}{x^3}$ 2. _____

$$x \rightarrow -2$$

 a. $-\frac{1}{16}$ b. $\frac{1}{8}$ c. $-\frac{1}{8}$ d. $-\frac{1}{2}$

3. Find the slope of the function: $f(x) = 7 - 3x$ 3. _____
 a. -3 b. -12 c. 6 d. -6

4. Given $g(x) = 4x - 1$ and $h(x) = 2x^2$, find the function: $g[h(x)]$ 4. _____
 a. $4x^2 - 1$ b. $7x^2$ c. $8x^2 - 2x$ d. $8x^2 - 1$

5. Solve $3x^2 + x - 10 \leq 0$. 5. _____
 a. $-5 \leq x \leq \frac{2}{3}$ b. $-2 \leq x \leq \frac{5}{3}$
 c. $2 \geq x \geq -\frac{5}{3}$ d. $2 \leq x \leq \frac{5}{3}$

6. A circular gear turns 120° per hour. Through how many radians does it turn in a 24-hour day? 6. _____
 a. 8 b. 16π c. $\frac{2}{3}\pi$ d. 12

7. Solve the equation; domain $0^\circ \leq \theta \leq 360^\circ$. Answer to the nearest whole degree: $2 \sin \theta - \sqrt{3} = 0$. 7. _____
 a. $\theta = 60^\circ, 120^\circ$ b. $\theta = 40^\circ, 80^\circ$ c. $\theta = 120^\circ, 360^\circ$ d. $\theta = 90^\circ$

8. A rock weighing 25 pounds rests on a hill that makes an angle of 30° with the horizontal. How much of the friction force is needed to prevent the rock from rolling down the hill? 8. _____
 a. 10 lbs. b. 12.5 lbs. c. 15 lbs. d. 18 lbs.

9. Express the Cartesian equation in polar equation form: $2x - 3y + 4 = 0$ 9. _____
 a. $r(2 \cos \theta - 3 \sin \theta) + 4 = 0$ b. $r(3 \cos \theta - 2 \sin \theta) + 4 = 0$
 c. $r(3 \sin \theta - 2 \cos \theta) - 4 = 0$ d. $r(\cos \theta - \sin \theta) + 4 = 0$

10. In how many ways can 6 campers sit around a campfire? 10. _____
 a. 25 b. 600 c. 30 d. 120

VALUES OF TRIGONOMETRIC FUNCTIONS

$m \angle \theta$		$\sin \theta$	$\csc \theta$	$\tan \theta$	$\cot \theta$	$\sec \theta$	$\cos \theta$		
Degrees	Radians								
0° 00'	.0000	.0000	Undefined	.0000	Undefined	1.000	1.0000	1.5708	90° 00'
10'	.0029	.0029	343.8	.0029	343.8	1.000	1.0000	1.5679	50'
20'	.0058	.0058	171.9	.0058	171.9	1.000	1.0000	1.5650	40'
30'	.0087	.0087	114.6	.0087	114.6	1.000	1.0000	1.5621	30'
40'	.0116	.0116	85.95	.0116	85.94	1.000	.9999	1.5592	20'
50'	.0145	.0145	68.76	.0145	68.75	1.000	.9999	1.5563	10'
1° 00'	.0175	.0175	57.30	.0175	57.29	1.000	.9998	1.5533	89° 00'
10'	.0204	.0204	49.11	.0204	49.10	1.000	.9998	1.5504	50'
20'	.0233	.0233	42.98	.0233	42.96	1.000	.9997	1.5475	40'
30'	.0262	.0262	38.20	.0262	38.19	1.000	.9997	1.5446	30'
40'	.0291	.0291	34.38	.0291	34.37	1.000	.9996	1.5417	20'
50'	.0320	.0320	31.26	.0320	31.24	1.001	.9995	1.5388	10'
2° 00'	.0349	.0349	28.65	.0349	28.64	1.001	.9994	1.5359	88° 00'
10'	.0378	.0378	26.45	.0378	26.43	1.001	.9993	1.5330	50'
20'	.0407	.0407	24.56	.0407	24.54	1.001	.9992	1.5301	40'
30'	.0436	.0436	22.93	.0437	22.90	1.001	.9990	1.5272	30'
40'	.0465	.0465	21.49	.0466	21.47	1.001	.9989	1.5243	20'
50'	.0495	.0494	20.23	.0495	20.21	1.001	.9988	1.5213	10'
3° 00'	.0524	.0523	19.11	.0524	19.08	1.001	.9986	1.5184	87° 00'
10'	.0553	.0552	18.10	.0553	18.07	1.002	.9985	1.5155	50'
20'	.0582	.0581	17.20	.0582	17.17	1.002	.9983	1.5126	40'
30'	.0611	.0610	16.38	.0612	16.35	1.002	.9981	1.5097	30'
40'	.0640	.0640	15.64	.0641	15.60	1.002	.9980	1.5068	20'
50'	.0669	.0669	14.96	.0670	14.92	1.002	.9978	1.5039	10'
4° 00'	.0698	.0698	14.34	.0699	14.30	1.002	.9976	1.5010	86° 00'
10'	.0727	.0727	13.76	.0729	13.73	1.003	.9974	1.4981	50'
20'	.0756	.0756	13.23	.0758	13.20	1.003	.9971	1.4952	40'
30'	.0785	.0785	12.75	.0787	12.71	1.003	.9969	1.4923	30'
40'	.0814	.0814	12.29	.0816	12.25	1.003	.9967	1.4893	20'
50'	.0844	.0843	11.87	.0846	11.83	1.004	.9964	1.4864	10'
5° 00'	.0873	.0872	11.47	.0875	11.43	1.004	.9962	1.4835	85° 00'
10'	.0902	.0901	11.10	.0904	11.06	1.004	.9959	1.4806	50'
20'	.0931	.0929	10.76	.0934	10.71	1.004	.9957	1.4777	40'
30'	.0960	.0958	10.43	.0963	10.39	1.005	.9954	1.4748	30'
40'	.0989	.0987	10.13	.0992	10.08	1.005	.9951	1.4719	20'
50'	.1018	.1016	9.839	.1022	9.788	1.005	.9948	1.4690	10'
6° 00'	.1047	.1045	9.567	.1051	9.514	1.006	.9945	1.4661	84° 00'
10'	.1076	.1074	9.309	.1080	9.255	1.006	.9942	1.4632	50'
20'	.1105	.1103	9.065	.1110	9.010	1.006	.9939	1.4603	40'
30'	.1134	.1132	8.834	.1139	8.777	1.006	.9936	1.4573	30'
40'	.1164	.1161	8.614	.1169	8.556	1.007	.9932	1.4544	20'
50'	.1193	.1190	8.405	.1198	8.345	1.007	.9929	1.4515	10'
7° 00'	.1222	.1219	8.206	.1228	8.144	1.008	.9925	1.4486	83° 00'
10'	.1251	.1248	8.016	.1257	7.953	1.008	.9922	1.4457	50'
20'	.1280	.1276	7.834	.1287	7.770	1.008	.9918	1.4428	40'
30'	.1309	.1305	7.661	.1317	7.596	1.009	.9914	1.4399	30'
40'	.1338	.1334	7.496	.1346	7.429	1.009	.9911	1.4370	20'
50'	.1367	.1363	7.337	.1376	7.269	1.009	.9907	1.4341	10'
8° 00'	.1396	.1392	7.185	.1405	7.115	1.010	.9903	1.4312	82° 00'
10'	.1425	.1421	7.040	.1435	6.968	1.010	.9899	1.4283	50'
20'	.1454	.1449	6.900	.1465	6.827	1.011	.9894	1.4254	40'
30'	.1484	.1478	6.765	.1495	6.691	1.011	.9890	1.4224	30'
40'	.1513	.1507	6.636	.1524	6.561	1.012	.9886	1.4195	20'
50'	.1542	.1536	6.512	.1554	6.435	1.012	.9881	1.4166	10'
9° 00'	.1571	.1564	6.392	.1584	6.314	1.012	.9877	1.4137	81° 00'
		$\cos \theta$	$\sec \theta$	$\cot \theta$	$\tan \theta$	$\csc \theta$	$\sin \theta$	Radians	Degrees
								$m \angle \theta$	

VALUES OF TRIGONOMETRIC FUNCTIONS

$m \angle \theta$		$\sin \theta$	$\csc \theta$	$\tan \theta$	$\cot \theta$	$\sec \theta$	$\cos \theta$		
Degrees	Radians								
9° 00'	.1571	.1564	6.392	.1584	6.314	1.012	.9877	1.4137	81° 00'
10'	.1600	.1593	6.277	.1614	6.197	1.013	.9872	1.4108	50'
20'	.1629	.1622	6.166	.1644	6.084	1.013	.9868	1.4079	40'
30'	.1658	.1650	6.059	.1673	5.976	1.014	.9863	1.4050	30'
40'	.1687	.1679	5.955	.1703	5.871	1.014	.9858	1.4021	20'
50'	.1716	.1708	5.855	.1733	5.769	1.015	.9853	1.3992	10'
10° 00'	.1745	.1736	5.759	.1763	5.671	1.015	.9848	1.3963	80° 00'
10'	.1774	.1765	5.665	.1793	5.576	1.016	.9843	1.3934	50'
20'	.1804	.1794	5.575	.1823	5.485	1.016	.9838	1.3904	40'
30'	.1833	.1822	5.487	.1853	5.396	1.017	.9833	1.3875	30'
40'	.1862	.1851	5.403	.1883	5.309	1.018	.9827	1.3846	20'
50'	.1891	.1880	5.320	.1914	5.226	1.018	.9822	1.3817	10'
11° 00'	.1920	.1908	5.241	.1944	5.145	1.019	.9816	1.3788	79° 00'
10'	.1949	.1937	5.164	.1974	5.066	1.019	.9811	1.3759	50'
20'	.1978	.1965	5.089	.2004	4.989	1.020	.9805	1.3730	40'
30'	.2007	.1994	5.016	.2035	4.915	1.020	.9799	1.3701	30'
40'	.2036	.2022	4.945	.2065	4.843	1.021	.9793	1.3672	20'
50'	.2065	.2051	4.876	.2095	4.773	1.022	.9787	1.3643	10'
12° 00'	.2094	.2079	4.810	.2126	4.705	1.022	.9781	1.3614	78° 00'
10'	.2123	.2108	4.745	.2156	4.638	1.023	.9775	1.3584	50'
20'	.2153	.2136	4.682	.2186	4.574	1.024	.9769	1.3555	40'
30'	.2182	.2164	4.620	.2217	4.511	1.024	.9763	1.3526	30'
40'	.2211	.2193	4.560	.2247	4.449	1.025	.9757	1.3497	20'
50'	.2240	.2221	4.502	.2278	4.390	1.026	.9750	1.3468	10'
13° 00'	.2269	.2250	4.445	.2309	4.331	1.026	.9744	1.3439	77° 00'
10'	.2298	.2278	4.390	.2339	4.275	1.027	.9737	1.3410	50'
20'	.2327	.2306	4.336	.2370	4.219	1.028	.9730	1.3381	40'
30'	.2356	.2334	4.284	.2401	4.165	1.028	.9724	1.3352	30'
40'	.2385	.2363	4.232	.2432	4.113	1.029	.9717	1.3323	20'
50'	.2414	.2391	4.182	.2462	4.061	1.030	.9710	1.3294	10'
14° 00'	.2443	.2419	4.134	.2493	4.011	1.031	.9703	1.3265	76° 00'
10'	.2473	.2447	4.086	.2524	3.962	1.031	.9696	1.3235	50'
20'	.2502	.2476	4.039	.2555	3.914	1.032	.9689	1.3206	40'
30'	.2531	.2504	3.994	.2586	3.867	1.033	.9681	1.3177	30'
40'	.2560	.2532	3.950	.2617	3.821	1.034	.9674	1.3148	20'
50'	.2589	.2560	3.906	.2648	3.776	1.034	.9667	1.3119	10'
15° 00'	.2618	.2588	3.864	.2679	3.732	1.035	.9659	1.3090	75° 00'
10'	.2647	.2616	3.822	.2711	3.689	1.036	.9652	1.3061	50'
20'	.2676	.2644	3.782	.2742	3.647	1.037	.9644	1.3032	40'
30'	.2705	.2672	3.742	.2773	3.606	1.038	.9636	1.3003	30'
40'	.2734	.2700	3.703	.2805	3.566	1.039	.9628	1.2974	20'
50'	.2763	.2728	3.665	.2836	3.526	1.039	.9621	1.2945	10'
16° 00'	.2793	.2756	3.628	.2867	3.487	1.040	.9613	1.2915	74° 00'
10'	.2822	.2784	3.592	.2899	3.450	1.041	.9605	1.2886	50'
20'	.2851	.2812	3.556	.2931	3.412	1.042	.9596	1.2857	40'
30'	.2880	.2840	3.521	.2962	3.376	1.043	.9588	1.2828	30'
40'	.2909	.2868	3.487	.2994	3.340	1.044	.9580	1.2799	20'
50'	.2938	.2896	3.453	.3026	3.305	1.045	.9572	1.2770	10'
17° 00'	.2967	.2924	3.420	.3057	3.271	1.046	.9563	1.2741	73° 00'
10'	.2996	.2952	3.388	.3089	3.237	1.047	.9555	1.2712	50'
20'	.3025	.2979	3.357	.3121	3.204	1.048	.9546	1.2683	40'
30'	.3054	.3007	3.326	.3153	3.172	1.049	.9537	1.2654	30'
40'	.3083	.3035	3.295	.3185	3.140	1.049	.9528	1.2625	20'
50'	.3113	.3062	3.265	.3217	3.108	1.050	.9520	1.2595	10'
18° 00'	.3142	.3090	3.236	.3249	3.078	1.051	.9511	1.2566	72° 00'
		$\cos \theta$	$\sec \theta$	$\cot \theta$	$\tan \theta$	$\csc \theta$	$\sin \theta$	$\text{Radians } m \angle \theta$	$\text{Degree: } \theta$

VALUES OF TRIGONOMETRIC FUNCTIONS

$m \angle \theta$		<i>sin</i> θ	<i>csc</i> θ	<i>tan</i> θ	<i>cot</i> θ	<i>sec</i> θ	<i>cos</i> θ		
Degrees	Radians								
18° 00'	.3142	.3090	3.236	.3249	3.078	1.051	.9511	1.2566	72° 00'
10'	.3171	.3118	3.207	.3281	3.047	1.052	.9502	1.2537	50'
20'	.3200	.3145	3.179	.3314	3.018	1.053	.9492	1.2508	40'
30'	.3229	.3173	3.152	.3346	2.989	1.054	.9483	1.2479	30'
40'	.3258	.3201	3.124	.3378	2.960	1.056	.9474	1.2450	20'
50'	.3287	.3228	3.098	.3411	2.932	1.057	.9465	1.2421	10'
19° 00'	.3316	.3256	3.072	.3443	2.904	1.058	.9455	1.2392	71° 00'
10'	.3345	.3283	3.046	.3476	2.877	1.059	.9446	1.2363	50'
20'	.3374	.3311	3.021	.3508	2.850	1.060	.9436	1.2334	40'
30'	.3403	.3338	2.996	.3541	2.824	1.061	.9426	1.2305	30'
40'	.3432	.3365	2.971	.3574	2.798	1.062	.9417	1.2275	20'
50'	.3462	.3393	2.947	.3607	2.773	1.063	.9407	1.2246	10'
20° 00'	.3491	.3420	2.924	.3640	2.747	1.064	.9397	1.2217	70° 00'
10'	.3520	.3448	2.901	.3673	2.723	1.065	.9387	1.2188	50'
20'	.3549	.3475	2.878	.3706	2.699	1.066	.9377	1.2159	40'
30'	.3578	.3502	2.855	.3739	2.675	1.068	.9367	1.2130	30'
40'	.3607	.3529	2.833	.3772	2.651	1.069	.9356	1.2101	20'
50'	.3636	.3557	2.812	.3805	2.628	1.070	.9346	1.2072	10'
21° 00'	.3665	.3584	2.790	.3839	2.605	1.071	.9336	1.2043	69° 00'
10'	.3694	.3611	2.769	.3872	2.583	1.072	.9325	1.2014	50'
20'	.3723	.3638	2.749	.3906	2.560	1.074	.9315	1.1985	40'
30'	.3752	.3665	2.729	.3939	2.539	1.075	.9304	1.1956	30'
40'	.3782	.3692	2.709	.3973	2.517	1.076	.9293	1.1926	20'
50'	.3811	.3719	2.689	.4006	2.496	1.077	.9283	1.1897	10'
22° 00'	.3840	.3746	2.669	.4040	2.475	1.079	.9272	1.1868	68° 00'
10'	.3869	.3773	2.650	.4074	2.455	1.080	.9261	1.1839	50'
20'	.3898	.3800	2.632	.4108	2.434	1.081	.9250	1.1810	40'
30'	.3927	.3827	2.613	.4142	2.414	1.082	.9239	1.1781	30'
40'	.3956	.3854	2.595	.4176	2.394	1.084	.9228	1.1752	20'
50'	.3985	.3881	2.577	.4210	2.375	1.085	.9216	1.1723	10'
23° 00'	.4014	.3907	2.559	.4245	2.356	1.086	.9205	1.1694	67° 00'
10'	.4043	.3934	2.542	.4279	2.337	1.088	.9194	1.1665	50'
20'	.4072	.3961	2.525	.4314	2.318	1.089	.9182	1.1636	40'
30'	.4102	.3987	2.508	.4348	2.300	1.090	.9171	1.1606	30'
40'	.4131	.4014	2.491	.4383	2.282	1.092	.9159	1.1577	20'
50'	.4160	.4041	2.475	.4417	2.264	1.093	.9147	1.1548	10'
24° 00'	.4189	.4067	2.459	.4452	2.246	1.095	.9135	1.1519	66° 00'
10'	.4218	.4094	2.443	.4487	2.229	1.096	.9124	1.1490	50'
20'	.4247	.4120	2.427	.4522	2.211	1.097	.9112	1.1461	40'
30'	.4276	.4147	2.411	.4557	2.194	1.099	.9100	1.1432	30'
40'	.4305	.4173	2.396	.4592	2.177	1.100	.9088	1.1403	20'
50'	.4334	.4200	2.381	.4628	2.161	1.102	.9075	1.1374	10'
25° 00'	.4363	.4226	2.366	.4663	2.145	1.103	.9063	1.1345	65° 00'
10'	.4392	.4253	2.352	.4699	2.128	1.105	.9051	1.1316	50'
20'	.4422	.4279	2.337	.4734	2.112	1.106	.9038	1.1286	40'
30'	.4451	.4305	2.323	.4770	2.097	1.108	.9026	1.1257	30'
40'	.4480	.4331	2.309	.4806	2.081	1.109	.9013	1.1228	20'
50'	.4509	.4358	2.295	.4841	2.066	1.111	.9001	1.1199	10'
26° 00'	.4538	.4384	2.281	.4877	2.050	1.113	.8988	1.1170	64° 00'
10'	.4567	.4410	2.268	.4913	2.035	1.114	.8975	1.1141	50'
20'	.4596	.4436	2.254	.4950	2.020	1.116	.8962	1.1112	40'
30'	.4625	.4462	2.241	.4986	2.006	1.117	.8949	1.1083	30'
40'	.4654	.4488	2.228	.5022	1.991	1.119	.8936	1.1054	20'
50'	.4683	.4514	2.215	.5059	1.977	1.121	.8923	1.1025	10'
27° 00'	.4712	.4540	2.203	.5095	1.963	1.122	.8910	1.0996	63° 00'
		<i>cos</i> θ	<i>sec</i> θ	<i>cot</i> θ	<i>tan</i> θ	<i>csc</i> θ	<i>sin</i> θ	<i>Radians</i>	<i>Degrees</i>
								<i>m</i> \angle θ	

VALUES OF TRIGONOMETRIC FUNCTIONS

$m \angle \theta$		$\sin \theta$	$\csc \theta$	$\tan \theta$	$\cot \theta$	$\sec \theta$	$\cos \theta$		
Degrees	Radians								
27° 00'	.4712	.4540	2.203	.5095	1.963	1.122	.8910	1.0996	63° 00'
10'	.4741	.4566	2.190	.5132	1.949	1.124	.8897	1.0966	50'
20'	.4771	.4592	2.178	.5169	1.935	1.126	.8884	1.0937	40'
30'	.4800	.4617	2.166	.5206	1.921	1.127	.8870	1.0908	30'
40'	.4829	.4643	2.154	.5243	1.907	1.129	.8857	1.0879	20'
50'	.4858	.4669	2.142	.5280	1.894	1.131	.8843	1.0850	10'
28° 00'	.4887	.4695	2.130	.5317	1.881	1.133	.8829	1.0821	62° 00'
10'	.4916	.4720	2.118	.5354	1.868	1.134	.8816	1.0792	50'
20'	.4945	.4746	2.107	.5392	1.855	1.136	.8802	1.0763	40'
30'	.4974	.4772	2.096	.5430	1.842	1.138	.8788	1.0734	30'
40'	.5003	.4797	2.085	.5467	1.829	1.140	.8774	1.0705	20'
50'	.5032	.4823	2.074	.5505	1.816	1.142	.8760	1.0676	10'
29° 00'	.5061	.4848	2.063	.5543	1.804	1.143	.8746	1.0647	61° 00'
10'	.5091	.4874	2.052	.5581	1.792	1.145	.8732	1.0617	50'
20'	.5120	.4899	2.041	.5619	1.780	1.147	.8718	1.0588	40'
30'	.5149	.4924	2.031	.5658	1.767	1.149	.8704	1.0559	30'
40'	.5178	.4950	2.020	.5696	1.756	1.151	.8689	1.0530	20'
50'	.5207	.4975	2.010	.5735	1.744	1.153	.8675	1.0501	10'
30° 00'	.5236	.5000	2.000	.5774	1.732	1.155	.8660	1.0472	60° 00'
10'	.5265	.5025	1.990	.5812	1.720	1.157	.8646	1.0443	50'
20'	.5294	.5050	1.980	.5851	1.709	1.159	.8631	1.0414	40'
30'	.5323	.5075	1.970	.5890	1.698	1.161	.8616	1.0385	30'
40'	.5352	.5100	1.961	.5930	1.686	1.163	.8601	1.0356	20'
50'	.5381	.5125	1.951	.5969	1.675	1.165	.8587	1.0327	10'
31° 00'	.5411	.5150	1.942	.6009	1.664	1.167	.8572	1.0297	59° 00'
10'	.5440	.5175	1.932	.6048	1.653	1.169	.8557	1.0268	50'
20'	.5469	.5200	1.923	.6088	1.643	1.171	.8542	1.0239	40'
30'	.5498	.5225	1.914	.6128	1.632	1.173	.8526	1.0210	30'
40'	.5527	.5250	1.905	.6168	1.621	1.175	.8511	1.0181	20'
50'	.5556	.5275	1.896	.6208	1.611	1.177	.8496	1.0152	10'
32° 00'	.5585	.5299	1.887	.6249	1.600	1.179	.8480	1.0123	58° 00'
10'	.5614	.5324	1.878	.6289	1.590	1.181	.8465	1.0094	50'
20'	.5643	.5348	1.870	.6330	1.580	1.184	.8450	1.0065	40'
30'	.5672	.5373	1.861	.6371	1.570	1.186	.8434	1.0036	30'
40'	.5701	.5398	1.853	.6412	1.560	1.188	.8418	1.0007	20'
50'	.5730	.5422	1.844	.6453	1.550	1.190	.8403	.9977	10'
33° 00'	.5760	.5446	1.836	.6494	1.540	1.192	.8387	.9948	57° 00'
10'	.5789	.5471	1.828	.6536	1.530	1.195	.8371	.9919	50'
20'	.5818	.5495	1.820	.6577	1.520	1.197	.8355	.9890	40'
30'	.5847	.5519	1.812	.6619	1.511	1.199	.8339	.9861	30'
40'	.5876	.5544	1.804	.6661	1.501	1.202	.8323	.9832	20'
50'	.5905	.5568	1.796	.6703	1.492	1.204	.8307	.9803	10'
34° 00'	.5934	.5592	1.788	.6745	1.483	1.206	.8290	.9774	56° 00'
10'	.5963	.5616	1.781	.6787	1.473	1.209	.8274	.9745	50'
20'	.5992	.5640	1.773	.6830	1.464	1.211	.8258	.9716	40'
30'	.6021	.5664	1.766	.6873	1.455	1.213	.8241	.9687	30'
40'	.6050	.5688	1.758	.6916	1.446	1.216	.8225	.9657	20'
50'	.6080	.5712	1.751	.6959	1.437	1.218	.8208	.9628	10'
35° 00'	.6109	.5736	1.743	.7002	1.428	1.221	.8192	.9599	55° 00'
10'	.6138	.5760	1.736	.7046	1.419	1.223	.8175	.9570	50'
20'	.6167	.5783	1.729	.7089	1.411	1.226	.8158	.9541	40'
30'	.6196	.5807	1.722	.7133	1.402	1.228	.8141	.9512	30'
40'	.6225	.5831	1.715	.7177	1.393	1.231	.8124	.9483	20'
50'	.6254	.5854	1.708	.7221	1.385	1.233	.8107	.9454	10'
36° 00'	.6283	.5878	1.701	.7265	1.376	1.236	.8090	.9425	54° 00'
		$\cos \theta$	$\sec \theta$	$\cot \theta$	$\tan \theta$	$\csc \theta$	$\sin \theta$	Radians	Degrees
								$m \angle \theta$	

VALUES OF TRIGONOMETRIC FUNCTIONS

$m \angle \theta$		$\sin \theta$	$\csc \theta$	$\tan \theta$	$\cot \theta$	$\sec \theta$	$\cos \theta$		
Degrees	Radians								
36° 00'	.6283	.5878	1.701	.7265	1.376	1.236	.8090	.9425	54° 00'
10'	.6312	.5901	1.695	.7310	1.368	1.239	.8073	.9396	50'
20'	.6341	.5925	1.688	.7355	1.360	1.241	.8056	.9367	40'
30'	.6370	.5948	1.681	.7400	1.351	1.244	.8039	.9338	30'
40'	.6400	.5972	1.675	.7445	1.343	1.247	.8021	.9308	20'
50'	.6429	.5995	1.668	.7490	1.335	1.249	.8004	.9279	10'
37° 00'	.6458	.6018	1.662	.7536	1.327	1.252	.7986	.9250	53° 00'
10'	.6487	.6041	1.655	.7581	1.319	1.255	.7969	.9221	50'
20'	.6516	.6065	1.649	.7627	1.311	1.258	.7951	.9192	40'
30'	.6545	.6088	1.643	.7673	1.303	1.260	.7934	.9163	30'
40'	.6574	.6111	1.636	.7720	1.295	1.263	.7916	.9134	20'
50'	.6603	.6134	1.630	.7766	1.288	1.266	.7898	.9105	10'
38° 00'	.6632	.6157	1.624	.7813	1.280	1.269	.7880	.9076	52° 00'
10'	.6661	.6180	1.618	.7860	1.272	1.272	.7862	.9047	50'
20'	.6690	.6202	1.612	.7907	1.265	1.275	.7844	.9018	40'
30'	.6720	.6225	1.606	.7954	1.257	1.278	.7826	.8988	30'
40'	.6749	.6248	1.601	.8002	1.250	1.281	.7808	.8959	20'
50'	.6778	.6271	1.595	.8050	1.242	1.284	.7790	.8930	10'
39° 00'	.6807	.6293	1.589	.8098	1.235	1.287	.7771	.8901	51° 00'
10'	.6836	.6316	1.583	.8146	1.228	1.290	.7753	.8872	50'
20'	.6865	.6338	1.578	.8195	1.220	1.293	.7735	.8843	40'
30'	.6894	.6361	1.572	.8243	1.213	1.296	.7716	.8814	30'
40'	.6923	.6383	1.567	.8292	1.206	1.299	.7698	.8785	20'
50'	.6952	.6406	1.561	.8342	1.199	1.302	.7679	.8756	10'
40° 00'	.6981	.6428	1.556	.8391	1.192	1.305	.7660	.8727	50° 00'
10'	.7010	.6450	1.550	.8441	1.185	1.309	.7642	.8698	50'
20'	.7039	.6472	1.545	.8491	1.178	1.312	.7623	.8668	40'
30'	.7069	.6494	1.540	.8541	1.171	1.315	.7604	.8639	30'
40'	.7098	.6517	1.535	.8591	1.164	1.318	.7585	.8610	20'
50'	.7127	.6539	1.529	.8642	1.157	1.322	.7566	.8581	10'
41° 00'	.7156	.6561	1.524	.8693	1.150	1.325	.7547	.8552	49° 00'
10'	.7185	.6583	1.519	.8744	1.144	1.328	.7528	.8523	50'
20'	.7214	.6604	1.514	.8796	1.137	1.332	.7509	.8494	40'
30'	.7243	.6626	1.509	.8847	1.130	1.335	.7490	.8465	30'
40'	.7272	.6648	1.504	.8899	1.124	1.339	.7470	.8436	20'
50'	.7301	.6670	1.499	.8952	1.117	1.342	.7451	.8407	10'
42° 00'	.7330	.6691	1.494	.9004	1.111	1.346	.7431	.8378	48° 00'
10'	.7359	.6713	1.490	.9057	1.104	1.349	.7412	.8348	50'
20'	.7389	.6734	1.485	.9110	1.098	1.353	.7392	.8319	40'
30'	.7418	.6756	1.480	.9163	1.091	1.356	.7373	.8290	30'
40'	.7447	.6777	1.476	.9217	1.085	1.360	.7353	.8261	20'
50'	.7476	.6799	1.471	.9271	1.079	1.364	.7333	.8232	10'
43° 00'	.7505	.6820	1.466	.9325	1.072	1.367	.7314	.8203	47° 00'
10'	.7534	.6841	1.462	.9380	1.066	1.371	.7294	.8174	50'
20'	.7563	.6862	1.457	.9435	1.060	1.375	.7274	.8145	40'
30'	.7592	.6884	1.453	.9490	1.054	1.379	.7254	.8116	30'
40'	.7621	.6905	1.448	.9545	1.048	1.382	.7234	.8087	20'
50'	.7650	.6926	1.444	.9601	1.042	1.386	.7214	.8058	10'
44° 00'	.7679	.6947	1.440	.9657	1.036	1.390	.7193	.8029	46° 00'
10'	.7709	.6967	1.435	.9713	1.030	1.394	.7173	.7999	50'
20'	.7738	.6988	1.431	.9770	1.024	1.398	.7153	.7970	40'
30'	.7767	.7009	1.427	.9827	1.018	1.402	.7133	.7941	30'
40'	.7796	.7030	1.423	.9884	1.012	1.406	.7112	.7912	20'
50'	.7825	.7050	1.418	.9942	1.006	1.410	.7092	.7883	10'
45° 00'	.7854	.7071	1.414	1.000	1.000	1.414	.7071	.7854	45° 00'
		$\cos \theta$	$\sec \theta$	$\cot \theta$	$\tan \theta$	$\csc \theta$	$\sin \theta$	$\text{Radians } m \angle \theta$	$\text{Degrees } \angle \theta$

MATHEMATICS 700-1200

Introduction

PLACEMENT TEST for the LIFE PAC CURRICULUM

Instructions

This test is designed to aid the teacher in proper placement of the student into the LIFE PAC curriculum. It has two sections: the Student Test and the Answer Key. The Answer Key is an insert in the Student Test and may be removed when testing begins.

This is not a timed test and the student should be given an opportunity to answer each question adequately. If the student becomes bogged down and the test seems too difficult, skip to the next section. If the test is still too difficult, this child's academic skill level has been reached and testing may stop. Each test level should take no longer than one hour. Students should not use calculators for any of these tests.

Testing should begin approximately two grade levels below the student's current or just completed grade level. For example, a student entering tenth grade [1000] should begin testing at the eighth grade [800] level. This allows for proper grade level placement as well as identification of any learning gaps that the student may have.

Once the test has been administered, it is ready to be scored. The teacher or parent does all of the scoring except for those who are using one of our placement services. Use the Answer Key to mark all incorrect answers on the Student Test. Next, record the total number of **correct** answers in the box beneath the LIFE PAC number in the left hand column. When all tests have been graded, transfer the number correct by LIFE PAC to the Student Placement Worksheet on the back page of the Answer Keys. Then add the total number of points per grade level.

Test	Level	Test	Level
701 - 710	7	1001 - 1010	10
801 - 810	8	1101 - 1110	11
901 - 910	9	1201 - 1210	12

There are ten possible points per section. Put all answers on the blanks to the right of the questions unless instructed to do otherwise.

701

1. 405,306
- 2a. >
- b. =
- c. <
3. 27
4. 44
5. 9
6. 11
7. 9,566
8. 1,918
9. 700
10. 2,000

702

- 1a. 7
- b. 67
- c. 469
- 2a. 75
- b. 15
- c. 5
3. 27
4. 64
5. 5,400,000,000
6. 5,372
7. 68,096
8. 27 R12
9. 607 R6
10. 36

703

1. line segment
2. c
3. 17
4. right
5. c
6. 360°
7. 6 in.
8. 18.84 in.
9. 288 sq. ft.
10. 720°

704

1. $\frac{30}{54}$
2. $6\frac{3}{7}$
3. >
4. 2.2
5. .034%
6. 9:34
7. $\frac{16}{25}$
8. .0013
9. .875
10. 5,000 mg

705

1. {5, 7, 9, 11}
2. b
3. a
4. 114
5. 8
6. 7×10^6
7. 8
8. 140
9. 2^4
10. b

706

- 1a. $1\frac{5}{8}$ b. $15\frac{7}{9}$
- 2a. $\frac{17}{45}$ b. $1\frac{5}{6}$
3. 26.623
4. 1.02
5. $\frac{7}{100}$
6. $\frac{51}{200}$
7. .43
8. $\frac{a}{c}$
9. $7\frac{1}{4}$ min.
10. .3 hr. or
18 min.

707

- 1a. $\frac{8}{15}$ b. $73\frac{1}{2}$
- 2a. $1\frac{1}{2}$ b. $\frac{2}{15}$
- 3a. 6 b. $\frac{7}{8}$
- 4a. 1.785
- b. 309.024
- 5a. 35.5
- b. 19.875
- 6a. 345.1
- b. .00739
7. 7
8. 40
9. 25%
10. \$284.38

708

1. 3 ft.
2. 20 in.
3. \$63
4. c
5. 1:5
6. $\frac{4}{9} = \frac{12}{27}$
7. b
8. 514 mph
9. 28 in.
10. 27

709

1. c
2. 9
3. 8
4. 8
5. 22
6. (-2, 5)
7. (4, 3)
8. (-6, -4)

9. 1
10. 22

710

1. 8×10^4
2. >
3. a
4. 16
5. 56.52 in.
- 6a. $\frac{7}{9}$ b. $2\frac{2}{3}$
- 7a. $\frac{1}{6}$ b. 2
8. 6
9. Distance equals rate times time
10. 44%

801

1. 2,005,206
2. hundred thousand
3. 4
4. 490,000
5. 24 fish
6. 75
7. 58 ft.
8. 68 in.
9. 37 in.

10. 1,764 m²

802

1. 1,614
2. c
3. 5⁴
4. a
5. 17, 19, 23
6. 2², 3²
7. 6
8. 120
9. $\frac{5}{6}$
10. $\frac{4}{5}$

803

1. $\frac{3}{4}$
2. $\frac{12}{42}$
3. $1\frac{4}{7}$
4. 18:72
5. $\frac{1}{8}, \frac{1}{2}, \frac{7}{12}$
6. $\frac{5}{6}, 1\frac{2}{3}, \frac{17}{8}$
6. .2
7. $\frac{71}{100}$
8. 40 ft.
9. b
10. 10%

804

1. $1\frac{1}{6}$
2. $618\frac{14}{15}$
3. $\frac{8}{35}$
4. $1\frac{13}{20}$
5. 779.864
6. 3.968
7. 3.1056
8. 72,050
9. $\frac{10}{5}$
10. .6

805

1. $\frac{4}{5}$
2. $58\frac{1}{2}$
3. 10.4384
4. 80.4
5. $\frac{5}{6}$
6. $1\frac{23}{26}$
7. \$3,000
8. 3.6
9. 64
10. 17.5%

806

1. 32
2. 28
3. 41
4. 4 in 14
5. 3:10
6. 5:10
7. 200
8. 5, 8, 11
9. (-5, -2)
10. 2:5

807

1. b
2. -15, -8, -6
 0, 2, 5, 10
3. 32
4. 15
5. 13
6. 0
7. -27
- 8a. (-1, 6)
- b. (2, -3)
9. -19
10. -3

808

1. 30 sq. ft.
2. 120 m²
3. 25.748 cm
4. 19.625 sq. ft.
5. 9 cu. ft.
6. c
7. c
8. 10 yds.³
9. c
10. a

809

1. 82
2. $\frac{2}{3}$
3. $\frac{N}{3} + 6$
4. 3N - 5
5. $2\frac{1}{2}$
6. 1
7. xy + 2x
8. x = -3
9. c

810

1. 160%
- 2a. 16 b. 27
3. 206.0 cm²
4. 672 in.³
5. $\frac{xy - 4x + 3y}{-12}$
6. 4N + 2 = N - 1
7. -6, 9, 0
8. 3, 4, 5, 6
9. 5 x 10⁶
10. 6

901

1. d.

2. c.

3. a.

4. b.

5. c.

6. d.

7. a.

8. d.

9. c.

10. b.

902

1. a.

2. c.

3. b.

4. a.

5. a.

6. d.

7. c.

8. b.

9. d.

10. d.

903

1. b.

2. c.

3. b.

4. a.

5. d.

6. b.

7. c.

8. a.

9. b.

10. d.

904

1. b.

2. c.

3. a.

4. b.

5. d.

6. c.

7. d.

8. b.

9. a.

10. c.

905

1. b.

2. b.

3. c.

4. b.

5. c.

6. b.

7. a.

8. d.

9. d.

10. d.

906

1. a.

2. d.

3. b.

4. d.

5. a.

6. c.

7. c.

906

8. d.

9. b.

10. a.

907

1. c.

2. c.

3. d.

4. b.

5. a.

6. d.

7. a.

8. b.

907

9. d.

10. a.

908

1. a.

2. d.

3. c.

4. c.

5. a.

6. b.

7. d.

908

8. a.

9. d.

10. c.

909

1. d.

2. c.

3. b.

4. c.

5. c.

6. b.

909

7. c.

8. a.

9. a.

10. b.

910

1. a.

2. b.

3. b.

4. d.

5. a.

6. d.

7. c.

8. a.

910

9. d.

10. c.

1001

1. d.

2. d.

3. a.

4. a.

5. d.

6. c.

7. b.

8. b.

9. b.

10. c.

1002

1. b.

2. a.

3. b. / a.

4. c.

5. b.

6. d.

7. c.

8. c.

1002

9. a.

10. b.

1003

1. d.

2. c.

3. c.

4. c.

5. d.

6. a.

7. d.

8. b.

9. d.

1003

10. a.

1004

1. c.

2. d.

3. b.

4. c.

1004

5. b.

6. d.

1004

7. a.

8. c.

9. b.

10. d.

1005

1. b.

2. a.

3. d.

4. b.

5. b.

6. d.

1005

7. d.

8. c.

9. a.

10. d.

1006

1. d.

2. b.

3. a.

4. b.

5. c.

6. d.

7. d.

8. c.

1006

9. d.

10. d.

1007

1. c.

2. d.

3. b.

4. c.

5. d.

1007

6. d.

7. c.

8. a.

9. a.

10. d.

1008

1. a.

2. b.

3. c.

4. b.

5. d.

6. c.

7. d.

1008

8. b.

9. a.

10. a.

1009

1. d.

2. a.

3. c.

4. b.

5. a.

6. d.

7. d.

8. c.

1009

9. c.

1009

10. b.

1010

1. d.

2. b.

3. a.

4. a.

5. d.

6. c.

7. b.

8. a.

9. b.

10. b.

1101

1. c.

2. a.

3. c.

4. d.

5. a.

6. b.

7. a.

8. b.

9. b.

10. c.

1102

1. d.
2. d.
3. a.
4. c.
5. c.
6. d.
7. a.
8. b.
9. b.
10. d.

1103

1. c.
2. a.
3. b.
4. c.
5. d.
6. c.
7. c.

1103

8. d.
9. d.
10. a.

1104

1. d.
2. c.
3. a.
4. b.
5. a.
6. b.
7. c.
8. b.
9. b.
10. d.

1105

1. a.

2. d.

3. b.

4. a.

5. c.

6. b.

7. c.

1105

8. a.

9. c.

10. d.

1106

1. a.

2. b.

3. c.

4. d.

5. a.

6. c.

7. d.

8. a.

9. c.

10. d.

1107

1. d.

2. c.

3. a.

4. b.

5. a.

6. c.

7. b.

1107

8. d.

9. b.

10. a.

1108

1. d.

2. c.

3. a.

4. a.

5. b.

6. c.

1108

7. d.

8. c.

9. b.

10. a.

1109

1. a.

2. d.

3. d.

4. c.

5. c.

6. b.

7. c.

8. a.

9. d.

10. b.

1110

1. b.

2. c.

3. a.

4. d.

5. a.

6. d.

7. a.

8. b.

9. d.

10. b.

1201

1. c.

2. b.

3. c.

4. d.

5. d.

6. b.

7. d.

8. b.

9. d.

10. d.

1202

1. c.

2. b.

3. a.

4. d.

1202

5. c.

6. c.

7. a.

1202

8. a.

1203

1a. a.
b. b.
c. d.

9. b.

2. c.

3. c.

4. a.

10. d.

5. a.

6. a.

7. c.

8. a.

9. d.

10. c.

1204

1. d.

2. d.

3. a.

1204

4. b.

1204

5. b.

6. d.

1204

7. d.

8. c.

1204

9. c.

10. a.

1205

1. c.

2. a.

3. d.

4. c.

5. b.

6. d.

7. a.

1205

8. c.

9. d.

10. b.

1206

1. b.

2. a.

3. b.

4. b.

5. b.

6. c.

7. b.

8. c.

1206

9. a.

10. b.

1207

1. a.

2. a.

3. d.

1207

4. d.

1207

6. b.

1207

10. d.

1208

1. c.

2. b.

3. d.

4. d.

5. c.

6. a.

7. a.

5. a.

1208

8. c.

9. c.

10. d.

1209

1. c.

2. d.

3. b.

4. d.

5. a.

6. b.

7. d.

8. d.

9. a.

10. c.

1210

1. b.

2. c.

3. a.

4. d.

5. b.

6. b.

7. a.

8. b.

9. a.

10. d.

Student Name

Age

Date

Grade Last Completed

	700	800	900	1000	1100	1200
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
TOTAL SCORE	_____	_____	_____	_____	_____	_____

GRADE LEVEL PLACEMENT: A student can be placed academically using the rule that he/she has successfully passed the test for any given level if he/she achieves a **Total Score of 70 points or more.**

This student places at grade level _____.

LEARNING GAPS: Learning gaps can be easily identified with the placement test. If a student receives **points of 6 or less** on any individual test, he/she has not shown mastery of the skills in that particular LIFEPAC. If desired, these LIFEPACs may be ordered and completed before the student begins his assigned grade level curriculum.

Learning gap LIFEPACs for this student are _____

It is not unusual for a student to place at more than one level in various subjects when beginning the LIFEPAC curriculum. For example, a student may be placed at 9th level in Bible, mathematics, science and social studies but 8th level in language arts. The majority of school time should be concentrated on the areas of lower achievement with the ultimate goal of equal skill mastery in all subjects at the same grade level.