



Pre-Algebra Summer Math Packet for Incoming 6th Graders

1. Kenny has 9 more comic books than Bobbie. Together they have 95 comic books. Define a variable. Then write an equation that could be used to find the number of comic books they each have.

1. _____

2. You and 3 friends pay \$26.55 for a pizza and 4 of the same kind of drinks. The pizza cost \$18.75. Write and solve an equation to find the cost of one drink.

2. _____

3. Crystal bowled two games for a total score of 202. Her score for the second game was 30 points less than the score of her first game. Write and solve an equation to find her score for the second game.

3. _____

Solve each equation.

4. $-0.7y = 9.1$

4. _____

5. $2\frac{1}{4}m + 3 = 4\frac{1}{8}$

5. _____

6. $-19.2 = -3.6x + 2.4$

6. _____

7. $-2a = 12 - 4a$

7. _____

8. $-2\frac{2}{3}n + 21 = -\frac{1}{3}n$

8. _____

9. $-2.3c - 6.6 = -12.2 - 3.9c$

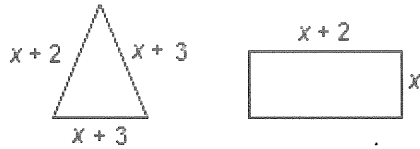
9. _____

10. An online movie streaming plan has no annual fee but charges \$4.25 per movie watched. Another plan charges an annual fee of \$36 plus \$3.50 per movie watched. For how many movies is the cost of the plans the same?

10. _____

11. Find the value of x so that the polygons have the same perimeter.

11. _____



Solve each equation.

12. $-30 = -2(-n + 3)$

12. _____

13. $7(1 - p) = 2(1 - 3p)$

13. _____

14. $-3(q - 4) + 15 = -5(q - 7) - 10$

14. _____

15. $3(y - 2) + 15 = -3(y - 3) + 6y$

15. _____

16. The table shows the number of hits made by three players in yesterday's softball game. If Mercedes and Kiaya had the same number of hits, how many hits did Evelyn have?

Player	Points
Evelyn	x
Mercedes	$3x - 1$
Kiaya	$4x - 2$

16. _____

17. The table shows the number of fish Callie and Jada each caught. If they caught the same number of fish, how many did each catch?

Name	Number of Fish Caught
Callie	$2(3t + 1)$
Jada	$4(2t - 1)$

17. _____

18. Bonnie and some friends went to an amusement park. They bought five of the same lunches and 3 desserts and spent a total of \$60.25 on the food. Each dessert costs \$5.25 less than one of the lunches.

a. Define a variable. Write an equation that can be used to find the cost of lunch.

18a. _____

b. Solve the equation to find the cost of a lunch.

18b. _____

1. Tyrell wants to buy bagels and cream cheese for his 16 coworkers at the office. He expects that each worker will eat $1\frac{1}{2}$ bagels and 2 servings of cream cheese. The cream cheese comes in 4-serving containers. How many bagels and containers of cream cheese will he need?

1. _____

2. To get into her tree house, Annabeth rests a ladder against the tree. The top of the ladder is 13 feet above the ground. The base of the ladder is 3 from the tree. What is the slope of the ladder?

2. _____

3. Mrs. Potts can make $2\frac{1}{2}$ dozen ravioli in 30 minutes. Write and solve a direct variation equation to find how many ravioli she can expect to make in 2 hours and 30 minutes.

3. _____

4. Store A is offering two tubes of lip gloss for \$7. The costs for lip gloss at Store B are shown in the table. Assume the cost for the lip gloss varies directly with the number of tubes. At which store does the lip gloss cost more? Explain.

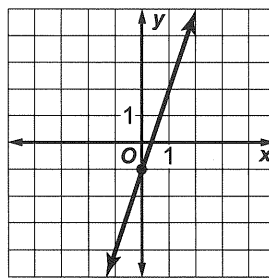
4. _____

Number of Tubes	3	5	7
Cost (\$)	12	20	28

5. State the slope and y -intercept for the graph of the equation $7x + y = 3$.

5. _____

6. Write an equation in slope-intercept form for the graph of the line shown.



6. _____

7. An eagle is flying at a height of 275 feet and climbing at a rate of 65 feet per second. The equation for the height of the bird y is $y = 275 + 65x$, where x is the number of seconds in flight. What do the slope and y -intercept represent?

7. _____

8. State the x - and y -intercepts for the graph of $2y + 3x = -18$.

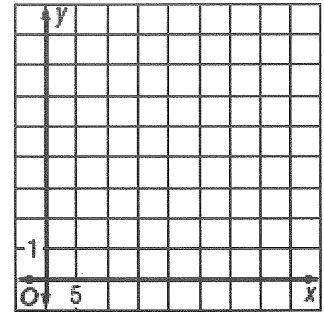
8. _____

9. The table shows the items and their individual prices that Amy bought for her party. Altogether, she spent \$18. This is represented by the function $2x + 3y = 18$.

	Streamers	Balloons
Cost (\$)	2	3
Amount Bought	x	y

a. Graph the function.

9a.



b. Interpret the x - and y -intercepts.

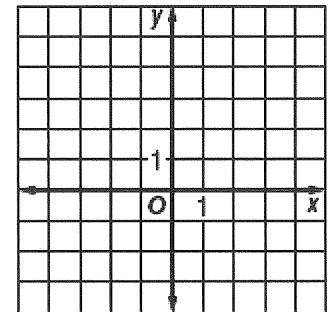
9b. _____

10. Solve the system of equations by graphing.

$$y = -4x + 3$$

$$-x + y = -2$$

10. _____



11. Cooghan asked his 19 classmates whether they were right- or left-handed. There were 5 more right-handed classmates than left-handed classmates.

a. Write a system of equations that can be used to find out how many classmates were right- or left-handed.

11a. _____

b. Solve the system.

11b. _____

12. Gwen bought a total of 35 pieces of licorice. She bought 4 times as many red pieces as she did black pieces.

a. Write a system of equations that represents the number of pieces of each kind of licorice that Gwen bought.

12a. _____

b. Solve the system.

12b. _____

c. Interpret the solution.

12c. _____

For Exercises 1-5, consider the following situation.

Marylou buys bagels for a number of office staff each day. Each bagel costs \$1.75.

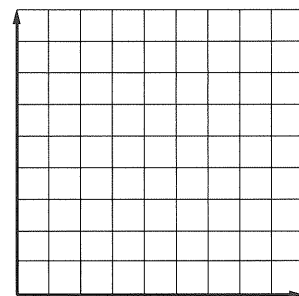
1. Write a function to represent the situation.
2. Make a function table to find the total cost if 3, 5, 7, or 9 office workers want bagels.

1. _____

2.

3. Graph the function.

3.



4. State the domain and range of the function.

4. _____

5. Is the function continuous or discrete? Explain.

5. _____

For Exercises 6 and 7, find each function value.

6. $f(7)$ if $f(x) = -3x + 2$.

6. _____

7. $f(-8)$ if $f(x) = 4x - 5$.

7. _____

8. A cube has a side length of s inches. The surface area of a cube is represented by the expression $6s^2$. The surface area of a cube is a function of the side length. Does this situation represent a linear or nonlinear function? Explain.

8. _____

For Exercises 9-11, consider the following situation.

The total cost of renting a lawn mower from Lawns Inc. is represented by the function $y = 10x + 15$, where x represents the number of hours and y represents the total cost. The cost of renting a lawn mower from Green Lawn is shown in the table.

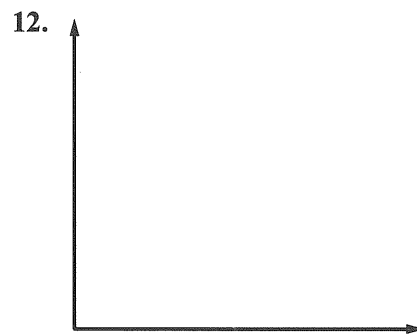
Number of Hours	Cost (\$)
2	38
3	47
4	56
5	65

9. Compare the functions' rates of change.
10. Find and interpret the initial value of renting from Green Lawn.
11. Which company should you use if you rent the lawn mower for 6 hours?
12. Sketch a qualitative graph that represents a cup of soup quickly cooling down.

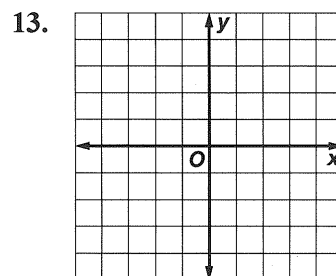
9. _____

10. _____

11. _____

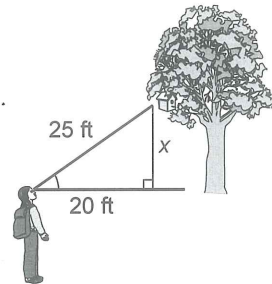


13. Graph $y = -3x^2 + 2$.



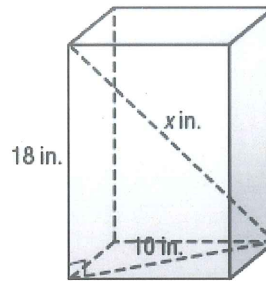
For Exercises 1 and 2, write and solve an equation to find each missing length. Round to the nearest tenth if necessary.

1. An observer is standing 20 feet from a tree with a hanging birdhouse. She is looking at the birdhouse. How far from the ground is the birdhouse? Round to the nearest tenth if necessary.



1. _____

2. Kenneth wants to wrap a collapsible fishing rod in the box shown at the right. Find the length of the diagonal of the box. Round to the nearest tenth if necessary.



2. _____

For Exercises 3 and 4, find the distance between each pair of points with the given coordinates. Round to the nearest tenth if necessary.

3. $(4.25, 5.5), (3.5, 0)$

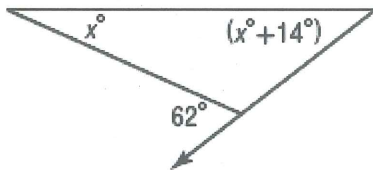
3. _____

4. $(-2, 4), (-5, -2)$

4. _____

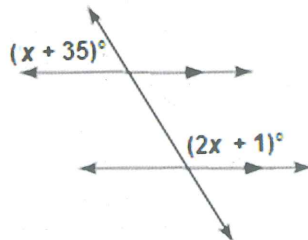
Find the value of x in each figure.

5.



5. _____

6.



6. _____

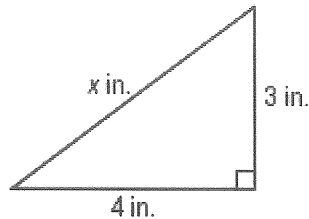
7. A shelf is in the shape of a triangle. Find the angles of the triangle if the measures of the angles are in the ratio $x : x : 4x$.

7. _____

8. What is true about angles in an equilateral triangle?

8. _____

9. What is the perimeter of the triangle?



9. _____

10. Find the measure of an exterior angle of a regular decagon.

10. _____

11. Find the sum of the measures of the interior angles of a 50-gon.

11. _____

12. The side view of a house (the "side elevation") is often in the shape of a pentagon. If the angle at the roof is 150° and there are two other angles of 90° , what is the sum of the measures of the other two angles?

12. _____

13. A triangle has side lengths of 10 inches, 24 inches, and 26 inches. Is the triangle a right triangle? Explain.

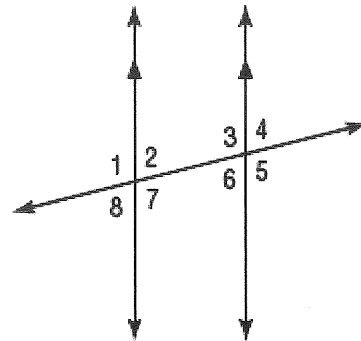
13. _____

14. Use the proof to find the missing reason.

Given: two parallel lines cut by a transversal,
 $m\angle 5 = 4x$, and $m\angle 7 = 96^\circ$

Prove: $x = 24$

Proof:



Statements

1. $m\angle 5 = 4x$, $m\angle 7 = 96^\circ$
2. $m\angle 5 = m\angle 7$
3. $4x = 96$
4. $x = 24$

Reasons

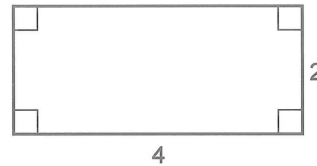
- Given
?
Substitution
Division Property of Equality

14. _____

1. The floors of houses in Japan are traditionally covered by tatami. Tatami are rectangular-shaped straw mats that measure about 6 feet by 3 feet. If the width of the room is 9 feet and the area of the room is 216 square feet, how many tatami are needed to cover the floor? Use the *draw a diagram* strategy.

1. _____

2. Determine whether the pair of polygons is similar using properties of similar polygons. Explain your reasoning.



2. _____

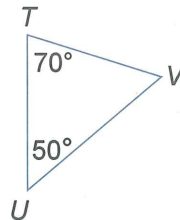
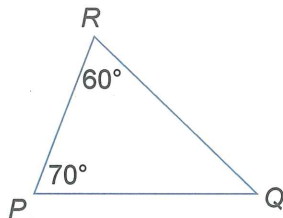
3. A statue casts a shadow 25 feet long. A boy standing next to the statue is 4.5 feet tall and casts a shadow that is 3.6 feet long. How tall is the statue?

3. _____

4. The length of a rectangle is 45 inches and the width is 8 inches. A similar rectangle has a width of 24 inches. What is the perimeter of the second rectangle?

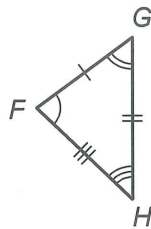
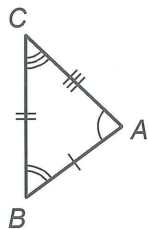
4. _____

5. Determine whether the triangles are similar. If so, write a similarity statement.



5. _____

6. The triangles below are congruent.

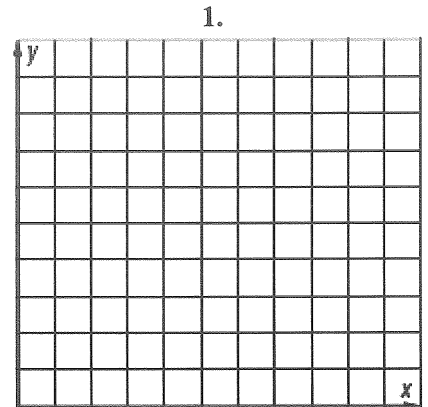


Write congruency statements comparing the corresponding parts.

6. _____

For Exercises 1 – 5, use the table below. The table shows the time spent listening to the radio by a group of people.

Age (years)	Listened to Radio per Week (h)
10	2
10	3
15	2
15	1
20	4
25	3
30	3
30	7
35	7
40	7



- Construct a scatter plot of the data.
- Interpret the scatter plot based on the shape of the distribution. 2. _____
- Draw and assess a line that seems to best represent the data on the scatter plot created for Exercise 1. 3. _____
- Write an equation in slope-intercept form for the line of best fit. 4. _____
- Use the equation for the line of best fit found in Exercise 4 to make a conjecture about the number of hours a 60-year-old would spend listening to the radio. 5. _____

For Exercises 6 and 7, use the table below. The table shows the heights of children at a day care center.

Child's Height (cm)					
85	59	82	78	63	83
90	88	71	74	68	59

- Find the five-number summary of the set of data. 6. _____



- Construct a box plot of the data. 7. _____

8. A teacher surveyed the students in the cafeteria and found that 30 males like bowling while 15 do not like bowling. There were 40 females surveyed and 20 of them do not like bowling.

a. Complete the two-way table summarizing the data.

8a, b.	Likes Bowling	Does Not Like Bowling	Total
Males			
Females			
Total			

b. Find the relative frequencies of students by columns. Round to the nearest hundredth if necessary. Write the answer in the table.

c. Interpret the relative frequencies of students by rows.

8c. _____

d. Does the data support the statement below? Justify your reasoning.

8d. _____

Girls like bowling more than boys.

For Exercises 9 – 12, use the table of quiz scores shown at the right.

Quiz Scores, Period 3					
43	50	37	39	42	49
36	35	50	48	42	40

9. Find the mean of the data. Round to the nearest tenth.

9. _____

10. Find the mean absolute deviation for the data set. Round to the nearest tenth.

10. _____

11. Describe what the mean absolute deviation represents.

11. _____

12. The standard deviation of quiz scores is 5.3. Describe the quiz scores that are within one standard deviation of the mean.

12. _____

13. Explain what distribution of a data means.

13. _____