

# Summer Math Packet

Manchester Public Schools

For Seventh Grade  
Students Going into Eighth Grade  
Algebra

2017



Name: \_\_\_\_\_

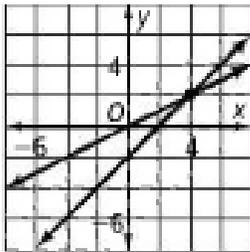
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**Solve each of the following:**

1. Sophia had \$50 she put into a savings account. If she saves \$15 per week for one year, how much will she have saved altogether?

2. Give the domain of the relation:  
 $\{(2, -3), (-1, 0), (0,4), (-1,5),(4,2)\}$

3. Name the ordered pair that is the solution of the system of equations graphed below.



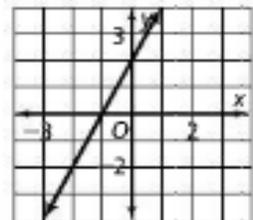
4. Write an expression which represents the phrase  
 "four subtracted from the quotient of x and 3".

5. Write an equation which represents the phrase  
 "six more than twice a number is 72"

6. What is  $23.7 \times 10^4$  written in standard notation?

7. Juan and his family went on vacation. They ate dinner at a restaurant one evening and the total for the meal came to \$55.73. If sales tax 6.35 % what is the total cost of the meal, not including tip?

8. Complete the table of values for the points that lie on the graph of the line:



x	-3	-2	0	1
y				

**Solve each of the following:**

<p>9. A jewelry store marks up the price of a topaz ring 215%. The store paid \$70 for the ring. For how much is the store selling the ring?</p>	<p>10. What is the solution of <math>-3p + 4 &lt; 22</math>?</p>
<p>11. Cathy ran for 30 min at a rate of 5.5 mi/h. Then she ran for 15 min at a rate of 6 mi/h. How many miles did she run in all?</p>	<p>12. A 6 ft-tall man casts a shadow that is 9 ft long. At the same time, a tree nearby casts a 48 ft shadow. How tall is the tree?</p>
<p>13. There are <math>3\frac{3}{4}</math> c of flour, <math>1\frac{1}{2}</math> c of sugar, <math>\frac{2}{3}</math> c of brown sugar, and <math>\frac{1}{4}</math> c of oil in a cake mix. How many cups of ingredients are there in all?</p>	<p>14. The formula <math>F = \frac{9}{5}C + 32</math> converts temperatures in degrees Celsius C to temperatures in degrees Fahrenheit F. What is <math>35^\circ</math> C in degrees Fahrenheit?</p>
<p>15. A bowling ball is traveling at 15 mi/h when it hits the pins. How fast is the bowling ball traveling in feet per second? (hint: 1 mi = 5280 ft)</p>	<p>16. Your grades on four exams are 78, 85, 97, and 92. What grade do you need on the next exam to have an average of 90 on the five exams?</p>

**Solve each of the following:**

<p>17. The number of points scored by a basketball team during the first 8 games of the season are 65, 58, 72, 74, 82, 67, 75, 71</p> <p>How much will their average game score increase by if the team scores 93 points in the next game?</p>	<p>18. The Martins keep goats and chickens on their farm. If there are 23 animals with a total of 74 legs, how many of each type of animal are there?</p>
<p>19. Solve for <math>y</math>: <math>2x + 3y = 12</math></p>	<p>20. Mrs. Ellsworth wants to put a fence around her square garden. The garden has an area of 25 square feet. How much fencing material is needed to fence in the garden?</p>

**Evaluate each of the following without a calculator:**

<p>21.) <math>40 - 6^2 \div 4 \cdot 3</math></p>	<p>22.) <math>6(4 - 2)^2 - 3(8 - 2)</math></p>
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**Evaluate the following expressions, without a calculator, given the values:**

$$a = -\frac{1}{2}, b = 4, c = 5, d = -3$$

<p>23.) <math>\frac{ab}{c^2 - d}</math></p>	<p>24.) <math>6(2a + 3b) + 5(4a - 3b)</math></p>
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**Simplify each of the following:**

<p>25.) <math>3x - 5y + 8 - 2x + 7y</math></p>	<p>26.) <math>6(2x - 3) - 2(5x + 8)</math></p>
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Solve each of the following equations:

33.)  $-14 = h - 5$

34.)  $d - (-3) = 8$

35.)  $5x + 4 = 22$

36.)  $5x + 3x - 6 = 26$

37.)  $5x + 3 = 2x + 15$

38.)  $5(2x - 6) = 7x - 3$

39.)  $\frac{9x - 3}{2} = \frac{7x + 5}{4}$

40.)  $\frac{3x - 2}{3} = \frac{4}{5}$

**PROBLEM SOLVING:**

1. Santana and Garrett started writing blogs at the same time. The number of subscribers  $S$  to Santana’s blog can be modeled by the function  $S = 12m + 24$ , where  $m$  is the number of months since she started the blog. Data for the number of subscribers to Garrett’s blog are shown in the table below:

Garrett’s Blog

Number of Months	Number of Subscribers
0	84
1	90
2	96
3	102
4	108

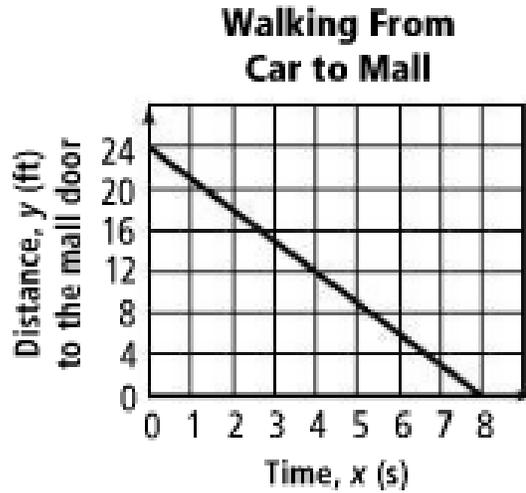
- a. Assume the growth in each blog’s subscribers continues to follow the established pattern. Will Santana and Garrett ever have the same number of subscribers? If so, how many?
- b. Eventually Santana will have more subscribers than Garrett. When will this occur? Write a mathematical argument to explain how you know.

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2. The graph below shows the time it takes Sam to get from his car to the mall door.



- a. How far was Sam's car parked from the door of the mall? \_\_\_\_\_
- b. How long did it take Sam to reach the door of the mall? \_\_\_\_\_
- c. How far from the door was Sam at 4 seconds? \_\_\_\_\_
- d. How fast was Sam walking in ft/sec? \_\_\_\_\_

3. Margarita parked 16 ft from the door and walked at a rate of 2 ft/sec.

- a. Draw the graph that shows the time that it takes Margarita to get from her car to the mall door on the graph above.
- b. If Margarita and Sam got out of their cars at the same time, who arrived at the mall door first? Explain your response.