

# Newtown Middle School Summer Math Problems Students Entering 7th Grade

Dear Parents and Students,

Summer is a wonderful opportunity for students to build their math skills and prepare themselves for their next mathematics course. Students are encouraged to complete 3-5 problems each week and then review their solutions with a parent, guardian, or another capable family member. All problems are aligned to the Connecticut Core Standards for Mathematics.

While you are reviewing the problems, think about the concept and not just the process. Show your thinking by writing out your work. Below are some questions that you should ask yourself:

1. Does my answer make sense?
2. Are there other ways to solve this problem?
3. Why does my mathematics procedure work?
4. How is this used in the real world?

In addition to these problems, please practice your skills by exploring the following websites:

Math Tutorials:

[www.kahnacademy.com](http://www.kahnacademy.com)

<http://patrickjmt.com/>

<http://www.artofproblemsolving.com/videos>

Practice Problems & Games:

<https://www.tenmarks.com/consumer/signup>

<http://www.arcademics.com/>

<http://www.hoodamath.com/index.html>

<http://www.pbslearningmedia.org/collection/mathcore/>

<http://www.math-play.com/Middle-School-Math-Games.html>

Have a wonderful summer!

Sincerely,

The Newtown Middle School Mathematics Department

Newtown Middle School  
Summer Math Packet  
Incoming 7<sup>th</sup> Grade Students

*Directions:* Please complete the following examples without the use of a calculator. You may want to use a separate sheet of scrap paper. Use the attached answer key to check your work.

1. The ratio of boys to girls in a class is 2:3.

What fraction of the students are girls?

If there are 80 boys, how many students are there altogether?

2. For every five blue marbles, there are 2 green marbles. Write this ratio in three different ways.
3. List all of the factors of 16.
4. List all of the factors of 36.
5. Find the prime factorization of 50.
6. Find the prime factorization of 72.
7. What is the greatest common factor of 24 and 48?



14. Find each sum:

$$\frac{2}{3} + \frac{1}{9}$$

$$\frac{3}{4} + 1\frac{1}{2}$$

$$2\frac{1}{6} + 3\frac{7}{9}$$

$$3.451 + 6.235$$

$$0.34 + 8.2$$

$$5.982 + 4.39$$

15. Find each difference:

$$\frac{7}{10} - \frac{2}{5}$$

$$3\frac{6}{9} - \frac{1}{3}$$

$$7\frac{1}{6} - 2\frac{3}{4}$$

$$3.23 - 1.12$$

$$9.72 - 6.5$$

$$6.4 - 3.71$$

16. Find each product.

$$\frac{2}{3} \times \frac{1}{4}$$

$$\frac{3}{5} \times 10$$

$$2\frac{1}{3} \times \frac{3}{4}$$

$$3\frac{2}{5} \times 1\frac{1}{3}$$

$$4.2 \times 3.6$$

$$0.33 \times 4.1$$

17. Find each quotient

$$\frac{1}{6} \div \frac{2}{3}$$

$$2\frac{1}{5} \div \frac{3}{4}$$

$$1\frac{1}{4} \div 2\frac{2}{5}$$

$$45.6 \div 2$$

$$40.8 \div 12$$

$$504 \div 21$$

18. 3 people share  $\frac{1}{2}$  pound of chocolate. How much of a pound of chocolate does each person get?

19. Julie has  $\frac{1}{2}$  yard of fabric to make book covers. Each book is made from  $\frac{1}{8}$  yard of fabric. How many book covers can Julie make?

20. How many  $\frac{3}{4}$ -cup servings are in  $\frac{2}{3}$  of a cup of yogurt?

21. Plot each point on the number line below:

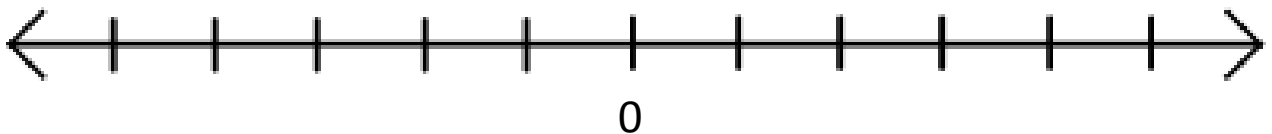
3

-3

-5

2.5

-0.5



22. Use an integer to represent 15 feet below sea level.

23. Use an integer to represent 15 feet above sea level.

24. The record low temperature for Maine is  $-48^{\circ}\text{F}$ . The record low temperature for Massachusetts is  $-35^{\circ}\text{F}$ . Which state had the coldest record low temperature? Show or explain how you found your answer.

25. Which number has the greatest absolute value?

13, -24, -35, 26

26. A whale is swimming at a depth of -35 feet. A submarine is located at a depth of -50 feet. Sea level is 0 feet. Which is deeper, the whale or the submarine? Show or explain how you know your answer is correct.

27. Find the value of each of the following expressions:

$$2 + 3 \times 4$$

$$5 \times 6 + 2 \times 3$$

$$8 - 6 + 2$$

$$3^2 + 4 \times 5$$

$$8 - 2^3 + 4^2$$

$$7^2 - 24 \div 3 + 25$$

28. Write an algebraic expression for each of the following:

7 less than a number

Twice a number

3 more than  $h$

The product of 8 and a number

The sum of  $m$  and 5

The difference of 9 and a number

The quotient of  $p$  and 3

2 more than three times a number

6 less than the quotient of 2 and  $w$

3 times the sum of a number and 6

29. Evaluate each of the following expressions when  $x = 2$  and  $y = 4$

$$4x$$

$$2x - 1$$

$$3y$$

$$6 - y$$

$$3x + 2y$$



30. Evaluate the following expression when  $a = 3$ ,  $b = 2$ , and  $c = 1$

$$\frac{ab-c}{5c}$$

31. Evaluate the following expression when  $n = \frac{1}{2}$

$$2(4n + 1) - 6n$$

32. The expression  $c + 0.08c$  can be used to find the total cost of an item with 8% sales tax, where  $c$  is the pre-tax cost of the item. Use the expression to find the total cost of an item that cost \$30.

33. The perimeter of a parallelogram is found using the formula  $p = 2l + 2w$ . What is the perimeter of a rectangular picture frame with dimensions of 6.5 inches by 4.5 inches?

34. Stephanie has six more than three as many crayons as Beth. Write an algebraic expression to represent the number of crayons that Stephanie has.

35. An amusement park charges \$8 to enter and \$0.75 per ticket. Write an algebraic expression to represent the total amount spent.

36. Ryan has a summer job doing yard work. He is paid \$20 per hour and a \$8 bonus when he completes the yard. He was paid \$88 for completing one yard. Write an equation to represent how long it took him to complete the yard work.

37. Describe a problem situation that can be solved using the equation  $8c + 2 = 26$ ; where  $c$  represents the cost of an item

38. John earned \$7.00 mowing the lawn on Saturday. He earned more money on Sunday. Write an expression that shows the amount of money John has earned.

39. Are the expressions equivalent? How do you know?

$$4p + 12 \quad 4(p+3) \quad 3p + 12 + p \quad 7 + 2p + p + 5 + p$$

40. Jennifer gets paid \$20 for babysitting. She spends \$1.99 on a candy bar and \$6.50 on lunch. Write and solve an equation to show how much money Jennifer has left.

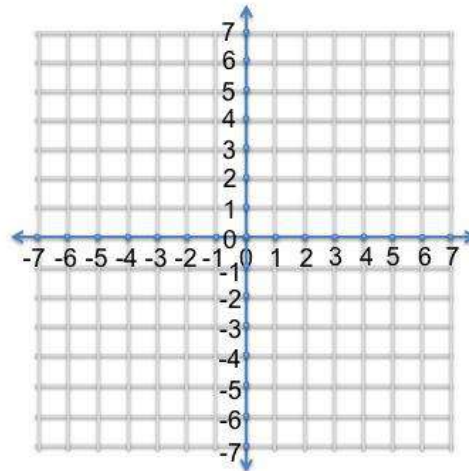
41. Trevor had 48 marbles.  $\frac{3}{4}$  of them are blue. How many blue marbles does Trevor have?

42. Use the following coordinates to draw polygons on the coordinate plane below.

A (3, -5)

B (2, 4)

C (-1, -1)



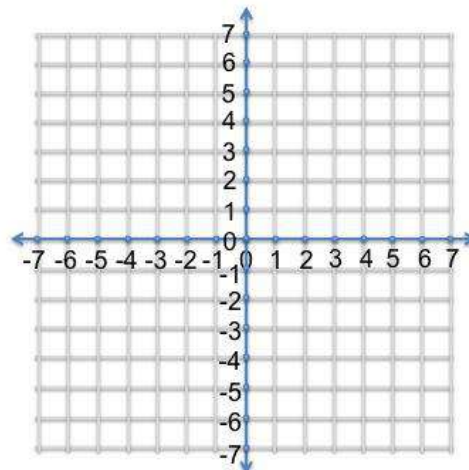
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A (0, 5)

B (-2, 0)

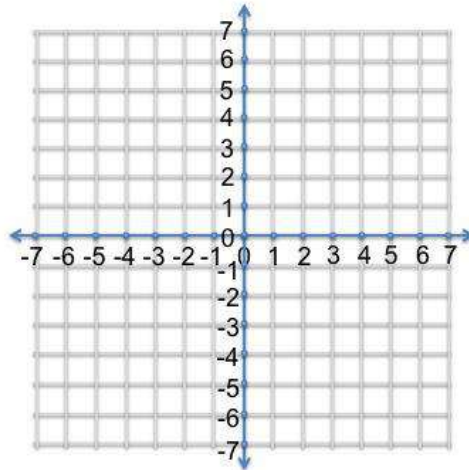
C (-1, -4)

D (2, 1)

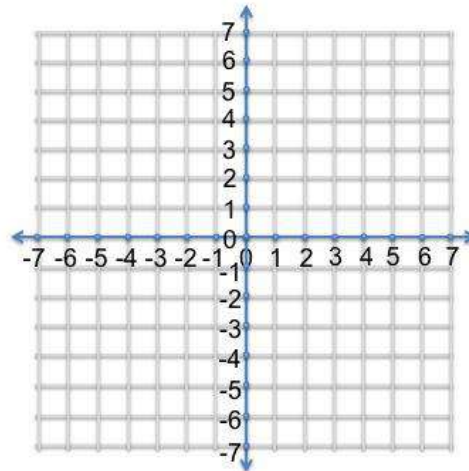


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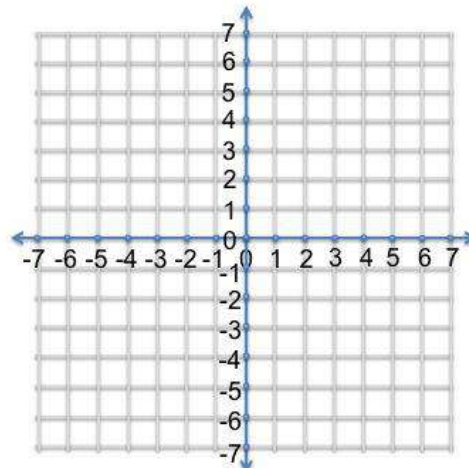
43. On a coordinate plane, a line segment is drawn between Point A  $(-3, 4)$  and Point B  $(3, 4)$ . What are the coordinates of the point on the line segment that is half way between Points A and B? Show or explain how you found your answer. You may use the coordinate plane below to help you find the answer.



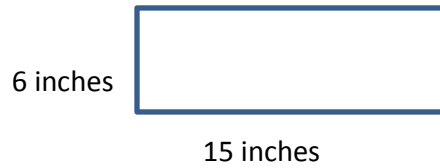
44. If the point  $(2, -3)$  is reflected across the x-axis, what are the coordinates of the new point? Show or explain how you found your answer. You may use the coordinate plane below to help you find the answer.



45. The coordinates  $(-3, 5)$ ,  $(2, -3)$ ,  $(-3, -3)$ , and  $(2, 5)$  are the vertices of a rectangle that is graphed on a coordinate plane. What is the length and width of the rectangle? Show or explain how you found your answer. You may use the coordinate plane below to help you find the answer.

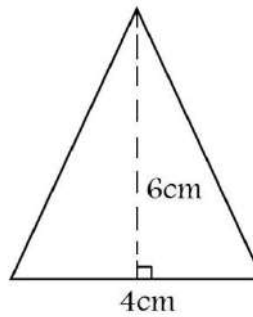


46. Find the perimeter and the area of the rectangle below.

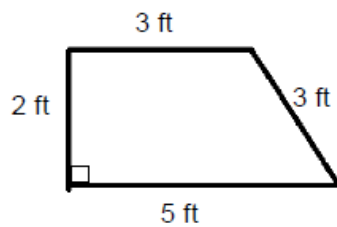


47. What is the area of triangle with base 7 yd. and height 11 yd?

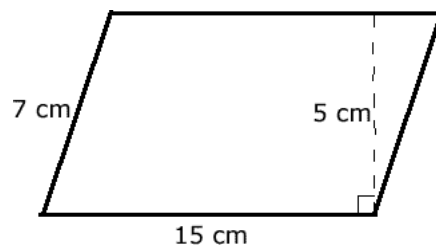
48. Find the area of the triangle below.



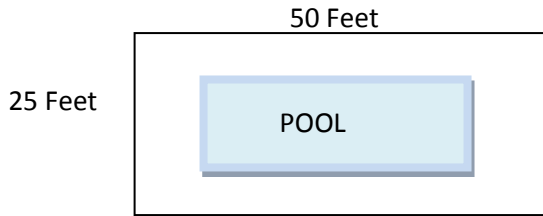
49. What is the area of the polygon below? Show or explain how you found your answer



50. What is the area of the polygon below? Show or explain how you found your answer.



51. Faith is tiling the patio around her pool. The area of the pool is 960 square feet. What is the area of the patio around the pool? Show or explain how you found your answer.



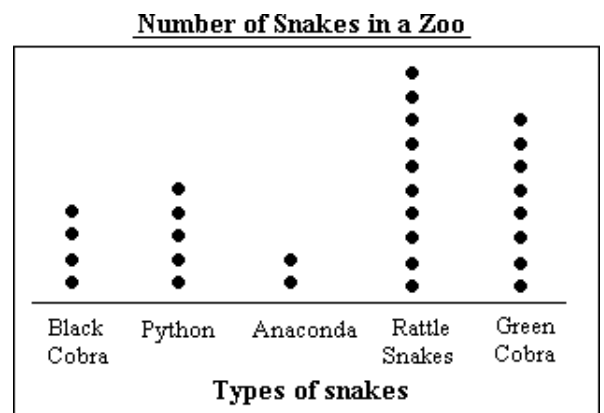
52. A toy store needs boxes that measure 10 centimeters long by 7 centimeters wide by 6 centimeters tall.  
 a. Draw a net below for a box with these dimensions.

b. What is the surface area of each box?

53. Use the dot plot below to answer the questions.

a. What is the total number of snakes at the zoo?

b. What is the mean number of snakes?



54. Find the mean, median, mode, and range of the following: 3, 7, 2, 5, 2, 4, 6, 2, 4, 2, 6, 3, 4, 1, 5, 2, 2, 6

55.

<b>Math Test Scores</b>				
Below 60%	60%-69%	70%-79%	80%-89%	90%-100%
3	4	5	15	6

How many students scored 70% or better on the math test?

56.

<b>Age Group</b>	<b>No. of People</b>
45-50	2
51-55	1
56-60	2
61-65	4
66-70	2
71-75	2

What is the number of people in age group 51-65 in the given table?

57. Maya has \$3.11, Samantha has \$8.81, and Tommy has \$7.95. What's a good estimate of the total amount of money they have together?

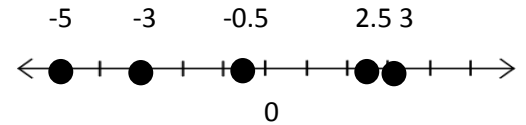
58. Heather reads 11.3 pages of her book each day. Estimate the total number of pages she reads in 30 days.

59. There are 70 boys in the gym. Thirty-nine of them are wearing khaki shorts. What fraction is a good estimate of how many boys are wearing khaki shorts?

60. It costs \$1.50 per pound to ship a package. Matt's package weighs between 7 and 8 pounds. Estimate the amount of money Matt will have to pay to ship his package.

## Answer Key

1.  $\frac{3}{5}, 200$
2. 5 to 2,  $5:2, \frac{5}{2}$
3. 1, 2, 4, 8, 16
4. 1, 2, 3, 4, 6, 9, 12, 18, 36
5.  $2 \times 5^2$
6.  $2^3 \times 9^2$
7. 24
8. 9
9. 60
10. 12
11. 60
12. 13.082
13. 264
  
14.  $\frac{7}{9}$        $2\frac{1}{4}$   
 $5\frac{17}{18}$       9.686  
 8.54      10.372
  
15.  $\frac{3}{10}$        $3\frac{1}{3}$   
 $4\frac{5}{12}$       2.11  
 3.22      2.69
  
16.  $\frac{1}{6}$       6  
 $1\frac{3}{4}$        $4\frac{8}{15}$   
 15.12      1.353
  
17.  $\frac{1}{4}$        $2\frac{14}{15}$   
 $\frac{25}{48}$       22.8  
 3.4      24
  
18.  $\frac{1}{6}$  lb
19. 4 book covers
20.  $\frac{8}{9}$  of a serving



- 21.
22. -15
23. 15
24. Maine
25. -35
26. Submarine
  
27. 14  
 36  
 4  
 29  
 16  
 66
  
28.  $n - 7$   
 $2n$   
 $h + 3$   
 $8n$   
 $m + 5$   
 $9 - n$   
 $p \div 3$   
 $3n + 2$   
 $2 \div w - 6$   
 $3(n + 6)$
  
29. 8  
 3  
 12  
 2  
 14
  
30. 1
31. 3
32. \$32.40
33. 22 inches
34.  $3c + 6$ ;  $c$  = number of crayons Beth has
35.  $8 + 0.75t$ ;  $t$  = number of tickets
36.  $20h + 8 = 88$ ;  $h$  = number of hours
37. 8 pencils that cost  $c$  each, plus a candy bar that costs \$2 equals a total of \$26

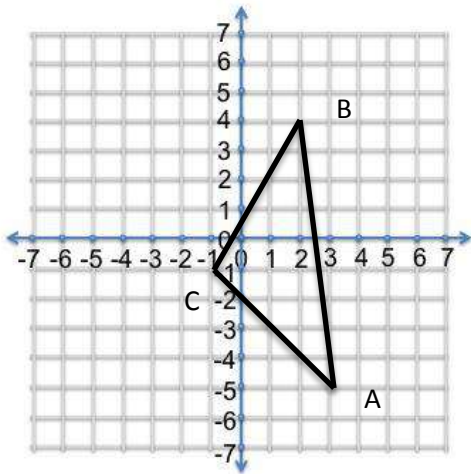
38.  $7 + m$

39. Yes, they are all equivalent using the distributive property or combining like terms

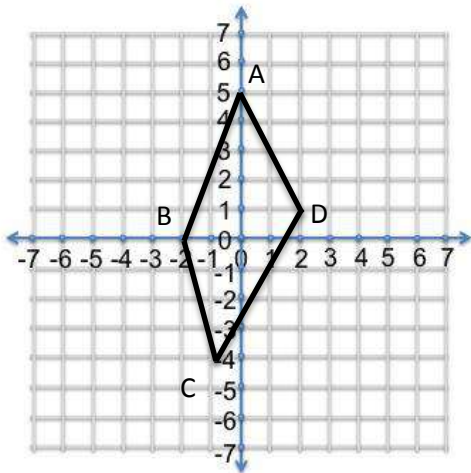
40.  $1.99 + 6.50 + x = 20$  or  $20 - 1.99 - 6.50 = x$   
 $x =$  amount of money left over

41. 36 blue marbles

42.



Triangle



Quadrilateral

43.  $(0, 4)$

44.  $(2, 3)$

45. 5 units by 8 units

46. Area =  $90 \text{ in}^2$   
Perimeter = 42 inches

47.  $38.5 \text{ yd}^2$

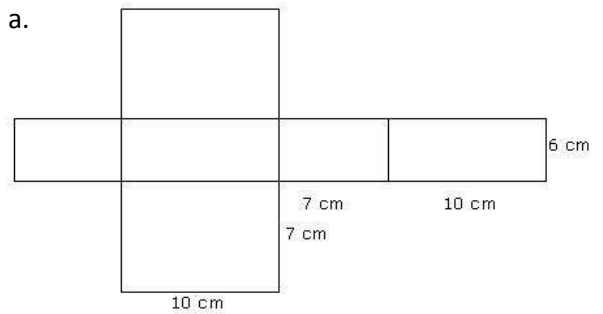
48.  $12 \text{ cm}^2$

49.  $8 \text{ ft}^2$

50.  $75 \text{ cm}^2$

51. 290 square feet

52. a.



b.  $344 \text{ cm}^2$

53. a. 29 snakes  
b. 5.8 snakes

54. mean =  $3.\bar{6}$   
median = 3.5  
mode = 2

55. 26 students

56. 7 people

57. \$20

58. 300 or 330 pages

59.  $\frac{4}{7}$

60. Between \$10.50 and \$12