Summer Math Packet for Rising 7th Graders

Dear Rising 7th Grade,

Congratulations on finishing 6th Grade - we hope you are looking forward to a wonderful summer!

Among many other goals we have for you next year, we hope to build upon and extend your progress in mathematics so that you will be confidently prepared to take Algebra in 8th Grade. With this in mind, we would ask that you complete this math packet over the summer in an effort to keep your skills sharp so that you can hit the ground running in September.

This packet contains 100 questions and is broken into 5 different sections that correspond to the Massachusetts Mathematics Curriculum Frameworks that you studied in 6th Grade:

1. Ratios and Proportional Relationships
2. The Number System
3. Expressions and Equations
4. Geometry
5. Statistics and Probability

It is our hope that you work on this packet gradually over the course of the summer, rather than waiting until the end of August or doing it all at the beginning of July. You can break it up by section or by numbers of questions if you wish, i.e. 1 section every 2 weeks, 10 questions per week, etc. If broken up and done gradually, the packet should be extremely manageable. You do not want to find yourself in the last week of summer scrambling to finish 100 problems so please plan accordingly.

Once completed, Edulastic will release your scores to you so that you may see how you did.

Completed packets are due the first day of school and they will count toward your first Trimester grade. Additionally, there will be a quiz on this material after students have had a chance to ask questions about anything they are still confused about. You may use additional paper to work on problems if you do not have enough space within the packet.

Please do your ***best*** work.

We hope you have a relaxing and safe summer and we look forward to meeting all of you in the fall! ☺

Sincerely,
The Gates 7th Grade Math Teachers

Ratios and Proportional Relationships

1. Josh scored 3 goals out of 10 attempts in today's soccer game. What percent of the time did Josh make a goal?

   A. 30%
   B. $3\frac{1}{3}$%
   C. 10%
   D. 3%

2. Gail is competing in a checkers tournament. She won 12 out of a total of 20 games. What is her ratio of wins to losses?

   A. 3 : 5
   B. 3 : 2
   C. 5 : 3
   D. 2 : 3

3. Henry bought 8.3 meters of string. How many centimeters of string did he buy?

   A. 8,300 cm
   B. 830 cm
   C. 83 cm
   D. 0.83 cm

4. Mr. Ford drove 224 miles in 4 hours. At what rate of speed did he drive?

   Answer: _____

5. Mr. Liston bought lunch for $12.80. He gave the waiter a tip of 15%. How much money did the waiter receive?

   A. $1.28
   B. $1.92
   C. $2.56
   D. $3.84

6. Jordan drank 36 ounces of water today. How many cups of water did he drink?

   A. 4.5 cups
   B. 9 cups
   C. 18 cups
   D. 288 cups

7. Devin wants to buy a book that costs $28.99. He has a coupon for 30% off the price of the book. If Devin uses his coupon, about how much money will he save?

   A. $0.30
   B. $1
   C. $9
   D. $41

8. The table shows the ratio of hours to cakes at a bakery.

Hours	Cakes Baked
1	
3	48
6	96
8	128

   What number is missing in the table?

   Answer: _____

9. Maria usually pays $3.10 per pound for her favorite granola. Which of the answers below is a better deal?

   A. 2 pounds for $6.49
   B. 3 pounds for $10
   C. 5 pounds for $14.75
   D. 8 pounds for $28

10. Ten fence posts cost $92. Mr. Bell spent $276 for fence posts. How many did he buy?

   Answer: _____

11. The ratio of peanuts to cashews in a mix is 5 to 7. How many ounces of peanuts are there in a 48-ounce jar of the mix?

Answer: _____

12. Look at the ratio table below. If the temperature continues to rise at the same rate, what will be the temperature at 11:00 A.M.?

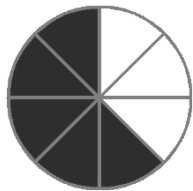| Time (A.M.)	7	8	9	10
Temperature	55°	58°	61°	64°

A. 66°

B. 67°

C. 68°

D. 70°

13. Jake earned $62.50 in 5 hours. At the same rate, how much will he earn in 8 hours?

Answer: _____

14. The ratio of cats to dogs at the animal shelter is 3 to 5. There are 27 cats. How many dogs are there?

Answer: _____

15. What percent of the circle is NOT shaded?

A. 12.5%

B. 25%

C. 37.5%

D. 62.5%

The Number System – Operations

16. Compute: $0.478 - 0.03$

Answer: _____

17. Alexa needs 20.5 pints of blueberries to make jam. She picked 7.75 pints on Friday and 4.25 pints on Saturday. How many more pints does she need to pick?

A. 8.5 pints

B. 8.25 pints

C. 11.5 pints

D. 11.75 pints

18. Three families brought 7 pounds of oranges back from vacation in Florida to share. How many pounds of oranges did each family get?

A. $2\frac{3}{5}$ pounds

B. $2\frac{1}{3}$ pounds

C. $3\frac{2}{5}$ pounds

D. $3\frac{2}{3}$ pounds

19. Mrs. Sanchez has 30.8 meters of satin trim for blankets. She needs 3.8 meters for each blanket. How many blankets can she make?

Answer: _____

20. A rake is priced at $28.49. Tax is $1.85. What is the total cost of the rake?

Answer: _____

21. Lunch costs $6.90. How much change will Hector get from $20.00?

Answer: _____

22. A garden is 896 square feet in area. It is 32 feet wide. How long is it?

Answer: _____

23. How far does a sailboat travel on a 3.5-hour cruise if its average speed is 18.6 mph?

A. 6.51 mi
B. 14.88 mi
C. 54.1 mi
D. 65.1 mi

24. Rob has $\frac{15}{16}$ pound of chocolates. He divides it into 5 equal portions. How much does each portion weigh?

A. $\frac{15}{16}$ lb
B. $\frac{1}{4}$ lb
C. $\frac{3}{16}$ lb
D. $\frac{1}{8}$ lb

25. If Mitch rides his bicycle at an average speed of 18 miles per hour, how long will it take him to cover 76.5 miles?

A. 1.38 hr
B. 4.25 hr
C. 13.78
D. 42.5 hr

26. Carla finds that she can make a small pillow from $\frac{3}{8}$ yard of fabric. How many pillows can she make from $4\frac{1}{2}$ yards of fabric?

A. $\frac{3}{8}$
B. $\frac{4}{3}$
C. 2
D. 12

27. A factory worker has 5,500 puzzles to pack into cartons that each hold 785 puzzles. How many puzzles will be left over after the last box is full?

A. 5
B. 6
C. 7
D. 8

28. Mary bought 8 pounds of granola at $3.10 a pound for a family hiking trip. How much did she spend altogether?

A. $12.40
B. $11.10
C. $248.00
D. $24.80

29. Flora is mailing 400 pairs of plastic sunglasses that each weighs 0.08 kg. How much will the entire shipment of sunglasses weigh?

Answer: _____

30. Upper Trail is 6.8 kilometers long. Lower trail is 7.25 kilometers long. How much longer is Lower Trail?

Answer: _____

31. How many $\frac{1}{4}$-cup servings can Laura make from $\frac{5}{8}$ cup of yogurt?

Answer: _____

32. Mandy is grocery shopping. In her cart are the following items:
- 5.1 pounds of apples that cost $0.79 a pound
- 1.9 pounds of beans that cost $1.19 a pound
- a can of soup that costs $2.09
- a box of cereal that costs $3.59

What is her total bill?
Answer: _____

The Number System – Number Concepts

33. What is the least common multiple of 4 and 18?

    A. 2
    B. 12
    C. 36
    D. 72

34. What is the greatest common factor of 24 and 36?

    A. 2
    B. 6
    C. 12
    D. 72

35. Which expression is equal to $72 + 63$?

    A. $9(8 + 7)$
    B. $8(9 + 7)$
    C. $7(10 + 9)$
    D. $6(12 + 10)$

36. What number shows a temperature of 9° below zero?

Answer: _____

37. Emma's house is 492 feet above sea level. What number can be used to represent sea level?

Answer: _____

38. Which integer is less than –2?

    A. –6
    B. 0
    C. 2
    D. 6

39. What number is the opposite of –15?

Answer: _____

40. Tanya is building a tower with blocks that are 3 inches high. Val is building a tower with blocks that are 7 inches high. What is the shortest tower each can build if they want their towers to be the same height?

    A. 14 inches
    B. 21 inches
    C. 35 inches
    D. 42 inches

41. What is the absolute value of 8?

Answer: _____

42. Pat is making flower bouquets. She has 12 roses, 21 daisies, and 45 carnations. All of the bouquets must be exactly alike. What is the greatest number of bouquets Pat can make if she uses all the flowers?

    A. 3
    B. 4
    C. 5
    D. 7

43. Which statement is true?

    A. $-5 > -3$
    B. $1\frac{2}{3} < -1\frac{4}{7}$
    C. $-\frac{7}{8} < -\frac{3}{4}$
    D. $1 > \frac{10}{7}$

44. A point has a negative x value and a positive y value. In which Quadrant is it located?

    A. Quadrant I
    B. Quadrant II
    C. Quadrant III
    D. Quadrant IV

45. A point is reflected over the y – axis. The coordinates of the reflection are (–5, 6). What are the coordinates of the original point?

Answer: _____

46. Which statement is true about two ordered pairs that are the same except for the signs of the numbers?

A. Their points are reflections.
B. Their points are on the horizontal axis.
C. Their points are on the vertical axis.
D. Their points are in different quadrants.

Answer: _____

47. Sam charted the noon temperatures in six cities on his birthday, January 27.

City	Temperature °F
Boston	3°
Worcester	–12°
Springfield	10°
Amherst	–3°
Gloucester	–8°
Plymouth	6°

Write the temperatures in order from least to greatest.

Answer: _____

48. Which city's noon temperature was greater than the temperature in Gloucester, but less than the temperature in Boston?

Answer: _____

Expressions and Equations – Expressions

49. Which is equivalent to 5^3?

A. $3 \times 3 \times 3$
B. $3 \times 3 \times 3 \times 3 \times 3$
C. 5×3
D. $5 \times 5 \times 5$

50. Lupe's dog is 10 inches taller than Sarah's dog. The variable s stands for the height of Sarah's dog. Which expression stands for the height of Lupe's dog?

A. $10s$
B. $10 - s$
C. $s + 10$
D. $s - 10$

51. Mary baked a batch of cookies. She ate 3 cookies and then gave half of the remaining cookies to her friends. If c represents the number of cookies that Mary baked, which expression shows the number of cookies she gave to her friends?

A. $(c - 3) \div 2$
B. $(c - 2) \div 3$
C. $c \div 2 - 3$
D. $c - 3 \div 2$

52. What is the constant in the following expression:

$\frac{t}{5} - 3s + 9$

Answer: _____

53. What is the value of this expression when $t = 3$ and $r = 15$?

$$90 \div (10 \times t) + r$$

Answer: _____

54. Which is not equivalent to the following expression: $2 \times 2 \times 2 \times 4 \times 4$?

   A. 128
   B. 2^7
   C. $2^3 \times 4^2$
   D. $2^4 \times 3^2$

55. Which expression represents the phrase *5 times a number divided by 8*?

   A. $8n \div 5$
   B. $\frac{5}{8} + n$
   C. $\frac{5n}{8}$
   D. $5n \times 8$

56. Carl used 24 blocks to build a tower. Each block is a cube with side length 2 inches. Use the formula $V = s^3$ to find the volume of a cube. What is the volume of the tower?

Answer: _____

57. Which expression is equivalent to $18s - 27t$?

   A. $9 \times 2(s - t)$
   B. $9(2s - 3t)$
   C. $6(3s - 4t)$
   D. $6 \times 3(s - t)$

58. What is the exponential form of $4 \times 4 \times 4$?

   A. 4×3
   B. 4^3
   C. 3^4
   D. 64

59. What is the coefficient of y in the expression $(3y^2 + 9)5$

Answer: _____

60. Evaluate this expression for $x = 10$, $y = 4$, and $z = 2$.
$$(8y - 2)x \div (z + y)$$

   A. 1
   B. 10
   C. 50
   D. 154

61. What is the value of $4m + 2$ when $m = 8$?

   A. 14
   B. 34
   C. 40
   D. 50

62. A boxing ring is a square with 18 foot sides. Use the formula $A = s^2$. What is the area of the boxing ring?

Answer: _____

63. Simplify this expression.
$$3y + 6y + 8y$$

Answer: _____

64. Brittney is 4 years older than Dakota. The variable b stands for Brittney's age. Which expression stands for Dakota's age?

   A. $4b$
   B. $4 - b$
   C. $b + 4$
   D. $b - 4$

65. Which expression is equivalent to the following:
$$8y + 5x - 3y + 7 - 2x?$$

   A. $5y + 3x + 7$
   B. $11y - 3x + 7$
   C. $5y - 5x - 7$
   D. $11y + 7x - 7$

66. Simplify this expression for $x = 2$ and $y = 4$.

$$(y + 10x) \div 8 + y^2 - 5$$

Answer: _____

67. Find the surface area of a box that is 15 inches high, 20 inches wide, and 30 inches long. Use the formula $SA = 2 \times (lw + hw + lh)$.

Answer: _____

Expressions and Equations – Equations and Inequalities

68. Choose a value for k that makes this equation true.

$80 = 5k$

A. $k = 16$
B. $k = 75$
C. $k = 85$
D. $k = 400$

69. Chris swims every day at the gym. She can swim 2 miles in an hour. Let y equal the number of miles and x equal the total time in hours. Which equation shows how many miles Chris can swim in x hours?

A. $y = x + 1$
B. $y = 2x + 1$
C. $y = 2x$
D. $y = x - 2$

70. Graph the inequality $x < 2$ on this number line.
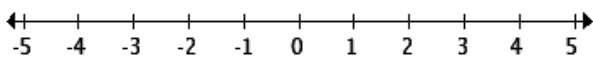
71. Choose the value for r that makes this equation true.

$$r - 6.7 = 9$$

A. $r = 15.7$
B. $r = 2.3$
C. $r = 3.7$
D. $r = 60.3$

72. Write an inequality for the following statement.
6 times a number plus 4 is greater than 50.

Answer: _____

73. At a factory, 450 bottles of ketchup are produced each hour. Which equation can be used to show the relationship between time in hours (h) and the number of bottles (b) of ketchup produced?

A. $450 \div h = b$
B. $450h = b$
C. $450 + b = h$
D. $450b = h$

74. To pass an exam, you need to get more than 60 points. Write an inequality that shows a score(s) greater than 60 points.

Answer: _____

75. Joshua had $860. He used $500 to pay his rent. Which equation can be used to find a, the amount he has left?

A. $a + \$500 = \$860$
B. $a + \$860 = \$500$
C. $\$860 + \$500 = a$
D. $\$500 - a = \$860$

76. Which value of x makes the inequality $x < -3$ true?

A. -4
B. -2
C. 0
D. 2

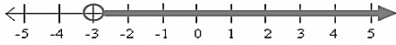**77.** Which equation represents *6 less than 2 times a number equals 4*?

A. $6 - 2n = 4$
B. $6 = 2n + 4$
C. $2n - 6 = 4$
D. $n - 6 = 2 \times 4$

78. How can you solve $23 = n - 9$?

    A. Add 9 to both sides.
    B. Subtract 9 from both sides.
    C. Add 23 to both sides.
    D. Subtract 23 from both sides.

79. How many solutions does the inequality shown on this number line have?

    A. an infinite number
    B. 15
    C. 9
    D. 1

80. The maximum weight a picture hook can hold is 10 pounds. Which inequality represents this situation?

    A. $w \leq 10$
    B. $w < 10$
    C. $w \geq 10$
    D. $w > 10$

81. Solve for p.
$$\frac{1}{6} + p = 2\frac{1}{2}$$

    A. $2\frac{1}{6}$
    B. $2\frac{1}{3}$
    C. $2\frac{2}{3}$
    D. $2\frac{5}{6}$

82. Solve for b.
$$24 \div b = 6$$

    A. $b = 3$
    B. $b = 4$
    C. $b = 8$
    D. $b = 144$

83. Write an equation that can be used to find the number of feet, f, of wood needed for any number of bookcases, b. Use the table below.

Number of Bookcases	Number of Feet of Wood
1	24
2	48
3	72
4	96
5	120

Answer: _____
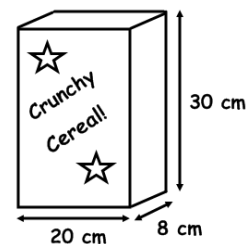
Geometry

84. This rectangular prism is constructed of $\frac{1}{4}$ inch cubes.
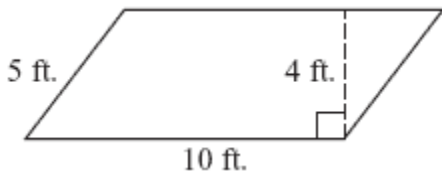

What is its volume?

Answer: _____

85. The dimensions of a Crunchy Cereal box are shown.

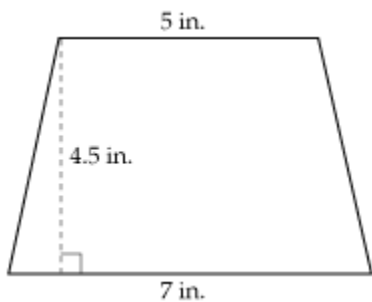How many square centimeters of cardboard are needed to make one box?

    A. 58 cm^2
    B. 600 cm^2
    C. 2,000 cm^2
    D. 4,800 cm^2

86. What is the area of this parallelogram?

5 ft.   4 ft.

10 ft.

A. 19 ft^2

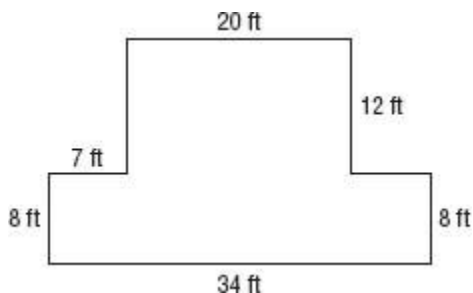B. 20 ft^2

C. 50 ft^2

D. 40 ft^2

87. Bill's sign is in the shape of a trapezoid with the given dimensions as shown below.

5 in.

4.5 in.

7 in.

What is the area of the trapezoid?

A. 9.5 in^2

B. 27 in^2

C. 35 in^2

D. 157.5 in^2

88. Alex made this drawing of the deck he wants to build.

20 ft

12 ft

7 ft
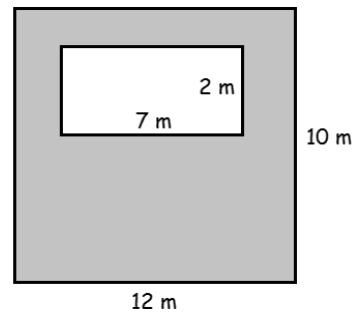
8 ft   8 ft

34 ft

What is the area of the deck?

Answer: _____

89. How many square inches of fabric does George need for a triangular flag with a base of 20 inches and a height of 40 inches?
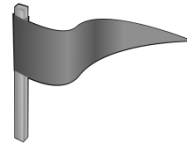
A. 100 in^2

B. 120 in^2

C. 400 in^2

D. 800 in^2

90. The dimensions of Frank's garden are 7 meters by 2 meters and it is surrounded by grass as shown by the diagram.

2 m

7 m

10 m

12 m

What is the area of his grass?

A. 14 m^2

B. 120 m^2

C. 134 m^2

D. 106 m^2

91. The box for Emma's earrings is $2\frac{1}{2}$ in. long, $1\frac{3}{4}$ in. wide, and $\frac{3}{4}$ in. tall. What is the volume of the box?

Answer: _____

Statistics and Probability

*If you have not yet studied some of these topics, do not worry – we will cover them in 7th grade. ☺

92. Which does NOT describe the center of a set of data?

    A. mean
    B. median
    C. range
    D. mode

Use the table below to answer questions 93 and 94.

Day	Cones Sold
Sunday	59
Monday	52
Tuesday	37
Wednesday	37
Thursday	37
Friday	70
Saturday	92

93. What is the mode of the number of cones sold?

    A. 33
    B. 37
    C. 52
    D. 55

94. What is the median number of cones sold?

    A. 33
    B. 37
    C. 52
    D. 55

Dora's bowling scores this week were 152, 170, 161. Use the scores to answer questions 95 and 96.
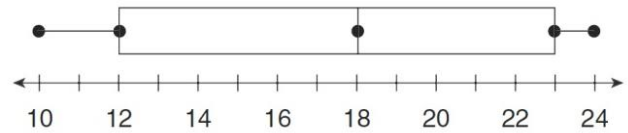
95. What was Dora's mean score?

    Answer: _____

96. What is the mean absolute deviation for the scores?

    Answer: _____

The box-and-whisker plot shows the number of points Carl Made during each game last season. Use it to answer questions 97 and 98.

97. What is the range of the number of points Carl had?

    Answer: _____

98. What is the interquartile range?

    Answer: _____

99. Mandy scored 88, 94, 82, and 89 on her math tests. What is the least score can earn on her next math test to have a mean of 90 or more?

    Answer: _____

100. Five buckets each had different amounts of water in them. Tom poured all of the water together and then divided the water equally among the 5 buckets. Which term best describes the amount of water in each bucket?

    A. mean
    B. range
    C. outlier
    D. mean absolute deviation