

2015 Mathematics Packet for Rising 7th Graders

In addition, the Middle School Mathematics Department is asking your child to work on the attached summer math review packet. This packet reviews key concepts that your child has already learned. Teachers will collect the packets on the first day of school.

In working on this packet, students should display their work neatly in the space provided. All computations on Section 1 should be done without a calculator. A ruler will be needed for some problems.

Here are some helpful websites you may find useful if your child “gets stuck” on the summer packet or would like to do some additional work online.

<http://www.math.com/> (The pre-algebra and algebra sections will be most helpful.)

<http://www.freemathhelp.com/algebra-help.html> (This has text and video lessons.)

<http://mathforum.org/library/drmath/drmath.middle.html>

<http://calculationnation.nctm.org/>

<http://www.khanacademy.org/>

<http://www.funbrain.com/cgi-bin/shtml.cgi?A1=../algebra/index.html> (try the hardest level)

<http://www.math-play.com/One-Step-Equation-Game.html> (“basketball” game that reviews one-step equations)

<http://www.math-play.com/integers-game.html> (integer games)

<http://www.math-play.com/Integers-Jeopardy/Integers-Jeopardy.html> (integer games)

<http://www.aaamath.com/g76-absolute-value.html> (absolute value review)

Challenge problems: <http://mathcounts.org/potwarchive>

Enjoy your summer. We are looking forward to working with your child in the fall!

Summer 2015 Mathematics Packet for Rising 7th Graders

Directions. *Please show all work in the space provided. No calculator unless otherwise indicated!*

SECTION 1

Use order of operations to determine each answer.

1) $4 \cdot 16 + 8 - 0 \div 5 =$

2) $8(3 + 4) - 2 * 8 \div (5 - 3) =$

3) $8^2 + (13 - 3)^2 \div 5 =$

Insert parentheses to make the following equation true.

4) $8 + 12 \div 4 \cdot 5 = 1$

Determine the answer for each problem.

5) $94 - (-87) = \underline{\hspace{2cm}}$

6) $-51 - 98 = \underline{\hspace{2cm}}$

7) $29 - 100 = \underline{\hspace{2cm}}$

8) $-777 - (-801) = \underline{\hspace{2cm}}$

$$9) -10 \cdot (-2 \cdot 18) = \underline{\hspace{2cm}}$$

$$10) -(4 + -3) = \underline{\hspace{2cm}}$$

$$11) -844 \div 4 = \underline{\hspace{2cm}}$$

$$12) -183/-61 = \underline{\hspace{2cm}}$$

$$13) 891 \div -9 = \underline{\hspace{2cm}}$$

Simplify.

$$14) -2(x + 3) = \underline{\hspace{2cm}}$$

$$15) 3(2x - 3) + (x - 5) = \underline{\hspace{2cm}}$$

$$16) \quad \frac{2}{3}(3x+9) = \underline{\hspace{2cm}}$$

Write in simplest form.

$$17) \quad 5\frac{2}{5} + 4\frac{1}{5} = \underline{\hspace{2cm}}$$

$$18) \quad \frac{2}{3} + \frac{5}{8} + \frac{5}{6} = \underline{\hspace{2cm}}$$

$$19) \quad 9 - 2\frac{1}{3} = \underline{\hspace{2cm}}$$

$$20) \quad 10\frac{1}{4} - 3\frac{2}{3} = \underline{\hspace{2cm}}$$

$$21) \quad \frac{1}{2} * \frac{5}{8} * \frac{4}{5} = \underline{\hspace{2cm}}$$

22) $-\frac{16}{9} \div 8 =$ _____

23) $-\frac{3}{8} \div \frac{3}{4} =$ _____

Write as a decimal.

24) $\frac{7}{10}$ _____ 25) $1\frac{1}{3}$ _____ 26) $8\frac{1}{4}$ _____

Write as a percent.

27) $\frac{4}{5}$ _____ 28) $1\frac{2}{5}$ _____ 29) $\frac{2}{3}$ _____

Write as a decimal.

30) 51% = _____ 31) 102% = _____ 32) 0.75% = _____

Write as a simple fraction or mixed number in lowest terms.

33) 125% = _____ 34) 3% = _____ 35) 50% = _____

Write as a percent AND as a simple fraction or mixed number.

36) $0.25 = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$ 37) $1.2 = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

38) $0.125 = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Solve each equation below and check your answers.

39) $x + 22 = 104.8$

40) $184 - x = 51$

41) $x - 6 = 30 + 12$

42) $30x = 480$

43) $4y - 8 = 20$

44) $17 = \frac{x}{3}$

45) $\frac{x}{24} = \frac{5}{12}$

For each of the following, write an algebraic equation. Then solve each equation.

46) Eight times a number, increased by 6, is 62. What is the number?

47) Number C divided by 0.4 is 10. What is C?

48) One half of a number is equal to 14. What is the number?

For each of the following, write an equation or set up a proportion. Then solve these percent problems. Calculators allowed here.

49) What number is 15% of 60?

50) 66 is 11% of what number?

51) 308 is what percent of 350?

52) A \$150 leather jacket is going on sale for a 25% discount. How much will the jacket cost on sale?

53) Jim bought 3 CDs at a cost of \$14.99 each. What will he pay including 7% sales tax?

Evaluate each expression given that a) $x = 4$ and b) $x = -3$

54) $2x$ a) _____ b) _____

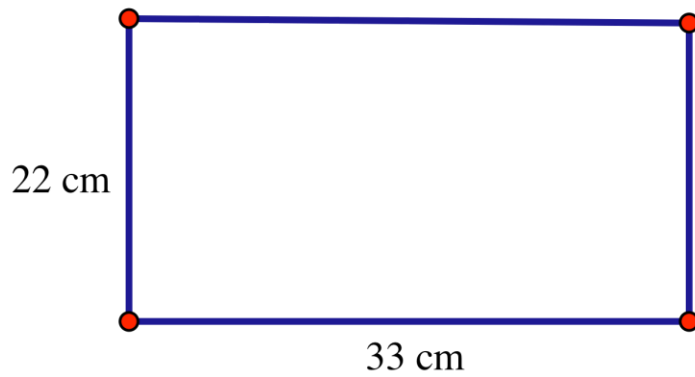
55) x^2 a) _____ b) _____

56) $x + 6$ a) _____ b) _____

57) $5x - 3$ a) _____ b) _____

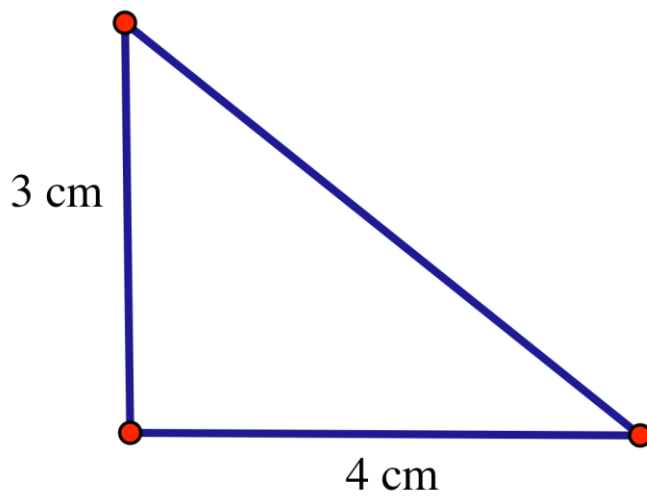
Basic Geometry and Using Formulas.

58) Find the perimeter of the following rectangle.



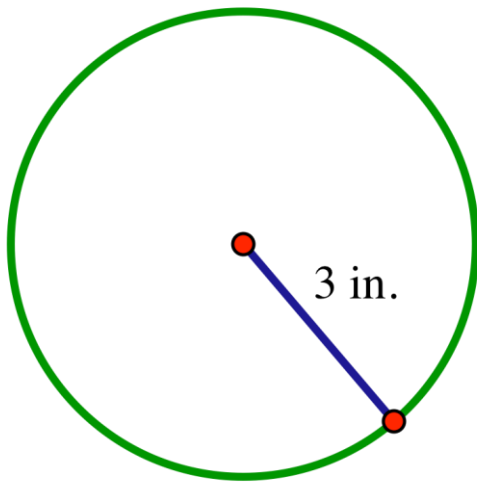
59) Find the area of the rectangle in the previous question.

60) Find the perimeter of the following **right** triangle.



61) Find the area of the triangle above.

62) Find the circumference to the nearest tenth. Use $\pi \approx 3.14$.



63) Find the area to the nearest tenth of a circle with diameter 5 cm. Use and round your answer to the nearest tenth. Calculator allowed.

Simplify.

64) $4(x + 3) =$ _____

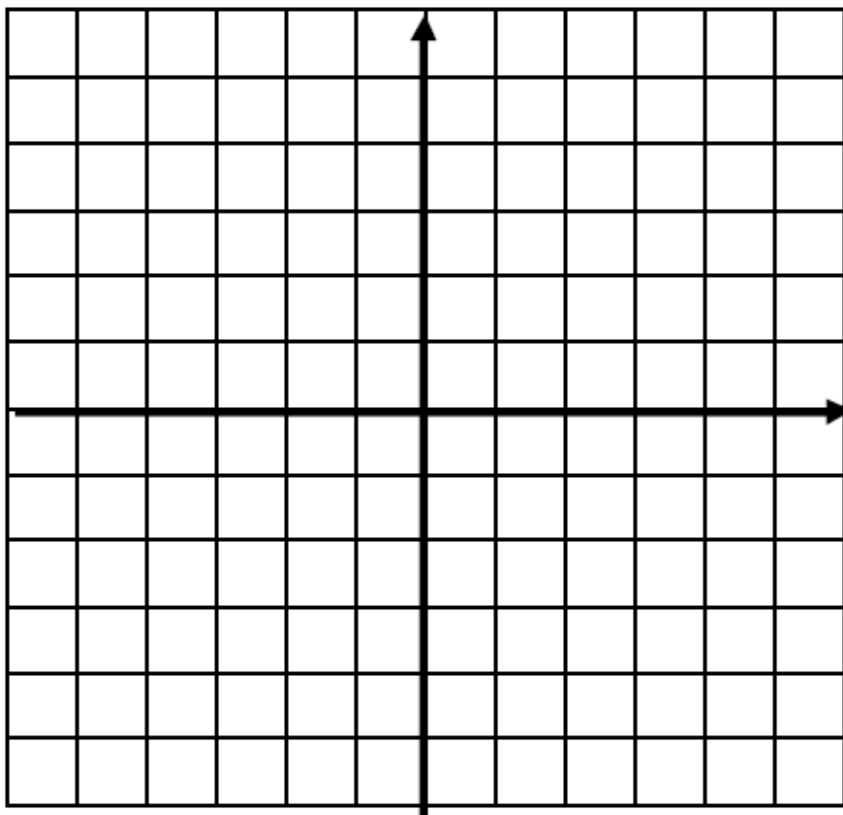
65) $-2(3x - 5) =$ _____

66) $2(3b + 1) - 5 =$ _____

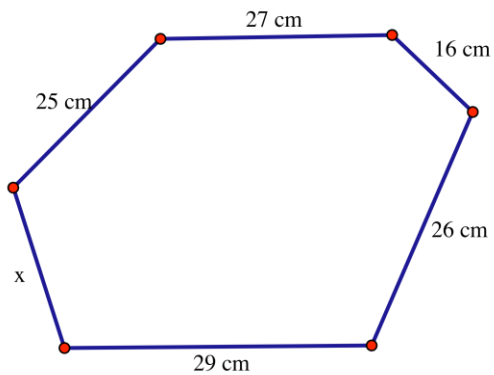
67) $2(x + 3) - 5(2x + 1) =$ _____

Plot each of the following points on the grid below. Use the letter to label the point on the graph.

68) A(3,0) B(5,5) C(-1,2) D(-3,-2) E(0,-3)



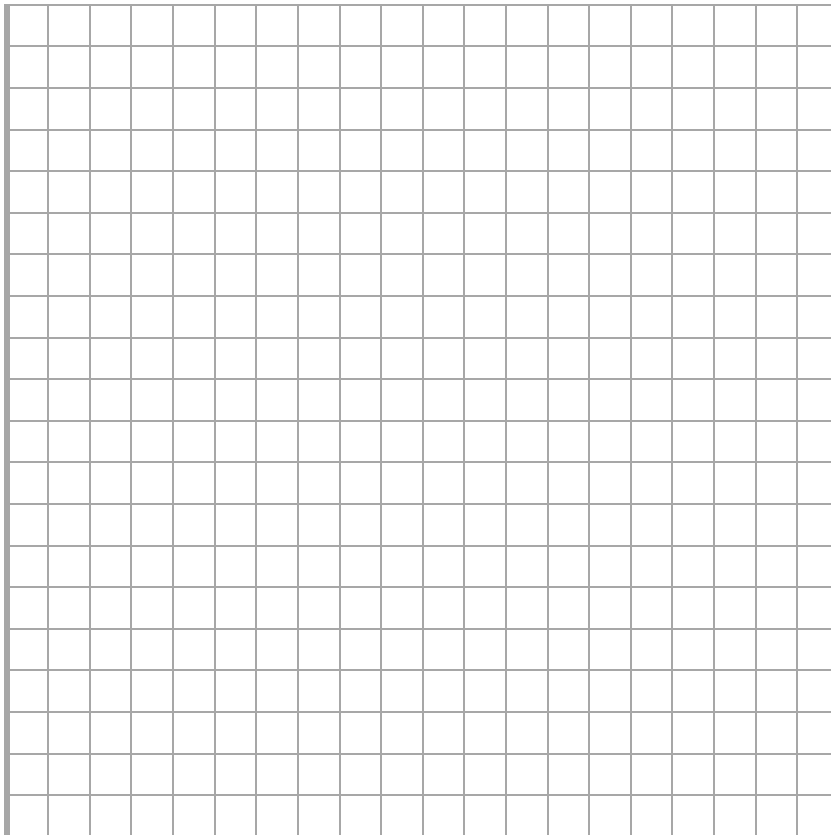
69) The perimeter of the figure below is equal to 150 cm. What is the length of the missing side?



70) Taylor is participating in a new fitness program in which he is required to report his weight at the end of each week. The table below shows some of his results.

a) Graph the data from the table on the grid provided. Use a straight edge to sketch the trend. Put number of weeks along the x-axis, weight along the y-axis.

Number of Weeks in the Fitness Program	Weight (in pounds)
2	181
5	176
9	167
12	160
16	153
19	148



b) Explain the mathematical relationship between the number of weeks in the fitness program and the weight in pounds.

c) Using information from the graph and table, predict Taylor's starting weight and weight after 25 weeks in the fitness program.

SECTION 2

Part 2:

Number Sequences

Find the next three terms in the following sequences.

- a. 5, 9, 13, 17, _____, _____, _____
- b. 2, 6, 18, 54, _____, _____, _____
- c. 2, 5, 10, 17, _____, _____, _____
- d. 1, 1, 2, 3, 5, _____, _____, _____

What is the name of the last sequence (d)? _____

Algebraic Expressions

Given that $s = 6$, $t = 10$, $p = 7$ and $g = 11$, find the value of the following expressions.

- a. $6s$
- b. $2s + 4t$ c. $(t + 3p)^2$
- d. $4g + 3stp$

Algebraic Reasoning

Find rules for the following tables

a. Rule: _____

X	1	2	3	4	5	6
Y	3	7	11	15	19	35

b. Rule: _____

J	5	7	9	11	13	15
K	-5	0	5	10	15	20

c. Rule: _____

M	100	150	200	250	300	350
S	10	15	20	25	30	35

d. Rule: _____

X	0	1	2	3	4	5
Y	0	7	14	21	28	35

Fractions

Simplify: Show Your Work Below!!!!!!

e. $\frac{2}{5} \times 10$

f. $\frac{4}{5} \div 3$

g. $6 \div \frac{1}{2}$

h. $\frac{3}{5} \times 11$

i. $\frac{2}{7} + \frac{1}{4}$

j. $\frac{3}{8} + \frac{1}{6}$

k. $1\frac{3}{4} + 3\frac{1}{3}$

l. $9\frac{1}{2} - 6\frac{1}{4}$

Ratios – Work out the problems below and then circle the correct answer.

Which shows the ratio 45 : 20 written as a fraction in simplest form?

- a. $\frac{13}{9}$
- b. $\frac{9}{13}$
- c. $\frac{9}{4}$
- d. $\frac{4}{9}$

Which value of x makes the ratio x : 6 equivalent to the ratio 24:72?

- a. $X = 2$
- b. $X = 3$
- c. $X = 1$
- d. $X = 18$

If 8 cans cost \$5.60, what is the unit rate for each can?

- a. \$0.76/ one can
- b. \$0.60/ one can
- c. \$0.70/one can
- d. \$0.64/one can

If a car travels 440 miles in 8 hours, what is the average speed per hour?

- a. 56/mph
- b. 45/mph
- c. 55/mph
- d. 57/mph

The scale on a map is 1 cm: 20 mi. If two cities are 5.25 cm apart on the map, what is the actual distance between the cities?

- a. 15.5 mi
- b. 105 mi
- c. 10.5 mi
- d. 155 mi

Numbers and Operations

Solve the problems below. Show your work!

1. $\frac{1}{3}y - 4 = 5$

2. $3 + 7q = 24$

Complete the following:

2. $|-5|$

3. $|-0.65|$

4. $\sqrt{49}$

5. The opposite of -19

6. $|-4755|$

7. The inverse operation of addition is _____.

8. The inverse operation of subtraction is _____.

9. The inverse operation of multiplication is _____.

10. The inverse operation of division is _____.

11. The absolute value sign means _____.

12. What is the order of operations? _____.

13. What does a number squared mean? _____.

14. What does a number cubed mean? _____.

_____. Complete the table below

Fraction	Decimal	Percent
		75%
$1\frac{3}{10}$		
	.25	

Simplify: Show your work!

1. $4x^2 + 6x - 9x^2 - 7 =$

2. $(6 + 4)^2 - 25$

5^2

Draw, graph, and label the following on the number line below.

a. 2.25

b. 0.1

c. 1

d. -1

e. $\frac{1}{2}$

f. 0.5



Data Analysis

1. The high temperatures in Columbus, GA over the last 2 weeks are as follows: 75, 76, 77, 73, 85, 80, 77, 78, 92, 76, 75, 77, 75, 69

Find the mean, median, mode, and range for this data. Show all work.

2. Mary made grades of 60, 85, and 90 on her last 3 math tests. What grade must she make on the next test to have an average of exactly 80 for the four tests?
3. Test scores for a class of 20 students are as follows:
93, 85, 94, 98, 87, 64, 75, 88, 85, 100, 95, 98, 100, 55, 60, 88, 90, 95, 100, 88
 - a. Draw a frequency table for this data on the back of this sheet. Fill it out with the requested data.
 - b. Set the intervals for the data.
 - c. Organize your data and tabulate in the chart
 - d. Find the interval that contains the mode
 - e. Find the interval that contains the median

Use the following data to determine the answers to each question.

The stem-and-leaf plots show the price of a pair of jeans at two boutiques.

Boutique **A**

3		3589
4		0001567
5		7789
6		0111

Boutique **B**

3		011588
4		000111135578
5		002234
6		38

Key: 3 | 0 = \$30

What is the median price for a pair of jeans from Boutique A and Boutique B in US dollars?

Integers

Simplify: Use a number line if needed. Show your work.

1. $-3 + 5 =$

2. $4 + (-10) =$

3. $-22 + (-24) =$

4. $-10 - (-5) =$

5. $-4 (-6) =$

6. $-30 \div (-3) =$

7. $-15 + 15 =$

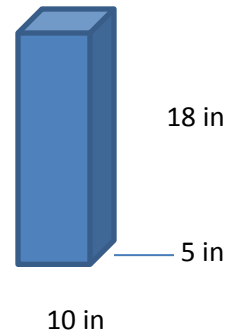
8. $2 + (-3) - (-9) =$

9. $5 (-8) \times -6 (-6) =$

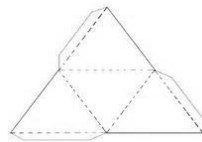
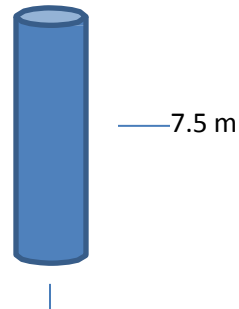
10. $35 \div -5$

Solid Figures

1. Find the volume of the rectangular prism.



2. Determine the volume of the figure below to the nearest tenth.



3. Into what figure does the following net fold?