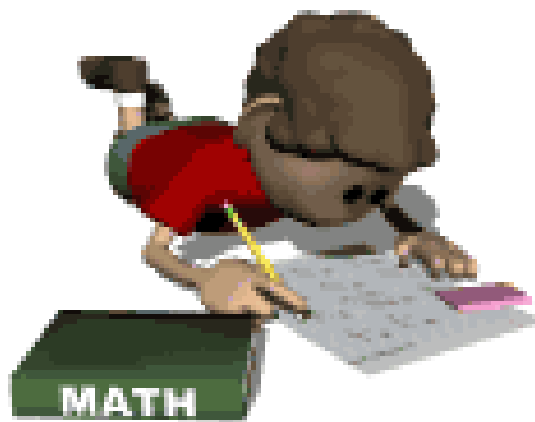# Class of 2015

Summer Math Packet

Academy Park High School

Name _____

This packet will help you review some basic skills that will be necessary for you to be successful in your math class in 9th grade at Academy Park High School. Follow the directions, read through the information in the boxes, and complete every question. It will be graded!

Pace yourself and do a few problems every day or once a week. Don't save it all for the day before school starts!

Directions:

- ❖ Show **all** your work neatly in the packet. (You may attach additional lined paper if necessary.)
- ❖ Box your final answers.
- ❖ Do **NOT** use a calculator.
- ❖ If you need it, use the PSSA 8th Grade Math Formula Sheet that is attached.
- ❖ Try **every** problem and do your best!
- ❖ Problems 81-100 are multiple choice questions on all topics that are in the packet.
- ❖ The last page is a reflection sheet…please answer the questions honestly.

Due Date: Friday, September 9th, 2011

Integer Operations

Adding and Subtracting Integers
- If the signs are the same, add the numbers and keep the sign.

  7 + 9 = 16   -2 + -6 = -8   -7 – 4 = -11
- If the signs are different, find the difference between the numbers and keep the sign of the larger number.

  5 + -11 = -6   -10 + 12 = 2   6 – 4 = 2

  * Remember that subtracting a negative number is the same as adding a positive

  6 - -3 = 6 + 3 = 9   -10 - -8 = -10 + 8 = -2

Multiplying and Dividing Integers
- Multiply or Divide.
- If there are an odd number of negatives, the answer is negative.
- If there are an even number of negatives, the answer is positive.

  -5 · - 3 = -15   (-1)(5)(2) = -10

  -56 ÷ -8 = 7   -16 / 4 = -4

1. 51 - -11 = _____

2. (-7)(6)(-4) = _____

3. 33 + -48 = _____

4. 240 ÷ -6 = _____

5. -24 · -52 = _____

6. -67 – 1 = _____

7. -5 + -13 = _____

8. -288 ÷ -24 = _____

9. -18 + -23 + 10 = _____

10. -27 - - 27 = _____

11. -6 · -5 · -4 = _____   12. 15 - -28 – 63 + 14 = _____

13. -144 ÷ 12 = _____   14. -53 + 20 + -7 + -14 + 13 = _____

15. (0)(-24) = _____   16. -137 – 45 = _____

17. 0 ÷ -12 = _____

Absolute Value

Absolute Value - the distance a number is from zero on the number line.

Ask yourself: How far is the number from zero?

$$|31| = 31 \qquad |-16| = 16 \qquad |-12 + 8| = |-4| = 4$$

18. |-1234| = _____   19. |97| = _____

20. |20 + -25| = _____   21. |-7| + |13| = _____

Order of Operations

Parentheses ( ), Brackets [ ], Braces { }
Exponents
Multiply \   Multiply and divide from left to right
Divide   /
Add   \ Add and subtract from left to right
Subtract /

22. $12 \div 3 + 12 \div 4 =$ _____   23. $(21 \div 7 + 4) \cdot 11 =$ _____

24. $96 \div 12(4) \div 2^2 =$ _____   25. $\dfrac{86 - 11}{9 + 6} =$ _____

26. $6 + 5^2 - 2 =$ _____   27. $7[(12 + 5) - 3(4)] =$ _____

28. $144 \div 16 \cdot 9 \div 3 =$ _____   29. $-15 - 8 + -4 - -6 =$ _____

30. $(20 - 9 + 28 - 17 + 7 - 24)^2 \div (99 \div 33 + 2) =$ _____

31. (-72 ÷ 9)(-15 ÷ -5) = _____   32. -6[7 − (-225 ÷ 15) · 3] = _____

33. (5 + -18 · 2)(16 − 4^2) = _____   34. $\dfrac{-36 \div 2^2}{67 - 70}$ = _____

35. 40 ÷ 8 − 3 · 5 + 7 = _____

Fractions

Adding and Subtracting Fractions

- Change all mixed and whole numbers to improper fractions if necessary.
- Find a common denominator.
- Add/Subtract the numerators.
- Simplify your answer.

Examples: $\dfrac{1}{6}+\dfrac{1}{3}=\dfrac{1}{6}+\dfrac{2}{6}=\dfrac{3}{6}=\dfrac{1}{2}$ $1\dfrac{1}{2}-\dfrac{7}{8}=1\dfrac{4}{8}-\dfrac{7}{8}=\dfrac{12}{8}-\dfrac{7}{8}=\dfrac{5}{8}$

Multiplying and Dividing Fractions

- Remember, when multiplying and dividing fractions there is no need to have a common denominator.
- Change all whole and mixed numbers to improper fractions.
- If it is a <u>division</u> problem, don't forget to change it to multiplication, and flip the 2nd fraction.
- Cross cancel then multiply.

Examples:

$2\dfrac{1}{4}\bullet\dfrac{2}{3}=\dfrac{^{3}\cancel{9}}{_{2}\cancel{4}}\bullet\dfrac{\cancel{2}^{1}}{\cancel{3}_{1}}=\dfrac{3}{2}$

$3\dfrac{2}{3}\div 4\dfrac{1}{2}=\dfrac{11}{3}\div\dfrac{9}{2}=\dfrac{11}{3}\bullet\dfrac{2}{9}=\dfrac{22}{27}$

36. $\dfrac{7}{8}-\dfrac{5}{6}=$ _____

37. $3\dfrac{1}{6}+\dfrac{5}{12}=$ _____

38. $-\dfrac{8}{16}+\dfrac{3}{4}=$ _____

39. $6\dfrac{1}{2}+-2=$ _____

40. $-\dfrac{6}{5}\bullet-\dfrac{5}{6}=$ _____

41. $5\bullet 2\dfrac{4}{5}=$ _____

42. $-\dfrac{6}{7} \cdot \dfrac{1}{4} \cdot \dfrac{2}{5} =$ _____

43. $\dfrac{3}{5} \div \dfrac{1}{5} =$ _____

44. $2\dfrac{1}{2} \div -\dfrac{3}{4} =$ _____

45. $-7 \div \dfrac{1}{2} =$ _____

Rounding

When rounding, look at the number directly to the right of the place value you are rounding to.
- If the number to the right is 5 or larger, round up to the next number
- If the number to the right is 4 or smaller, leave the number you are rounding the way it is

Examples: Round 4.673 to the nearest hundredth
        Look to the right of the 7 (which is in the hundredths place).
        Since 3 is less than 5, the number is rounded to 4.67.

        Round 39,178 to the nearest ten.
        The 7 is in the tens place, so to the right of it is an 8. Since 8 is larger than 5, we round up and get 39, 180.

46. Round 854 to the nearest hundred _____

47. Round 62.17354 to the nearest hundredth _____

48. Round 253.5198 to the nearest thousandth _____

Evaluating Expressions

When evaluating expressions, simply plug in the given values for the indicated variables and simplify the expression.

Examples: Evaluate 7a – 4b if a = -2 and b = 3
$$7(-2) – 4(3) = -14 – 12 = -26$$

What is the value of x^2 + 3 if x = 5?
$$(5)^2 + 3 = 25 + 3 = 28$$

49. Evaluate 2a + 8b if a = 5 and b = -3 _____

50. What is the value of 3x – 4y if x = 3 and y = -2? _____

51. Evaluate a^2 + 3b for a = 4 and b = -3. _____

Solving Equations

When solving equations, isolate the variable on one side of the equation by "un-doing" the operations attached to the variable. Remember, what you do to one side of the equation must be done to the other side of the equation as well!

Examples:

$a + 6 = 4$
$ - 6 - 6$
$a = -2$

$b - 7 = 10$
$ + 7 + 7$
$b = 17$

$-3c = -21$
$$\frac{-3c}{-3} = \frac{-21}{-3}$$
$c = 7$

$$\frac{d}{2} = -4$$
$$2 \bullet \frac{d}{2} = 2 \bullet -4$$
$d = -8$

Solve each equation and box your answer.

52. $f + 3 = -5$

53. $4g = -24$

Basic Geometry

Use the formula sheet to find the area **AND** perimeter of each shape. Round to the nearest hundredths when necessary. Use 3.14 for π (pi).
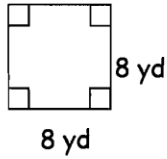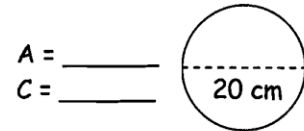
Example:

5m

8m
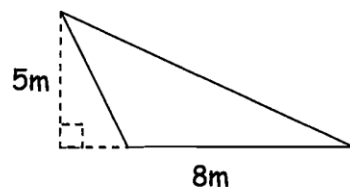
Triangle

$A = \dfrac{1}{2} b\,h$
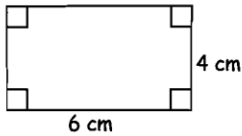
$A = \dfrac{1}{2} \bullet 8 \bullet 5$

$A = 20 \text{ m}^2$

54. A = _____

55. P = _____

8 yd

8 yd

56. d = _____   A = _____

57. r = _____   C = _____

20 cm

58. P = _____

59. A = _____

4 cm

6 cm

60. P = _____

61. A = _____

5ft.   4ft.   5ft.

6ft.

6m

62. A = _____

63. P = _____

13m   12m   13m

16m
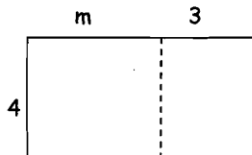
64. A = _____

65. P = _____

5 in

3 in   6 in.

1 in.
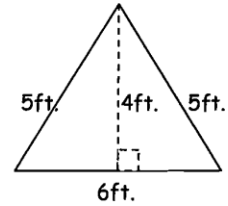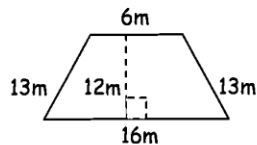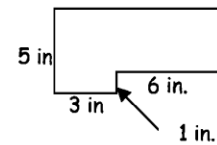
Distributive Property

Multiply the number on the outside of the parentheses by each term inside the parentheses. Don't forget the rules for negatives! Draw rectangles or arrows if you need to.

m   3

4

4(m + 3) = 4m + 12

66. $10(a - 4) =$ _____

67. $7(x + y) =$ _____

68. $-4(k + -9) =$ _____

69. $3(-7x - 5) =$ _____

70. 20(5y - -6) = _____   71. -8(11r – 9s) = _____

72. $\frac{1}{2}(48x - 25t) =$ _____   73. 5(4a + -10b – 6c) = _____

Proportions

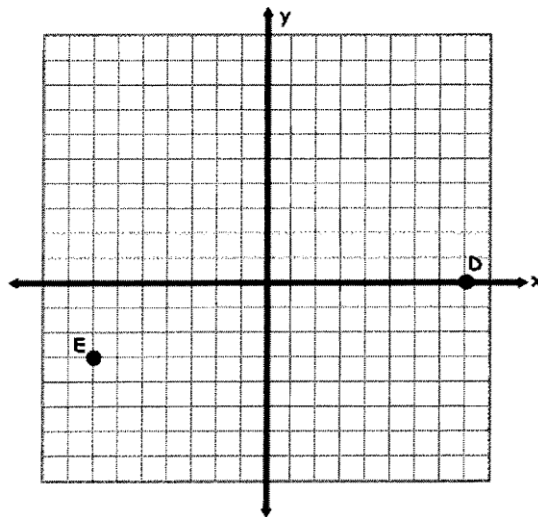To find the missing values, use scale factor or cross multiplication

74. $\frac{3}{6} = \frac{n}{24}$

75. $\frac{2.5}{4} = \frac{10}{x}$

Coordinate Graphing

x-axis – horizontal axis

y-axis – vertical axis

Don't forget – (x, y)

Plot the points on the graph. Label each point with the letter.
76. A (3, 2)   77. B (-4, 5)   78. C (0, -5)

Find the coordinates.
79. D (_____)   80. E (_____)

Multiple Choice Questions. Circle your answer.

81.

Which statement is correct?

F $(2 \times 3) + 5 \div 8 = 2$
G $(2 \times 3 + 5) \div 8 = 2$
H $2 \times (3 + 5) \div 8 = 2$
J $2 \times 3 + (5 \div 8) = 2$

82.

Four students are reading the same book. The table below shows the portion that each student has read.

READING RECORD

Student	Portion Read
Frankie	$\frac{7}{10}$
Jacqueline	$\frac{2}{3}$
Pierre	$\frac{5}{8}$
Yolanda	$\frac{3}{4}$

Which student has read the largest portion of the book?

F Frankie
G Jacqueline
H Pierre
J Yolanda

83.

What is the value of the expression $7 + 5 \times (-3) - (6 - 2) \div 2$?

F -10

G -16

H -20

J -38

84.

What is the value of n in the equation below?

$$2n - 5 = 23$$

F 9

G 14

H 26

J 28

85.

What is the value of the expression $3a + 2b$, if $a = 4$ and $b = 9$?

A 18

B 23

C 25

D 30

86.

Manuel and Jerry are trying to find the value of the expression $(5 + 7)^2$.

Jerry plans to first square 5, then square 7, and then add the products together.

Manuel plans to add five and seven together, then square the sum.

Which statement is true?

F   Only Jerry has a correct strategy.

G   Only Manuel has a correct strategy.

H   Both Manuel and Jerry have
a correct strategy.
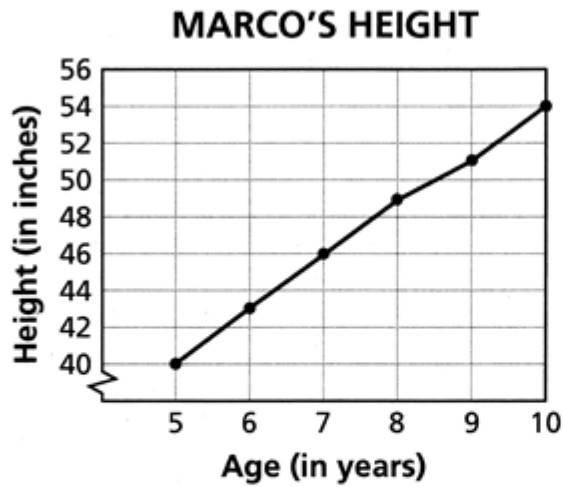
J   Neither Manuel nor Jerry has
a correct strategy.

87.

The expression $\frac{1}{15} \div \left(\frac{4}{15} + \frac{1}{3} \right)$ is
equivalent to

A $\frac{1}{9}$

B   9

C $\frac{1}{5}$

D   5

88.

The line graph below shows the increase in Marco's height over a five-year period.

MARCO'S HEIGHT

How many inches did Marco's height increase between age 5 and age 10?

A 7 inches
B 8 inches
C 14 inches
D 16 inches

89.

Simplify the expression below.

$$5 + 3 \bullet 2 - 4^2 \bullet |{-2}|$$

A   43
B   48
C   -16
D   -21

90.

Cathleen planned to walk her dog for $\frac{3}{4}$ of a mile. After it started to rain, she decided to walk only $\frac{1}{2}$ of that distance. What fraction of a mile did Cathleen walk her dog?
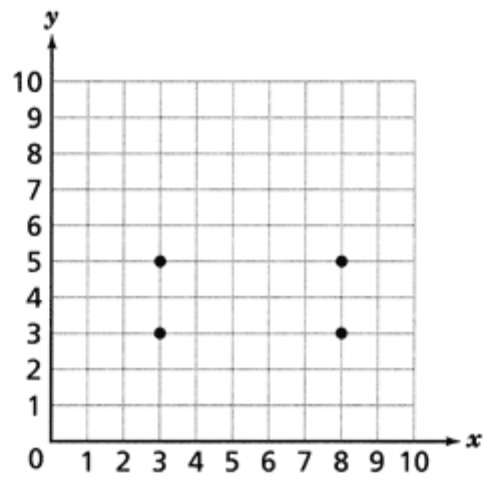
F $\frac{1}{4}$

G $\frac{3}{8}$

H $\frac{4}{6}$

J $\frac{4}{8}$

91.

Ned wants to draw a pentagon on the grid below by plotting a fifth point and then connecting all of the points.

Which coordinates would **not** complete the pentagon?

F   (5, 8)
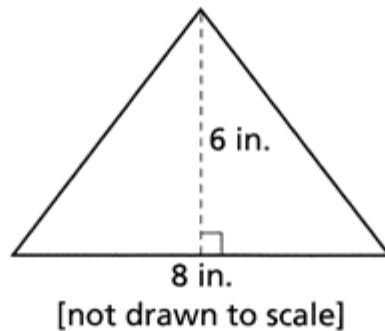
G   (6, 7)

H   (7, 2)

J   (8, 4)

92.

Willard has a stained glass window with one triangular piece shown below.

6 in.

8 in.

[not drawn to scale]

$$A = \frac{1}{2}bh$$

What is the area, in cubic inches, of the triangular piece?

A   14
B   24
C   48
D   96

93.

Carmen put new tile on $\frac{1}{4}$ of her bathroom floor. She then put new carpet on $\frac{5}{8}$ of another section of the same floor. What fraction of the bathroom floor is covered with new tile and new carpet?

F $\frac{5}{8}$

G $\frac{7}{8}$

H $\frac{4}{12}$

J $\frac{6}{12}$

94.

Betty made $\frac{3}{4}$ of the baskets she attempted in a basketball game. Which other ratio is equivalent to the number of baskets Betty made?

A $\frac{6}{12}$

B $\frac{9}{12}$

C $\frac{12}{20}$

D $\frac{18}{20}$

95.

Nan lives $13\frac{1}{2}$ miles from the airport. Felipe lives $6\frac{1}{4}$ miles from the airport. How many more miles does Nan live from the airport than Felipe?
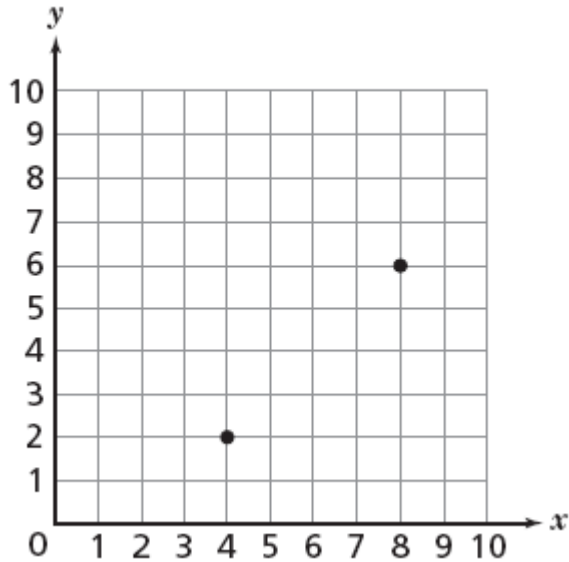
A $7\frac{1}{8}$

B $7\frac{1}{6}$

C $7\frac{1}{4}$

D $7\frac{1}{2}$

96.

Carlos plots two points on the grid below.

He wants to plot two more points and then connect all four points to form a square.
Which two points should Carlos plot to form a square?

A   (4, 2) and (8, 6)
B   (4, 6) and (6, 6)
C   (4, 2) and (6, 2)
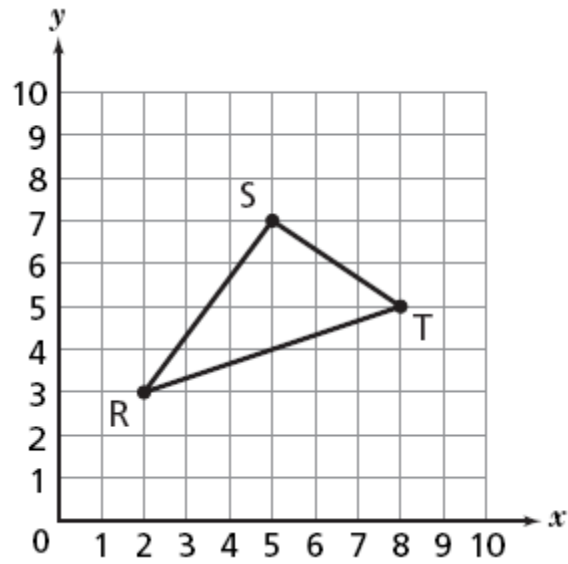**D**   (4, 6) and (8, 2)

97.

What is the value of the expression below when $r = 2$?

$$9 - 3r$$

A   **0**

B   **3**

C   **6**

D   **12**

98.

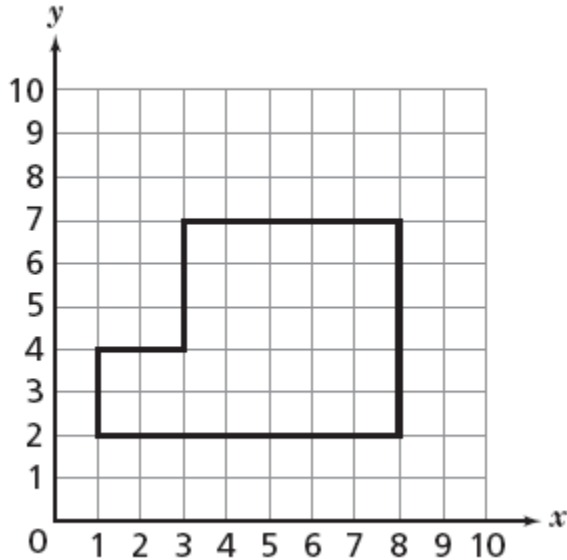A triangle is plotted on the coordinate plane below.

Which coordinates represent, in order, the locations of point R, point S, and point T?

A (3, 2), (7, 5), and (5, 8)

B (2, 3), (7, 5), and (8, 5)

C (2, 3), (5, 7), and (8, 5)

D (3, 2), (5, 7), and (5, 8)

99.

A diagram of a classroom floor at Hilldale Middle School is drawn on the grid below.

What is the perimeter of the classroom?

A   12 units

B   24 units

C   29 units

D   35 units

100.

Mr. Ramirez bought 6 tickets to the circus. He spent a total of $12.00. He used the equation below to determine the cost of each ticket, t.

$$6t = 12.00$$

How much money did Mr. Ramirez spend on each ticket?

A $72.00
B $18.00
C $6.00
D $2.00

<u>Summer Packet Reflection:</u>

Rate yourself on the scale from one to four for each of the following statements:

Absolutely!	Sort of	Not Really	No
4	3	2	1

_____1. I followed the directions on the front of the packet.

_____2. I gave my best effort in completing the problems.

_____3. If I didn't understand a problem, I have a question ready to
　　　　　　　　ask in class.

_____4. I was able to complete the packet independently.

_____5. I paced myself in completing the packet instead of cramming it
　　　　　　　　all over the Labor Day Weekend.

_____6. I think this packet helped me remember some of the things
　　　　　　　　I've learned in math.

7. List two skills from the packet that you feel you have completely mastered.

_____

_____

8. List two skills in which you would like more practice.

_____

_____

Comments (optional):