THE SEVEN HILLS SCHOOL

Summer Math Packet
for
Rising 8th Grade Students
entering
Algebra IB

Directions:

1. Study "math facts"...addition, subtraction, multiplication, and division of whole numbers 0-12.
2. Complete this math packet *without* the use of a calculator. Check answers with the key provided.
3. Turn this packet in on the first day of school.
4. Enjoy your summer! We are looking forward to seeing you at the start of the new year.

Revised August 2018

WEEK 1

1. Find the product: $\frac{15}{4} \cdot \frac{8}{25}$	2. Find the product: $36 \cdot \frac{4}{9}$	3. Find the product: $2\frac{2}{3} \cdot 1\frac{3}{5}$
4. Find the quotient: $\frac{24}{7} \div \frac{6}{21}$	5. Find the quotient: $\frac{2}{5} \div 30$	6. Find the quotient: $2\frac{3}{10} \div 1\frac{4}{5}$
7. Find the sum: $\frac{5}{6} + \frac{2}{9}$	8. Find the sum: $5\frac{3}{4} + 1\frac{1}{3}$	9. Find the difference: $5\frac{1}{3} - 4\frac{1}{2}$
10. I need $2\frac{1}{4}$ yd of fabric to cover a chair. How many chairs can I cover with $23\frac{2}{3}$ yd of fabric?	11. Circle the answer for the best estimate of the sum: $\frac{14}{26} + \frac{98}{99} + \frac{100}{51} + \frac{90}{31} + \frac{13}{27}$ A. 6 B. 7 C. 5 D. 8	12. Evaluate: $12 + 64 \div 8 - 4$
13. Evaluate: $9(1+7) + 2 \cdot 5$	14. Evaluate: $6[2 + 8(3^3)]$	15. Evaluate: $\frac{2(8^2 - 4) + 8}{29 - 3^3}$

WEEK 2

1. First, simplify. Then, circle if the statement is *true* or *false*. $2 \cdot [7 \cdot 5 - 3(2)] \leq 58$ True False	2. Write the word statement in symbols: *Ten is greater than six plus one.*	3. Write the word statement in symbols: *Three is not equal to four.*
4. Write the word statement in symbols: *One-third is less than or equal to three-ninths.*	5. If $x = 2$ and $y = 1$, then the value of xy is what?	6. If $x = 4$, find the value of $4x^2$.
7. If $x = 6$, find the value of $\frac{4x-1}{3x}$.	8. Write the word phrase as an algebraic expression, using x as the variable: *The difference between 14 and a number.*	9. Write the word phrase as an algebraic expression, using x as the variable: *The product of 9 and five more than a number.*
10. Find the absolute value: $-\left\lvert -\frac{4}{5} \right\rvert$	11. Circle the lesser of the two given numbers: $-\lvert -2 \rvert$ $-\lvert -3 \rvert$	12. Circle the lesser of the two given numbers: $\lvert -8.9 \rvert$ $\lvert -9.8 \rvert$
13. Evaluate: $[(-8) + (-6)] + 14$	14. Evaluate: $-4\frac{3}{8} + 6\frac{1}{2}$	15. Evaluate: $\frac{1}{3} - \left(-\frac{4}{3}\right)$

WEEK 3

1. The lowest temperature ever recorded in Tennessee was -32° F. The highest temperature ever recorded there was 145° F more than the lowest. What was this highest temperature?	2. I enjoy playing Triominoes. On five successive turns, my scores were -13, 15, -12, 24 and 14. What was my total score for the five turns?	3. Find the product: $-\frac{5}{4} \cdot \left(-\frac{5}{8}\right)$
4. Simplify: $(8-9)(4-12)$	5. Simplify: $4(-8)+\lvert 4-15\rvert$	6. Evaluate for x = 6, y = -4, and a = 3. $6x-5y+4a$
7. Evaluate for x = 6, y = -4, and a = 3. $(6-x)(5+y)(3+a)$	8. Evaluate for x = 6 and a = 3. $5x-4a^2$	9. Evaluate for x = 6, y = -4, and a = 3. $\frac{xy+8a}{x-y}$
10. Find the average: -17, 34, 9, -2	11. Simplify the following expression: $1+15z+2+4z$	12. Simplify the following expression: $-r+2-5r+3+4r$
13. Simplify the following expression: $-\frac{5}{6}+8x+\frac{1}{6}x-7-\frac{7}{6}$	14. Simplify the following expression: $-4-5(t-13)$	15. Simplify the following expression: $-\frac{7}{5}(t-15)-\frac{1}{2}t$

WEEK 4

1. Solve the equation: $x + 7 = 11$	2. Solve the equation: $x + 47 = 26$	3. Solve the equation: $8 + k = -4$
4. Solve the equation: $-\frac{1}{4} = x - \frac{2}{3}$	5. Solve the equation: $x + 21.5 = -13.4$	6. Solve the equation: $9x + 1 = 8x + 4$
7. Solve the equation: $5x + 4 - 4x = 0$	8. Solve the equation: $4x + 3x - 6 - 6x = 10 + 3$	9. Solve the equation: $(8y - 3) - (7y + 1) = -6$
10. Solve the equation: $-4x = -64$	11. Solve the equation: $-\frac{3}{4}x = -21$	12. Solve the equation: $3p - 7p = 24$
13. Solve the equation: $\frac{2}{3}x - \frac{5}{9}x = 4$	14. Solve the equation: $9x - 3x + x = -4$	15. Write an equation using the given information, using *x* as the variable. Then, solve. *If twice a number is divided by 5, the result is 4. Find the number.*

WEEK 5

1. Solve the equation: $4x + 3 = 27$	2. Solve the equation: $7p + 8 = 9p - 2$	3. Solve the equation: $4x + 9 = 3 - (x - 2)$
4. Solve the equation: $\frac{1}{5}x - \frac{2}{3}x - 2 = -\frac{2}{5}x$	5. Solve the equation: $0.92x + 0.98(12 - x) = 0.96(12)$	6. Solve the equation: $2 - (y + 4) = 3y - 2$
7. Solve: *The product of 5, and 3 more than twice a number, is 85. What is the number?*	8. The distance formula is *d=rt*, where *d* is distance, *r* is rate, and *t* is time. Find the time it takes to drive 252 miles going 45 miles per hour.	9. Use the circumference equation, $C = 2\pi r$, to find the radius of a circle with a circumference of 16.328 cm. (Use 3.14 for π.)
10. Use the formula for the volume of a pyramid ($V = \frac{1}{3}Bh$) to find the volume of a pyramid with the following measurements: $B = 36\ m^2$; $h = 4m$.	11. Solve the formula for the specified variable: $A = LW$ for L	12. Decide whether the proportion is *true* or *false*: $\frac{4}{12} = \frac{7}{21}$
13. Solve the proportion: $\frac{x}{6} = \frac{18}{4}$	14. Solve the proportion: $\frac{20}{100} = \frac{m}{80}$	15. If 16 candy bars cost $20.00, how much do 24 candy bars cost?

WEEK 6

1. If 7 shirts cost $87.50, find the cost of 11 shirts.

2. If 8 U.S. dollars can be exchanged for 103.0 Mexican pesos, how many pesos can be obtained for $65? (Round to the nearest tenth.)

3. What is 26% of 480?

4. 18% of what number is 108?

5. 8 is what percent of 64?

6. On a 75-point algebra test, Grady scored 63 points. What percent of the total points did he score?

7. Decide whether the given ordered pair is a solution of the given equation:

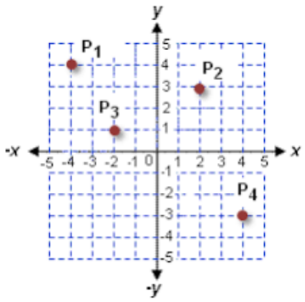
$$2x - y = 6 \;;\; (4,\ 2)$$

8. Complete the table of values. Write the results as ordered pairs.

$$2x + 2y = 12$$

x	y
0	
	0
	8

9. In which quadrant is point P_3 located?



10. Using the same coordinate plane in #9, in which quadrant is point P_4 located?

11. Write the *slope-intercept* form of a linear equation.

12. What type of line, when graphed on a coordinate plane, is formed when the line has a slope of zero?

13. What type of line, when graphed on a coordinate plane, is formed when the line has an undefined slope?

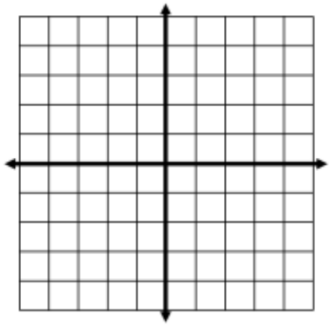
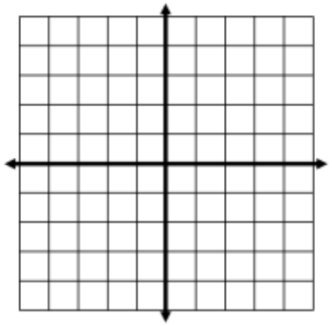
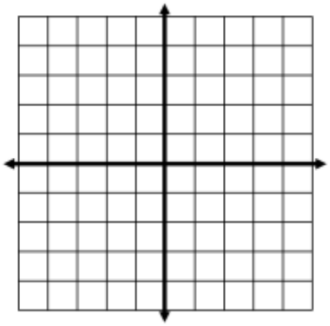
14. Find the slope of the following equation:

$$y = 9$$

15. Find the slope of the following equation:

$$x = 9$$

WEEK 7

1. Plot the following set of points, and draw a line through them. Determine the slope. (3, 5), (3, 0), and (3, -3) 	2. Plot the following set of points, and draw a line through them. Determine the slope. (-3, -3), (0, -3), and (4, -3) 	3. Plot the following set of points, and draw a line through them. Determine the slope. (0, 2), (-3, 0), and (3, 4) 
4. Determine the slope of the line through the following pair of points (4, -1) and (-2, -8).	5. Determine the slope of the line through the following pair of points (8, 0) and (0, -5).	6. Determine the slope of the line through the following pair of points (-8, 6) and (-8, -1).
7. Find the slope of the line $y = 5x - 9$.	8. Find the slope of the line $y = -7x + 10$.	9. Find the slope of the line $y = -x + 4$.
10. Solve the equation for y $2x + 5y = 15$.	11. Solve the equation for y $-4x + 3y = 8$.	12. Solve the equation for y $10x = 30 + 3y$.
13. Write an equation for the line passing through the given point with the given slope. Give final answer in slope-intercept form. $(2, 7)$, $m = 3$	14. Write an equation for the line passing through the given point with the given slope. Give final answer in slope-intercept form. $(-3, 1)$, $m = -2$	15. Write an equation for the line passing through the given point with the given slope. Give final answer in slope-intercept form. $(8, 4)$, $m = 1$

WEEK 8

1. Simplify. $10\frac{5}{8} - 3\frac{1}{10}$	2. Simplify. $\frac{3}{4} \div \frac{1}{8}$	3. Simplify. $5 - (-4) + (-2)$
4. Simplify. $\frac{(-3)^2 - (-4)(2^4)}{5(2) - (-2)^3}$	5. *True* or *false*? $\frac{4(3-9)}{2-6} \geq 6$	6. Find the value of $xz^3 - 5y^2$ when $x = -2$, $y = -3$, and $z = -1$.
7. Solve. $2r - 6 = 8r$	8. Solve. $4 - 5(y + 2) = 3(y + 1) - 1$	9. Solve. $\frac{2}{3}x + \frac{3}{4}x = -17$
10. 140% of what number is 315?	11. What percent of 48 is 96?	12. Alex had $525, which was 70% of the total amount she needed for a deposit on an apartment. What was the total deposit she needed?
13. Solve the equation for y $-3x + 4y = 12$.	14. What is the slope of the line in #13?	15. Write an equation for the line passing through the given point with the given slope. Give final answer in slope-intercept form. $(2, -5)$, $m = 3$

Fractions to Decimals

Directions: Find each decimal equivalent. No calculator allowed! Look for patterns.

$\frac{1}{8} =$

$\frac{1}{4} = \frac{2}{8} =$

$\frac{3}{8} =$

$\frac{2}{4} = \frac{4}{8} =$

$\frac{5}{8} =$

$\frac{3}{4} = \frac{6}{8} =$

$\frac{7}{8} =$

$\frac{1}{6} =$

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

$\frac{3}{6} =$

$\frac{2}{3} = \frac{4}{6} =$

$\frac{5}{6} =$

$\frac{1}{10} =$

$\frac{1}{5} = \frac{2}{10} =$

$\frac{3}{10} =$

$\frac{2}{5} = \frac{4}{10} =$

$\frac{5}{10} =$

$\frac{3}{5} = \frac{6}{10} =$

$\frac{7}{10} =$

$\frac{4}{5} = \frac{8}{10} =$

$\frac{9}{10} =$

Answer Key

Week 1:

1. $\frac{6}{5}$ *or* $1\frac{1}{5}$
2. ☺
3. $\frac{64}{15}$ *or* $4\frac{4}{15}$
4. ☺
5. $\frac{1}{75}$
6. ☺
7. $\frac{19}{18}$ *or* $1\frac{1}{18}$
8. ☺
9. $\frac{5}{6}$
10. ☺
11. B
12. ☺
13. 82
14. ☺
15. 64

Week 2:

1. $58 \leq 58$; true
2. ☺
3. $3 \neq 4$
4. ☺
5. 2
6. ☺
7. $\frac{23}{18}$
8. ☺
9. $9(x + 5)$ *or* $9(5 + x)$
10. ☺
11. $-|-3|$
12. ☺
13. 0
14. ☺
15. $\frac{5}{3}$ *or* $1\frac{2}{3}$

Week 3:

1. 113° F
2. ☺
3. $\frac{25}{32}$
4. ☺
5. -21
6. ☺
7. 0
8. ☺
9. 0
10. ☺
11. $3 + 19z$
12. ☺
13. $\frac{49}{6}x - 9$
14. ☺
15. $-\frac{19}{10}t + 21$

Week 4:

1. $x = 4$
2. ☺
3. $k = -12$
4. ☺
5. $x = -34.9$
6. ☺
7. $x = -4$
8. ☺
9. $y = -2$
10. ☺
11. $x = 28$
12. ☺
13. $x = 36$
14. ☺
15. $\frac{2x}{5} = 4;\ x = 10$

Week 5:

1. $x = 6$
2. ☺
3. $x = -\frac{4}{5}$
4. ☺
5. $x = 4$
6. ☺
7. 7
8. ☺
9. 2.6 cm
10. ☺
11. $L = \frac{A}{W}$
12. ☺
13. $x = 27$
14. ☺
15. $30.00

Week 6:

1. $137.50
2. ☺
3. 124.8
4. ☺
5. 12.5%
6. ☺
7. Yes
8. ☺
9. II
10. ☺
11. $y = mx + b$
12. ☺
13. a vertical line
14. ☺
15. Undefined

Week 7:

1. undefined slope
2. ☺️
3. $m = \frac{2}{3}$
4. ☺️
5. $m = \frac{5}{8}$
6. ☺️
7. $m = 5$
8. ☺️
9. $m = -1$
10. ☺️
11. $y = \frac{4}{3}x + \frac{8}{3}$
12. ☺️
13. $y = 3x + 1$
14. ☺️
15. $y = x - 4$

Week 8:

1. $\frac{301}{40}$ or $7\frac{21}{40}$
2. ☺️
3. 7
4. ☺️
5. True
6. ☺️
7. $r = -1$
8. ☺️
9. $x = -12$
10. ☺️
11. 200%
12. ☺️
13. $y = \frac{3}{4}x + 3$
14. ☺️
15. $y = 3x - 11$

Fractions to Decimals:

.125	$.1\overline{6}$	.1
.25	$.\overline{3}$	.2
.375	.5	.3
.5	$.\overline{6}$	.4
.625	$.8\overline{3}$	.5
.75		.6
.875		.7
		.8
		.9