Name:_____ Date:_____

8th Honors Math

Summer Math Packet

Dear Students,

Attached you will find your summer math packet. This packet is a way for you to keep your math skills sharp over the summer and ready for September.

- Please make sure to follow the directions and show **ALL** work! You will not receive credit if your work is not shown. An important part of math is being able to show the process of how you arrive at an answer.
- Be neat and organized! Use all the paper you need and hand it in with your packet. Be sure your papers are labeled.
- Please box your final answers.
- Don't rush and check your work!

I look forward to seeing you all in September. Have a great summer!!

Mrs. Davis

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Summer Honors Math Packet

Name: _____

A. All problems in the packet are complete.

Points: 10 8 6 4 2

B. Detailed work process is shown for each problem(use extra paper if needed).

Points: 10 8 6 4 2

C. Work is neat and organized.

Points: 5 4 3 2 1

D. Summer packet is handed in on time(the first day of school). One point will be deducted for each day the assignment is late.

Points: 5 4 3 2 1

Total Points Possible: 30 Points Earned: _____

Order of Operations

Simplify each expression using PEMDAS!

1) $2 * 6 \div 4 + 7 - 8 * 3 + 77 \div 11$

2) $72 \div 12 + 2^2 - 5 * 2 + 3 + 2 * (6 - 5)$

3) $7 * (12 - 5) + 9 \div (-3) + 7 * (-2)$

4) $13 + 2x - 5 - 8x + 7 * (4x + 1)$

5) $-5x - 8 + (8 \div 2) + 7 * 6$

6) $3x - 6 + 4 * 8 - 3x + 2y - 90 \div 5$

Absolute Values & Negative Integer Operations

Simplify each statement as much as possible.

1. $|-4|$
2. $-|-5|$
3. $(-3)^2$
4. -5^3

5. $-4 * 5$
6. $-7 + 3$
7. $-8 * -7$
8. $-28 \div -7$

9. $-42 + 27$
10. $-22 - (-8)$
11. $\frac{-42}{7}$
12. $37 - 83$

13. $-42 \div 2 + (7 * 3) + 8 - (-5) - 4 * 2$

14. $|-2| + 8^2 - (-3)^2 + 7 * 2 - 22 \div 2$

15. $|-4^3| - 8 * 7 + (-(-(-2) + \left(-\frac{48}{6}\right) + (-3) * (-2)$

Operations with Fractions

Reduce answers as much possible by finding common factors.

#1. $\frac{2}{5}+\frac{3}{7}$

#2. $\frac{4}{28}-\frac{7}{9}$

#3. $3\frac{1}{3}+4\frac{7}{8}$

#4. $-\frac{7}{25}-\frac{8}{15}$

#5. $\frac{2}{25}*\frac{15}{22}$

#6. $\frac{27}{31}*-\frac{62}{81}$

#7. $-\frac{10}{21}*-\frac{49}{35}$

#8. $4\frac{1}{3}*5\frac{2}{5}$

#9. $-\frac{42}{55}\div\frac{28}{11}$

#10. $\frac{25}{28}\div\frac{15}{32}$

#11. $-\frac{8}{5}\div\frac{6}{35}$

#12. $\frac{125}{128}\div\frac{65}{72}$

13. You have $8\frac{4}{5}$ total cups of lemonade, and you want to share it with your friends. Each friend gets $\frac{1}{10}$ of a cup to drink.
How many friends do you have?

14. You have $10\frac{2}{7}$ ounces of candle wax to make an army of tiny, beautiful-smelling candles. You are able to make a total of 12 candles from the wax. How much wax is in each candle? (Hint: write an equation first.)

Exponents & Expressions

For #1-4, rewrite as multiplication problems, then solve.

#1. $(-5)^4$ #2. $\left(\frac{1}{2}\right)^3$ #3. -4^2 #4. $\left(-\frac{2}{3}\right)^3$

For #5-7, rewrite as exponents, and solve.

#5. $2 * 2 * 2$ #6. $(\frac{1}{4} * \frac{1}{4})$ #7. $-1 * -1 * -1 * -1 * -1 * -1 * -1$

Simplify the expression by combining terms.

#8. $-2(x-3)+4x$ #9. $4x-1(6+2x)$ #10. $4x-3+6z+7-10x$

#11. $(6a+3x)-(4a-7x)$ #12. $(-4y-8x)+(7y+10x)$

#13. $(5x-2a)-(-4x+7a)$ #14. $(15x-3y)+(-12x-y)$

Find the greatest common factor of the following terms.

#15. 84, 128 #16. $147x$, $105x^2$ #17. 216, 288, 72

Solving Equations

Solve each equation for the variable.

#1. $2x + 6 = 8$

#2. $-4(x - 2) = 16$

#3. $\frac{x+7}{3} = 12$

#4. $\frac{5x-3}{2} = 11$

#5. $-3x - 7 = x + 9$

#6. $4(2x + 6) = 16x + 8$

#7. $2(x - 4) = 22$

#8. $-5x = 35$

#9. $\frac{x}{4} + 3 = 7$

#10. $-\frac{2x}{5} = 10$

#11. $-\frac{x-5}{2} = 11$

#12. $\frac{2x+1}{2} = 3x$

Factor out any common factors from each expression.

#13. $81x + 27$

#14. $3x - 9$

#15 $-48 - 64x$

Inequalities

For #1-2, write a sentence that represents the inequality.

#1. $x < 7$ #2. $x \geq -4$

For #3-4, tell if the given number makes the inequality TRUE or FALSE.

#3. $2x < 10, \text{value} = -3$ #4. $\frac{x+7}{6} \geq -5, value = 5$

Solve the inequalities, showing each step. Then graph the solutions.

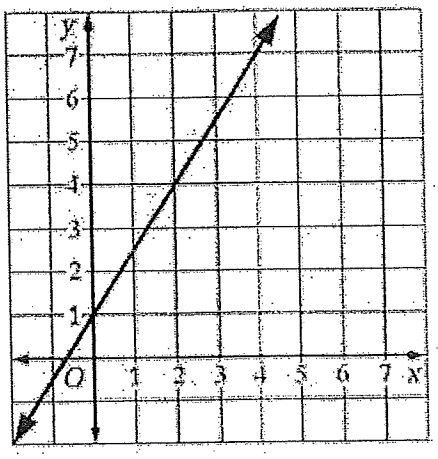
#5. $x + 7 \leq -2$ #6. $\frac{3}{5}x > 9$ #7. $7 - 2x \geq 5$

#8. $-x - 8 < 3$ #9. $-\frac{5}{6}x \geq 15$ #10. $2x - 5 > 3x + 6$

#11. $3x - 8 < 3x + 7$ #12. $3x + 7 > 4$ #13. $-2x + 7 < 9x - 2$

Coordinate Plane & Unit Rates

For #1-3, use the graph given to answer the questions.



#1. When $x = -2$, what is Y?

#2. When $y = 4$, what is X?

#3. When $x = 4$, what is Y?

For #4-6, use the equation $y = -3x + 2$ to find the value of y at the given x values.

#4. $x = 3$ **#5.** $x = -\frac{5}{3}$ **#6.** $x = 0$ **#7.** $x = -4$

For #7-10, write the ratio as a fraction in its <u>simplest</u> form (reduce!).

#8. 56 to 77 **#9.** 144 to 84 **#10.** 15 to 45 **#11.** 36 : 108

Find the unit rate [by making the denominator 1].

#12. $\frac{28\ megabytes}{5\ seconds}$ **#13.** $\frac{45\ cups\ of\ coffee}{4\ days}$ **#14.** $\frac{28\ detentions}{9\ days}$

Proportions & Slope

For #1-3, tell if the statements are proportional. Show your work.

1. $\frac{3}{7} = \frac{81}{189}$

2. $\frac{22}{8} = \frac{152}{56}$

3. $\frac{5}{6} = \frac{70}{82}$

For #4-6, write a proportion for the situation, and then solve.

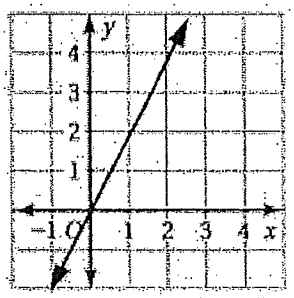
4. A test is worth 36 total points and you want to get an 87% on it. How many points do you need to score?

5. You pay $4 for 7 pounds of chocolate frogs. How much would you pay for 11 pounds of chocolate frogs?

6. The ratio of chocolate to vanilla ice cream is 3 scoops to 7 scoops. If there are 147 scoops of vanilla ice cream, how many total scoops are there?

For #7-8, find the slopes of the graphs provided.

7.



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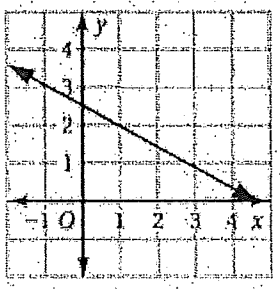


For #9-11, use the points given to find the slope between them. (Answers might be fractions!)

9. $(-3, 4)$ *and* $(-1, -2)$

10. $(7, 9)$ *and* $(2, -1)$

11. $(-21, 9)$ *and* $(19, -4)$

Decimals, Fractions, Percents

1. Write 0.42 as a fraction.

2. Write $\frac{7}{35}$ as a decimal.

3. Write 74% as a fraction.

4. Write 0.5732 as a percent.

5. Write $\frac{3}{11}$ as a percent.

6. Write $\frac{6}{25}$ as a percent.

For #7-12, turn the sentences into equations, and solve.

7. What number is 37% of 7?

8. 22% of 45 is what number?

9. 7 is 37% of what number?

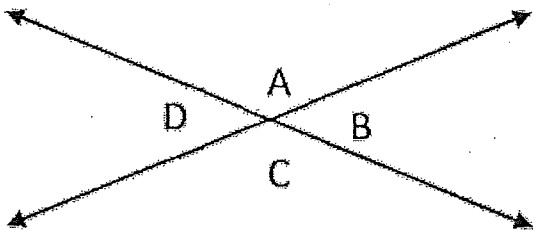
10. What is 212% of 3?

11. 0.15% of 3,034 is what number?

12. 6 is 8% of what number?

13. A company makes a table for $15 and sells it for $19. What is the percentage of markup?

ANGLES



1. List the pairs of adjacent angles.
2. List the pairs of vertical (opposite) angles.

3. Angle Z and Angle X on intersecting lines are vertical angles. If Angle Z is 63°, what is Angle X?

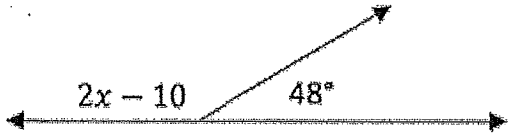
4. Angle K and Angle J on intersecting lines are adjacent angles. If Angle K is 105°, what is angle J?

5. The total sum of **complementary** angles is _____.

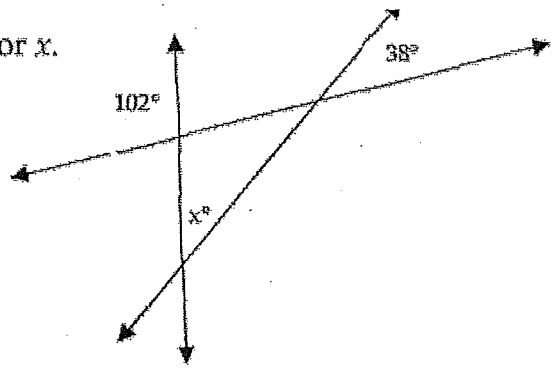
6. The total sum of **supplementary** angles is _____.

7. Angle B and Angle C are **complementary**. If Angle B is 43°, what is Angle C?

8. Solve for x.



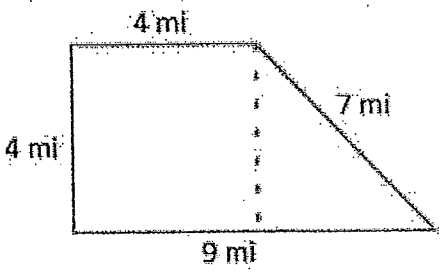
9. Solve for x.



Area, Perimeter, and Circumference

1. A circle has a radius of 3 inches. A) What is the diameter? B) What is the area of the circle? C) What is the circumference of the circle?

2. A circle has a diameter of 8 meters. A) What is the radius? B) What is the area of the circle? C) What is the circumference of the circle?



3. What is the perimeter of the figure to the right?

4. What is the area of the figure to the right?

5. What is the area of a parallelogram with a base of 9 inches and a height of 7.62 centimeters?

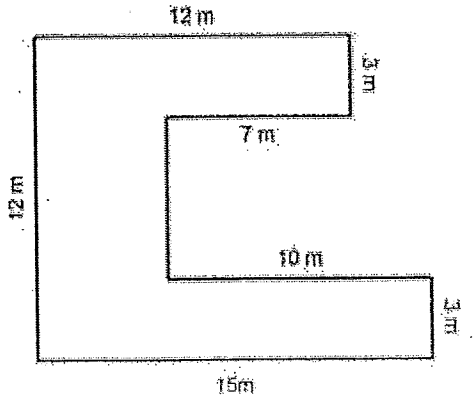
6. The area of a rectangle is 58 in^2. The base is 8 inches long. What is the height?

7. A circle has a circumference of 14π inches. What is the diameter of the circle?

8. A triangle has an area of 160 mi^2, and a base of 20 miles. What is the height?

9. What is the area of a triangle that has a base of 8 meters and a height of 7 meters?

10. A circle has an area of $49\pi\ m^2$. What is the radius of the circle?



11. Find the perimeter of the shape to the left.

12. Find the area of the shape to the left.