Summer Homework Packet

Incoming 8th Grade

Dear Parents/Guardians and Students,

Throughout the summer it is very important to review topics from previous mathematics grade levels. The problems in this packet are designed to help you review and work on skills to be a successful 8th grade math student. This packet will count as a homework grade and these topics will appear on a quiz at the beginning of the marking period (after a review is completed).

The summer homework packet is due Wednesday, September 9th 2015. In order to receive full credit for the summer homework assignment, all work must be shown (homework does not have to be 100% correct to receive full credit; it needs to be completed to the best of your ability and on time). There are two additional worksheets attached to the packet that are extra credit. These two pages do not have to be completed; however any student that completes them and shows their work will receive extra credit.

Have a wonderful summer!

Miss Wolf

Name _____ Class _____ Date _____

* No Calculator

Review 105

Multiplying and Dividing Decimals

Multiply 5.43×1.8.

① Multiply as if the numbers were whole numbers.

② Count the total number of decimal places in the factors.

③ Place the decimal point in the product.

$$\begin{array}{r} 5.43 \\ \times\ 1.8 \\ \hline 4344 \\ +\ 543 \\ \hline 9.774 \end{array}$$

5.43 × 1.8: **3 decimal places**

9.774 ← **3 decimal places**

Multiply $38.25 \div 1.5$.

① Rewrite the problem with a whole number divisor.

② Place the decimal point in the quotient.

③ Divide. Then check.

$1.5\overline{)38.25}$ ↓

$1.5.\overline{)38.2.5}$

↑ ↑ **Move 1 place each.**

$$\begin{array}{r} 25.5 \\ 15\overline{)382.5} \\ -30 \\ \hline 82 \\ -75 \\ \hline 75 \\ -75 \\ \hline 0 \end{array}$$

$25.5 \times 15 = 382.5$ ✔ **Multiply to check.**

Find each product.

1. $\begin{array}{r} 1.42 \\ \times\ 7.2 \\ \hline \end{array}$

2. $\begin{array}{r} 2.2 \\ \times\ 4.1 \\ \hline \end{array}$

3. $\begin{array}{r} 5.11 \\ \times\ 0.3 \\ \hline \end{array}$

4. $\begin{array}{r} 3.68 \\ \times\ 5.8 \\ \hline \end{array}$

5. 2.8×0.05 _____

6. $1.45 \cdot 0.7$ _____

7. $(2.07)(4.9)$ _____

8. $9.3(0.56)$ _____

9. $0.006(3.75)$ _____

10. 3.8×912 _____

Rewrite each problem so the divisor is a whole number.

11. $5.1\overline{)351.9}$ _____

12. $1.8\overline{)14.9}$ _____

13. $0.32\overline{)39.68}$ _____

14. $0.06\overline{)0.948}$ _____

15. $0.8\overline{)2.112}$ _____

16. $0.49\overline{)9.457}$ _____

Find each quotient.

17. $2\overline{)15.8}$

18. $0.4\overline{)2.2}$

19. $0.09\overline{)0.99}$

20. $2.7\overline{)12.15}$

21. $0.14\overline{)28.14}$

22. $0.08\overline{)0.64}$

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Review 109

Adding and Subtracting Integers

Use these rules to add and subtract integers.

Adding Integers

Same Sign

- The sum of two positive integers is positive.
  Example: $6 + 16 = 22$
- The sum of two negative integers is negative
  Example: $-9 + (-3) = -12$

Different Signs

- First find the absolute values of each number.
- Then subtract the lesser absolute value from the greater.
- The sum has the sign of the integer with the greater absolute value.
  Example: $-10 + 9 = -1$

Subtracting Integers

- To subtract integers, add the opposite.
- Then following the rules for adding integers.
  Example: $6 - (-3) = 6 + 3 = 9$

Find each sum.

1. $8 + (-2)$ _____
2. $-9 + 4$ _____
3. $3 + (-2)$ _____
4. $-1 + 11$ _____
5. $12 + 13$ _____
6. $-9 + 5$ _____
7. $7 + 2$ _____
8. $-1 + (-7)$ _____
9. $-3 + 0$ _____
10. $-1 + (-1)$ _____
11. $6 + 5$ _____
12. $3 + (-2)$ _____

Complete.

13. $-3 - 4$ Change to addition: $-3 +$ _____ = _____
14. $5 - 2$ Change to addition: $5 +$ _____ = _____
15. $-6 - (-10)$ Change to addition: $-6 +$ _____ = _____
16. $8 - (-2)$ Change to addition: $8 +$ _____ = _____

Find each difference.

17. $4 - 5$ _____
18. $-5 - 4$ _____
19. $-8 - (-7)$ _____
20. $19 - (-6)$ _____
21. $-10 - 12$ _____
22. $-12 - 10$ _____
23. $-4 - (-5)$ _____
24. $-2 - (-3)$ _____
25. $9 - (-7)$ _____
26. $0 - 3$ _____
27. $6 - 8$ _____
28. $0 - (-10)$ _____

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Review 110

Multiplying and Dividing Integers

To multiply integers:

- If the signs are alike, the product is positive.

$$2 \cdot 3 = 6$$
$$-2 \cdot -3 = 6$$

- If the signs are different, the product is negative.

$$2 \cdot -3 = -6$$
$$-2 \cdot 3 = -6$$

To divide integers:

- If the signs are alike, the quotient is positive.

$$6 \div 3 = 2$$
$$-6 \div -3 = 2$$

- If the signs are different, the quotient is negative.

$$6 \div -3 = -2$$
$$-6 \div 3 = -2$$

Study these four examples. Write positive or negative to complete each statement.

$$7 \cdot 3 = 21 \qquad 7 \cdot -3 = -21$$
$$-7 \cdot -3 = 21 \qquad -7 \cdot 3 = -21$$

1. When both integers are positive, the product is _____.
2. When one integer is positive and one is negative, the product is _____.
3. When both integers are negative, the product is _____.

$$21 \div 3 = 7 \qquad -21 \div -3 = 7$$
$$21 \div -3 = -7 \qquad -21 \div 3 = -7$$

4. When both integers are positive, the quotient is _____.
5. When both integers are negative, the quotient is _____.
6. When one integer is positive and one is negative, the quotient is _____.

Tell whether each product or quotient will be *positive* or *negative*.

7. $4 \cdot 7$ _____
8. $-4 \cdot 7$ _____
9. $-4 \cdot -7$ _____
10. $4 \cdot -7$ _____
11. $-28 \div 4$ _____
12. $28 \div 4$ _____
13. $-28 \div -7$ _____
14. $28 \div -7$ _____
15. $10 \cdot -4$ _____
16. $-25 \div 5$ _____
17. $-2 \cdot -2$ _____
18. $100 \div 10$ _____

*No Calculator

Review 117

Exploring Two-Step Problems

You can change a word expression into an algebraic expression by converting the words to variables, numbers, and operation symbols.

To write a two-step algebraic expression for *seven more than three times a number,* follow these steps.

① Define the variable.	Let n represent the number.
② Ask yourself are there any key words?	"More than" means add and "times" means multiply.
③ Write an algebraic expression.	$7 + 3 \cdot n$
④ Simplify.	$7 + 3n$

Define a variable and write an algebraic expression for each phrase.

1. 3 inches more than 4 times your height _____
2. 4 less than 6 times the weight of a turkey _____
3. 8 more than one-half the number of miles run last week _____
4. twice the cost plus 30 _____

Solve.

5. Three friends pay $4 per hour to rent a paddleboat plus $5 for snacks. Write an expression for the total cost of rental and snacks. Then evaluate the expression for 2 hours.

_____

6. A lawn care service charges $10 plus $15 per hour to mow and fertilize lawns. Write an expression for the total cost of having your lawn mowed and fertilized. Then evaluate the expression for 4 hours.

_____

Solve each equation using number sense.

7. $2s + 6 = 12$ _____
8. $\frac{f}{10} - 1 = 2$ _____
9. $4r - 7 = 9$ _____
10. $4x - 10 = 30$ _____
11. $2n - 7 = 13$ _____
12. $\frac{s}{3} + 2 = 4$ _____

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Review 136

Multiplying Fractions and Mixed Numbers

Follow these steps to multiply fractions and mixed numbers.

	Multiply: $\frac{3}{4} \cdot \frac{2}{5}$	Multiply: $2\frac{2}{3} \cdot 1\frac{5}{8}$
		$\frac{8}{3} \cdot \frac{13}{8}$
① Write the mixed numbers as improper fractions if necessary.		
② Multiply numerators. Multiply denominators.	$\frac{3 \cdot 2}{4 \cdot 5} = \frac{6}{20}$	$\frac{8 \cdot 13}{3 \cdot 8} = \frac{104}{24}$
③ Simplify, if necessary.	$\frac{6}{20} = \frac{3}{10}$	$\frac{104}{24} = 4\frac{1}{3}$

Complete to find each product.

1. $\frac{1}{5} \cdot \frac{2}{3}$

$\frac{1 \cdot 2}{5 \cdot 3} = \frac{\square}{\square}$

Product _____

2. $\frac{1}{4} \cdot 4\frac{1}{8}$

$\frac{1}{4} \cdot \frac{\square}{8} = \frac{\square}{32}$

Product _____

3. $2\frac{3}{4} \cdot 1\frac{2}{3}$

$\frac{\square}{4} \cdot \frac{\square}{3} = \frac{\square}{12}$

Product _____

Find each product. Write the product in simplest form.

4. $\frac{5}{8} \cdot \frac{2}{5}$ _____

5. $\frac{2}{3} \cdot 9$ _____

6. $\frac{5}{12} \cdot \frac{3}{10}$ _____

7. $\frac{3}{4} \cdot 1\frac{4}{5}$ _____

8. $\frac{1}{2} \cdot 5\frac{1}{6}$ _____

9. $3\frac{4}{5} \cdot \frac{1}{6}$ _____

10. $1\frac{2}{3} \cdot 5$ _____

11. $1\frac{3}{4} \cdot 3\frac{1}{7}$ _____

12. $2\frac{3}{5} \cdot \frac{1}{4}$ _____

13. $2\frac{3}{5} \cdot \frac{7}{8}$ _____

14. $4\frac{1}{5} \cdot \frac{5}{7}$ _____

15. $\frac{1}{2} \cdot 2\frac{1}{8}$ _____

16. $3\frac{5}{6} \cdot 2\frac{1}{4}$ _____

17. $2\frac{5}{7} \cdot 1\frac{1}{3}$ _____

18. $7\frac{2}{3} \cdot 2\frac{1}{7}$ _____

19. $5\frac{1}{2} \cdot 2\frac{2}{3}$ _____

20. $\frac{5}{6} \cdot 3\frac{3}{5}$ _____

21. $7\frac{3}{4} \cdot 2$ _____

Grade 7 Topics

Name _____ Class _____ Date _____

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Review 143

Unit Rates and Proportional Reasoning

A **rate** is a ratio that compares two quantities measured in different units.

The cost for 10 copies is $1.50.

The rate is $1.50/10 copies ($1.50 per 10 copies).

A **unit rate** is a rate that has a denominator of 1. You can compare using unit rates.

To find the unit rate for 10 copies:

$$\$1.50/10 \text{ copies} = \frac{\$1.50}{10} = \frac{\$1.50 \div 10}{10 \div 10} = \frac{\$.15}{1}$$

The unit rate is $.15 per copy. This is also the *unit price.*

COPY CENTER Color Copies	
1 copy	$.25
10 copies	$1.50
25 copies	$2.50
50 copies	$4.50
100 copies	$6.00

For the better buy, compare unit rates.

The unit price for 10 copies is $.15/copy.

The unit price for 1 copy is $.25/copy.

Since $.15 < $.25, the 10-copy price is the better buy.

Use the Copy Center chart. Find the unit rate.

1. 25 copies

$$\frac{\$2.50}{25} = \frac{\$2.50 \div \square}{25 \div \square} = \_\_\_\_$$

2. 100 copies

$$\frac{\$6.00}{100} = \frac{\$6.00 \div \square}{100 \div \square} = \_\_\_\_$$

3. 50 copies

$$\frac{\$4.50}{50} = \frac{\$4.50 \div \square}{50 \div \square} = \_\_\_\_$$

Write the unit rate for each situation.

4. drive 1,800 mi in 30 h _____

5. 390 mi on 15 gal of gasoline _____

6. jog 4,000 m in 12 min _____

7. $25.50 for 17 tickets _____

8. 456 mi on 12 gal of gasoline _____

9. 54 c of flour for 12 cakes _____

Find each unit price. Then determine the better buy.

10. juice: 18 oz for $1.26
8 oz for $.70

_____

11. cloth: 2 yd for $3.15
6 yd for $7.78

_____

12. socks: 2 pairs for $3.50
6 pairs for $9.00

_____

13. pecans: 1 lb for $4.80
2 oz for $1.00

_____

Name _____ Class _____ Date _____

Review 150

* No Calculator

Percents, Fractions, and Decimals

To write a percent as a fraction, write a fraction with 100 as the denominator.

$45\% = \frac{45}{100}$ ← **Denominator 100**

$= \frac{45 \div 5}{100 \div 5} = \frac{9}{20}$ ← **Simplify.**

$45\% = \frac{9}{20}$

To write a decimal as a percent, multiply by 100.

Write 0.85 as a percent.

$0.85 \cdot 100 = 85$

$0.85 = 85\%$

To write a percent as a decimal, divide by 100.

Write 46% as a decimal.

$46 \div 100 = 0.46$

$46\% = 0.46$

Write each fraction as a percent.

1. $\frac{3}{4}$ _____
2. $\frac{12}{25}$ _____
3. $\frac{4}{5}$ _____
4. $\frac{23}{4}$ _____

Write each percent as a fraction in simplest form.

5. 45% _____
6. 60% _____
7. 16% _____
8. 25% _____
9. 37.5% _____
10. 99% _____
11. 40% _____
12. 86% _____

Write each percent as a decimal or each decimal as a percent.

13. 35% _____
14. 48% _____
15. 116% _____
16. 8% _____
17. 12% _____
18. 5.5% _____
19. 400% _____
20. 0.6% _____
21. 0.39 _____
22. 0.735 _____
23. 0.86 _____
24 0.34 _____
25. 0.4 _____
26. 0.6 _____
27. 0.004 _____
28. 6 _____

Grade 7 Topics

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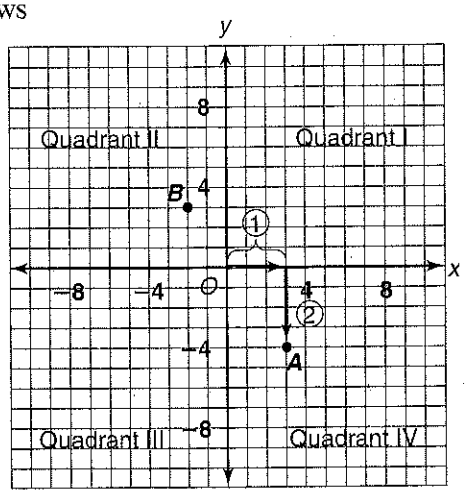
Review 186

Graphing Points in Four Quadrants

The intersection of a horizontal number line and a vertical number line forms the **coordinate plane.** The coordinate plane below shows point A for the **ordered pair** $(3, -4)$.



To graph point A with **coordinates** $(3, -4)$:

① Start at the origin, O. Move 3 units to the right.

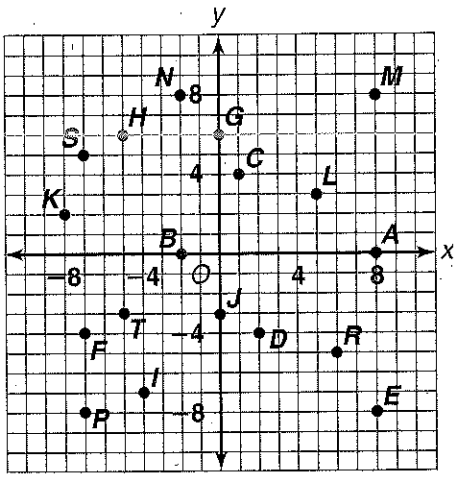
② Move 4 units down for -4. Draw point A.

The axes form four **quadrants** in the coordinate plane.

- The point $(3, -4)$ is located in quadrant IV.
- Point B is located in quadrant II.

The line containing two points with the same x-coordinate is a vertical line. The line containing two points with the same y-coordinate is a horizontal line.

Name the point with the given coordinates.



1. $(8, 0)$ _____
2. $(8, -8)$ _____
3. $(1, 4)$ _____
4. $(-7, -4)$ _____
5. $(-5, 6)$ _____
6. $(-2, 0)$ _____
7. $(6, -5)$ _____
8. $(-5, -3)$ _____

Write the coordinates of each point.

9. D _____
10. G _____
11. I _____
12. J _____
13. K _____
14. L _____
15. M _____
16. S _____

Identify the quadrant in which each point lies.

17. F _____
18. C _____
19. D _____
20. H _____
21. N _____
22. P _____
23. S _____
24. R _____

Without graphing, tell whether the line containing each pair of points is vertical or horizontal.

25. F and P _____
26. H and G _____
27. A and M _____

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Review 180 *Extra Credit

Function Rules

The function table shows the relationship between inputs and outputs.
A function rule for this table is:

output = 4 · input

Input	Output
1	4
2	8
3	12

You can use the function rule $y = 2x + 3$ to find y when $x = 0, 1, 2$, and 3.
Replace x with 0, 1, 2, and 3.

x	$y = 2x + 3$
0	$2(0) + 3 = 3$
1	$2(1) + 3 = 5$
2	$2(2) + 3 = 7$
3	$2(3) + 3 = 9$

Write input-output function rules for each table of values.

1.

Input	Output
3	6
4	8
5	10
6	12

_____

2.

Input	Output
1	3
2	4
3	5
4	6

_____

3.

Input	Output
1	45
2	90
3	135
4	180

_____

Make a table for the function represented by each rule. Find y when $x = 0, 1, 2$, and 3.

4. $y = 10x$

x	y
0	
1	
2	
3	

5. $y = x - 4$

x	y
0	
1	
2	
3	

6. $y = 2x + 4$

x	y
0	
1	
2	
3	

7. $y = 3x - 1$

x	y
0	
1	
2	
3	

8. A printer can print 9 black and white pages per minute.

   a. Write a function rule to represent the relationship between the number of black and white printed pages and the time it takes to print them. _____

   b. How many black and white pages can be printed in 15 minutes? _____

   c. How long would it take to print a 75 page black and white report? _____

Name _____ Class _____ Date _____

Review 187 *Extra Credit

Graphing Linear Equations

The **solutions** of $y = x + 3$ are the (x, y) pairs that make the equation true.

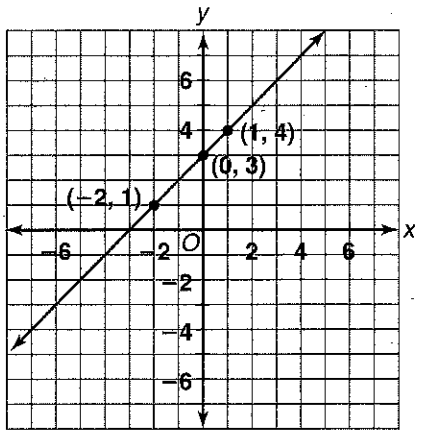
The solutions can be listed in a table.

x	$x + 3$	y	(x, y)
0	$0 + 3$	3	$(0, 3)$
1	$1 + 3$	4	$(1, 4)$
-2	$-2 + 3$	1	$(-2, 1)$

If all the solutions lie on a line, the equation is a **linear equation** and the line is its **graph.**

$y = x + 3$ is a linear equation.

The solutions can be graphed in the coordinate plane, as shown.



Complete each table.

1. $y = x - 4$

x	$x - 4$	y	(x, y)
2			
4			
6			

2. $y = 3x$

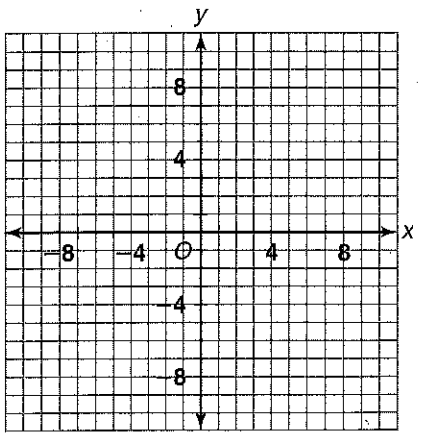
x	$3x$	y	(x, y)
-1			
0			
3			

3. $y = -x + 1$

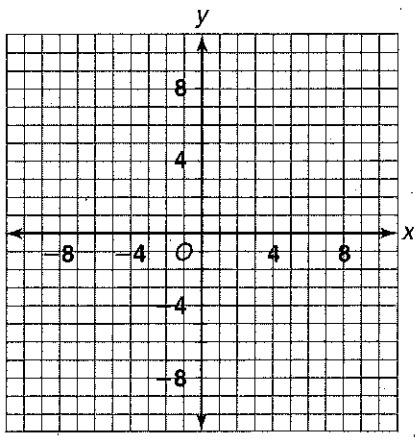
x	$-x + 1$	y	(x, y)
0			
2			
-3			

Graph each linear equation.

4. $y = x - 5$



5. $y = 3x - 4$



Grade 7 Topics