FOR ALL STUDENTS TAKING ALGEBRA I
2021-2022

SUMMER REVIEW PACKET

NAME _____

To all Orangeburg Prep Math Students:

In an effort to continue to improve our standardize test scores and prevent knowledge loss over the summer break, you are asked to complete the attached worksheets and be prepared to turn them in on the first day of classes. The questions in the packet focus on the skills you were taught in your previous math courses. Some problems may be a bit involved, so it is not a good idea to wait until the last minute.

Work needs to accompany each problem and all answers should be in simplified form. The PRINTED packet is due at the beginning of class on Aug. 19 and will be counted as a project grade. A score of 80% will be given if every problem is attempted. Additional points, up to 20%, will be given for accuracy.

You will also be given a quiz on this packet during the first week of school, so make sure to bring questions that you have during Open House on Aug. 17. Any assignment not turned in on time will receive a 10 point deduction for each day that it is late.

Enjoy your summer vacation and your math packet. We look forward to a great school year starting in August.

The Math Department

HONOR CODE: I promise that I completed this summer review packet independently from any other student. I used only the resources given in this packet. **I did NOT use Photomath or any similar program!**

PARENT:_____

STUDENT:_____

Helpful Websites
www.regentsprep.org
www.khanacademy.org
www.purplemath.com/modules
www.Aleks.com (a website where you can subscribe for individual math lessons)

ORDER OF OPERATIONS USING INTEGERS

A Review on Operations on Integers

Addition Problems:

negative + negative   *negative + positive*

$-6 + (-20)$ $6 + (-20)$ $-6 + 20$

$\boxed{-26}$ $\boxed{-14}$ $\boxed{14}$

Multiplication & Division Problems:

negative & positive   *negative & negative*

$-18 \cdot 2$ $-18 \div 2$ $-15 \cdot (-3)$ $-15 \div (-3)$

$\boxed{-36}$ $\boxed{-9}$ $\boxed{45}$ $\boxed{5}$

Subtraction Problems:

Subtraction is the same as adding the opposite.
(of the 2nd number)

$18 - 32 \rightarrow 18 + (-32)$

$\boxed{-14}$

$-25 - 11 \rightarrow -25 + (-11)$ $-4 - (-13) \rightarrow -4 + {}^{+}13$

$\boxed{-36}$ $\boxed{9}$

Remember PEMDAS

$-7 + (-18 \div 2)^2 \div 3 \cdot 5$ parentheses

$-7 + (-9)^2 \div 3 \cdot 5$ exponents

$-7 + 81 \div 3 \cdot 5$ multiplication/division

$-7 + 27 \cdot 5$ (left to right)

$-7 + 135$ addition/subtraction

$\boxed{128}$ (left to right)

Find the value of the expression.

1. $15 - 12 \div 4$

2. $7 + 2 \cdot 4 - 4$

3. $23 - (-17 + 8)$

4. $24 \div (-3) \cdot 2 - 3^2$

5. $-12(20 - 17) - 3 \cdot 6$

6. $3[2 + (12 \div 3)^2]$

7. $\dfrac{-8(2) - 4}{8 \div 4}$

8. $(4 - 10)^2 - [(-10) \div (-5)]$

9. $\dfrac{2 \cdot 4^2 - 8 \div 2}{(5 + 2) \cdot 2}$

10. Let $x = -2$, $y = 4$, and $z = \dfrac{1}{2}$

Evaluate $z(y - 3x) + x$

OPERATIONS ON FRACTIONS & MIXED NUMBERS

Addition & Subtraction Problems:
You <u>must</u> have common denominators before adding or subtracting.
Making them improper fractions first is optional (your choice).

$$9\frac{1}{18}+4\frac{5}{6}$$

$$9\frac{1}{18}+4\frac{5\cdot3}{6\cdot3}$$

$$9\frac{1}{18}+4\frac{15}{18}$$

$$13\frac{16\div2}{18\div2}$$

$$\boxed{13\frac{8}{9}}$$

$$4\frac{3}{4}-1\frac{5}{6}$$

$$4\frac{3\cdot3}{4\cdot3}-1\frac{5\cdot2}{6\cdot2}$$

$$4\frac{9}{12}-1\frac{10}{12}$$

$$\boxed{2\frac{11}{12}}$$

<u>side work</u>

$$3\frac{21}{\cancel{4}\ \cancel{9}\ 12}$$

$$-\ 1\frac{10}{12}$$

$$2\frac{11}{12}$$

or make them improper fractions

$$4\frac{9}{12}-1\frac{10}{12}$$

$$\frac{57}{12}-\frac{22}{12}$$

$$\frac{35}{12}\ \text{or}\ \boxed{2\frac{11}{12}}$$

Multiplication & Division Problems:
You <u>must</u> make mixed numbers become improper fractions before multiplying or dividing.
There's no need to get common denominators.

$$2\frac{2}{3}\cdot1\frac{1}{6}$$ or you can reduce any numerator
with any denominator before multiplying

$$\frac{8}{3}\cdot\frac{7}{6}$$

$$\frac{56\div2}{18\div2}$$

$$\frac{28}{9}\ \text{or}\ \boxed{3\frac{1}{9}}$$

$$\frac{8\div2}{3}\cdot\frac{7}{6\div2}$$

$$\frac{4}{3}\cdot\frac{7}{3}$$

$$\frac{28}{9}\ \text{or}\ \boxed{3\frac{1}{9}}$$

Division = Multiplying by the Reciprocal
(of the 2nd number)

$$\frac{4}{7}\div1\frac{2}{9}$$

$$\frac{4}{7}\div\frac{11}{9}$$

$$\frac{4}{7}\cdot\frac{9}{11}$$

$$\boxed{\frac{36}{77}}$$

$$15\div2\frac{1}{2}$$

$$\frac{15}{1}\div\frac{5}{2}$$

$$\frac{15}{1}\cdot\frac{2}{5}$$

$$\frac{15\div5}{1}\cdot\frac{2}{5\div5}$$

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

$$\frac{6}{1}\ \text{or}\ ⑥$$

***Find the value of each expression. Final answers must be
in simplest form*** *(including improper fractions to mixed numbers).*

1. $\dfrac{2}{3}+\dfrac{9}{3}$

2. $\dfrac{1}{4}+\dfrac{1}{5}$

3. $\dfrac{13}{20} - \dfrac{2}{5}$

4. $\dfrac{5}{6} - 3\dfrac{1}{2}$

5. $3\dfrac{3}{4} + 2\dfrac{1}{6}$

6. $\dfrac{7}{2} \cdot \dfrac{3}{2}$

7. $2\dfrac{1}{4} \cdot \dfrac{1}{18}$

8. $\dfrac{3}{2} \div \dfrac{1}{8}$

9. $\dfrac{3}{7} \div \dfrac{1}{5}$

10. $\dfrac{2}{3} \div 1\dfrac{1}{3}$

VERBAL EXPRESSIONS

ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION	EXPONENTS
Plus	Minus	Multiplied by	Divided by	Square of $(2^{nd}$ power$)$
Increased by	Decreased by	Times	Quotient of	Cube of $(3^{rd}$ power$)$
More than	Fewer than	Product	Into	Power of
Sum of	Less	Twice, One-half, etc.		
	Less than	Of *(usually with fractions)*		
	Difference of			

Write an algebraic expression for each verbal expression.

- The sum of two-fifths a number and eight: $\boxed{\dfrac{2}{5}n + 8}$

- Seven more than twice the difference a number and five: $\boxed{7 + 2(n-5)}$ *or* $\boxed{2(n-5) + 7}$

1. The sum of 9 and a number

2. The difference of a number cubed and twelve

3. A number decreased by 8

4. Three less than 5 times a number

5. One-third the square of b

6. The product of four and x increased by y

7. The quotient of a number and negative 5

8. A number to the power of five less seven

9. Twice the sum of 15 and a number

10. The quotient of three and the sum of a number and 11

SOLVING EQUATIONS USING INVERSE OPERATIONS

Examples on Solving Equations Using Inverse Operations:

1.) $x + 72 = 14$

$\quad \underline{-72 \quad -72}$

$\quad \boxed{x = -58}$

$$\begin{array}{r} {}^{6}\,{}^{12} \\ \cancel{72} \\ \underline{-14} \\ 58 \end{array}$$

2.) $-39 = r - 50$

$\quad \underline{+50 \quad\quad +50}$

$\quad \boxed{11 = r}$

3.) $-8w = -168$

$\quad \underline{\div(-8) \quad \div(-8)}$

$\quad \boxed{w = \quad 21}$

4.) $\dfrac{h}{15} = -5$

$\quad \underline{\cdot\,15 \quad \cdot\,15}$

$\quad \boxed{h = -75}$

5.) $-21h + 9 = -75$

$\quad \underline{-9 \quad -9}$

$\quad -21h = -84$

$\quad \underline{\div(-21) \quad \div(-21)}$

$\quad \boxed{h = 4}$

think:
$-75 + (-9)$

6.) $-34 + \dfrac{n}{-3} = 2$

$\quad \underline{+34 \quad\quad\quad +34}$

$\quad \dfrac{n}{-3} = 36$

$\quad \underline{\cdot(-3) \quad \cdot(-3)}$

$\quad \boxed{n = -108}$

S
A
D
M
E
P

When using inverse operations, go in the "inverse order" of PEMDAS. (SADMEP)

Solve each equation using inverse operations. Final answers must be in simplest form (including improper fractions to mixed numbers). No decimals.

1. $x - 6 = -23$

2. $x - (-8) = 22$

3. $-4x = 14$

4. $\dfrac{x}{7} = -8$

5. $\dfrac{2}{3}x = 10$

6. $17 = -5 + x$

7. $4x + 11 = 27$

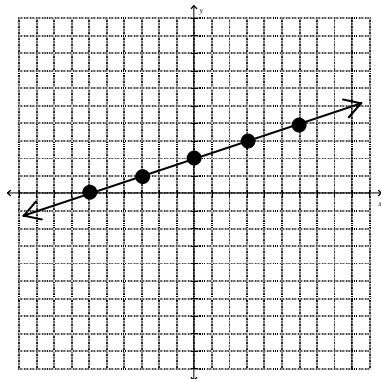**8.** $-2 - 9x = 34$

9. $13 - x = -8$

10. $\dfrac{3}{5}x + 2 = 7$

GRAPHING POINTS ON A COORDINATE PLANE

For each equation, use the given x-coordinates to complete the table.   Then, graph the line.

Example: $y = \dfrac{1}{3}x + 2$

x	y
-6	0
-3	1
0	2
3	3
6	4

sample work:

$y = \dfrac{1}{3}x + 2 \qquad y = \dfrac{1}{3}x + 2 \qquad y = \dfrac{1}{3}x + 2$

$y = \dfrac{1}{3} \cdot 0 + 2 \qquad y = \dfrac{1}{3}(-6) + 2 \qquad y = \dfrac{1}{3} \cdot 3 + 2$

$y = 0 + 2 \qquad\quad y = -2 + 2 \qquad\quad y = 1 + 2$

$y = 2 \qquad\qquad y = 0 \qquad\qquad\quad y = 3$

For each equation, use the given x-coordinates to complete the table.   Show your work in the spaces provided. Then, graph the ordered pairs and line on the coordinate plane provided on the __answer page__.

1. $y = 3x - 1$

x	y
-2	
-1	
0	
1	
2	

2. $y = -x + 2$

x	y
-6	
-5	
-1	
4	
7	

3. $y = -2x - 7$

x	y
-7	
-5	
-2	
0	
1	

4. $y = \dfrac{1}{2}x + 3$

x	y
-4	
-2	
0	
2	
4	

5. $y = \dfrac{2}{3}x + 4$

x	y
-6	
-3	
0	
3	
6	

ANSWER PAGES

ORDER OF OPERATIONS USING INTEGERS

1. _____   2. _____

3. _____   4. _____

5. _____   6. _____

7. _____   8. _____

9. _____   10. _____

OPERATIONS ON FRACTIONS AND MIXED NUMBERS

1. _____   2. _____

3. _____   4. _____

5. _____   6. _____

7. _____   8. _____

9. _____   10. _____

VERBAL EXPRESSIONS

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____
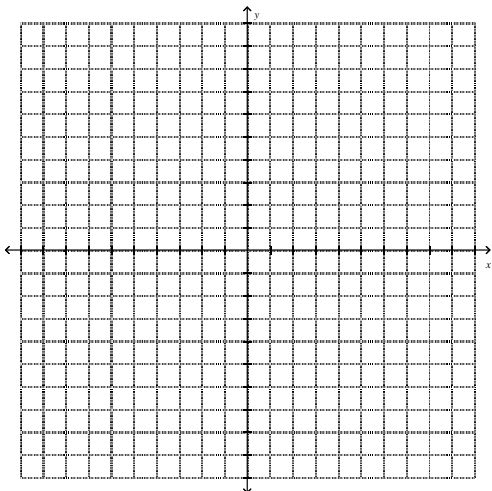
7. _____

8. _____

9. _____

10. _____

SOLVING EQUATIONS USING INVERSE OPERATIONS

1. _____   2. _____   3. _____

4. _____   5. _____   6. _____

7. _____   8. _____   9. _____

10. _____
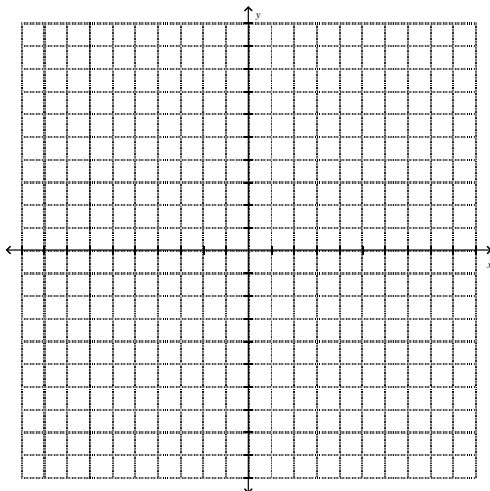
GRAPHING POINTS ON A COORDINATE PLANE
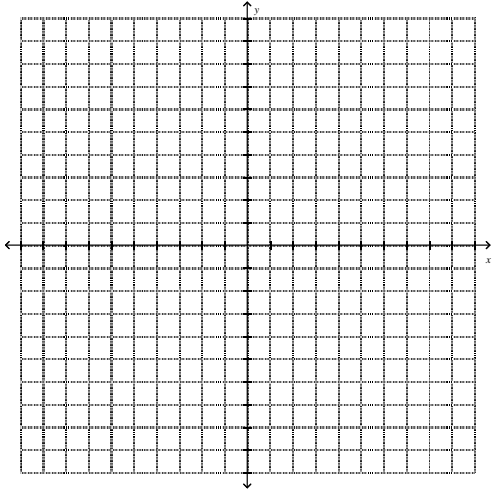
1.

x	y
-2	
-1	
0	
1	
2	

2.

x	y
-6	
-5	
-1	
4	
7	

3.

x	y
-7	
-5	
-2	
0	
1	

4.

x	y
-4	
-2	
0	
2	
4	

5.

x	y
-6	
-3	
0	
3	
6	