**SUMMER PACKET**

**7TH Grade Honors to 8th Grade Algebra I, Honors**

**Answer Sheet**

**A List of Resources is provided at the end of the packet**

Record all Answers Below. Show all work on the packet or on scrap paper that you attach to the packet. Full credit will only be given if work is shown.

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**Simplify. Where necessary, use the distributive property to write an equivalent variable expression.**

**Example** $2\left(x+3\right)-4(x-2)$

**Distribute** $2x+6-4x+8$

**Combine like terms** $-2x+14$

 **NO CALCULATOR (Show ALL WORK)**

1. $-3-\left(2+7\right)+\left(-8\right)(5-10)$
2. $\frac{5(3-8)}{4∙6-2∙7}$
3. $\left[50÷5∙2\left(4-8\right)-20\right]+\left[2(10-3∙2)\right]$
4. $-9\left(-6\right)+3\left(8\right)-(-5)$
5. $\frac{2}{7}+8-3 \frac{8}{9}$ $-$ $\frac{2}{7}-8$
6. 
7. $\left(-2\right)\left(3x-8\right)+9x(3)$
8. $\left(-\frac{2}{3}\right)\left[6x-9y+3\right]$
9. $-4+6\left[3x-2(10x+8)\right]-7x$
10. $12v+6(v+4)$
11. 

1. 

1. 
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6. 
7. 
8. $-4(\frac{1}{2}x+\frac{3}{4})$

**Exponents Rules**

 **Algebra Numbers**

$a^{m}∙a^{n}=a^{m+n}$$4^{3}∙4^{2}=4^{3+2}=4^{5}$

$\frac{a^{m}}{a^{n}}=a^{m-n}$$\frac{6^{8}}{6^{5}}=6^{8-5}=6^{3}$

**NO CALCULATOR**

**Evaluate each expression if** $w= -4, x=6, y= 2, z=-1$

1. $\frac{3w-2x}{2xy}$
2. $x^{2}-xz+4w$
3. $w^{2}-2y^{2}+\frac{1}{4}xy$
4. $3+2\left(wx+xy\right)^{2}$

**Simplify each expression. Write your answer using only positive exponents.**

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**Use the distributive property and your knowledge of exponents to simplify.**

**Example** $-8v(-2-5v)$

**Solution** $-8v∙\left(-2\right)+\left(-8v\right)(-5v)$

$-16v+40v^{2}$

1. 9n(-8n - 7)
2. -2t(-9 + 9t)
3. -3b(6b + 6)
4. -7r(8 + 3r)
5. 3m(-2 + 3m)
6. 7w(-8 + 3w)
7. 2w(-w - 4)
8. 6q(-4 + 8q)
9. 3d(-5 + 8d)
10. -7r(4 - 6r)
11. -8j(7 - 6j)
12. -3j(9 + 9j)

**Solve each equation. It is possible that there is “NO Solution” or “Infinitely Many Solutions” for some problems. If your answer is a fraction, leave it in fraction form, do not change it to decimal form.**

**NO CALCULATOR – SHOW ALL WORK**

Example: $15+x=-3$

 $-15$ $-15$

 $x=-18$

1. 
2. 

1. 

1. 

1. 

1. 

1. 
2. 

**Solve each equation. It is possible that there is “NO Solution” or “Infinitely Many Solutions” for some problems. If your answer is a fraction, leave it in fraction form, do not change it to decimal form.**

**NO CALCULATOR – SHOW ALL WORK**

Example



$-4x$ $-4x$

 $12x=24$

$÷12$ $÷12$

 $x=2$

1. 
2. 
3. 
4. 
5. 
6. 
7. $\frac{2}{3}w=6$
8. $\frac{1}{8}x=-\frac{15}{16}$
9. $\frac{1}{3}x=\frac{1}{2}$
10. $\frac{3}{5}x=\frac{3}{10}$
11. 
12. 
13. 
14. 
15. 
16. 

**Solve each equation. It is possible that there is “NO Solution” or “Infinitely Many Solutions” for some problems. If your answer is a fraction, leave it in fraction form, do not change it to decimal form.**

**NO CALCULATOR – SHOW ALL WORK**

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. $20=-2(w+10)$
10. 
11. 
12. $\frac{t}{3}+12=-2$
13. $-4x+14-x=24$

**Solve each equation. It is possible that there is “NO Solution” or “Infinitely Many Solutions” for some problems. If you answer is a fraction, leave it in fraction form, do not change it to decimal form.**

**NO CALCULATOR – SHOW ALL WORK**

1. 
2. $\frac{1}{4}\left(20-8a\right)=6-a$
3. $-3\left(6x+10\right)=2x-20$
4. $3\left(18-2t\right)=t+5$
5. $\frac{3}{4}x=\frac{5}{8}$
6. 
7. 
8. $-\frac{3}{8}x+16=26$
9. -15 + 3x + 3 = 4x - 11 – 9x
10. 4 – 4(2x – 5) = 4( 6 – 2x)
11. 2x – 9 = 2(x – 3)
12. $\left(x-13\right)-\left(x-5\right)+2x=0$
13. $5x+2\left(1-x\right)=2(2x-1)$

**Solve each inequality. Write the solution as an inequality AND Graph the solution set on a number line. It is possible that there will be NO SOLUTION, or ALL REAL NUMBERS**

**NO CALCULATOR – SHOW ALL WORK**

1. $2x+1>7$
2. $-6m\geq 6$
3. $36<\frac{x}{-9}$
4. $\frac{x}{2}-4\geq -6$
5. $5+\frac{x}{3}\leq 6$
6. $-5\left(x+3\right)<-5x+1$
7. $7z<3+7(z-1)$

**Classify each statement as TRUE or FALSE**

1. $–(-2)<\left|-3\right|$
2. $ \left|-3\right|\geq \left|3\right|$
3. $ \left|-13\right|<\left|-12\right|$

Simplify. Leave fraction as improper if it is improper

1. 
2. 
3. 
4. 
5. 
6. 
7. 

Find the slope of the graph that passes between the following points



**Example 1:**

Using the points (3, 4) and (–3, –1) find the slope of the line.

 x y x y

(3, 4) (–3, –1)

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

1. a. (6, −3), (−2, 1) b. (8, −5), (−5, 8)
2. a. (−2, 0), (2, −6) b. (−6, 5), (−1, 5)

1. a. (15, 4), (4, 15) b. (−1, −4), (4, 6)

Find the slope of the given linear function

1. 



**Identify the slope and y-intercept of the line with the given equation.**

1. 
2. 
3. Write an equation of the line that is parallel to the line  and passes through the point (0, 10)
4. Write an equation of the line that is perpendicular to the line  and passes through the point (0, – 3

Let  and . Find the indicated value.

1. 
2. 

**Write a linear function that satisfies the given conditions.**

1.  
2.  
3. **Solve the following linear system by graphing on the given coordinate grid. Write the solution on the line.**

 

 

Write the variable expression for each sentence – record your answers on the answer sheet.

 Verbal Expression Variable Expression

Example: Two less than the product of a number and six $6x-2$

1. The difference of x and a number
2. A number decreased by 17
3. A number increased by 6
4. The sum of a number and 8
5. Twice the sum of a number and twelve
6. The quotient of 18 and a number
7. Half the product of a number and 4
8. A number squared
9. Nine times a number
10. Ten more than six times a number
11. The quantity six plus a number divided by two
12. Seven divided by the sun of a number plus 2
13. The sum of five and a number is twelve
14. The difference between five and a number
15. Twelve less than three times a number
16. Ten less than twice a number
17. The sum of a number and its opposite
18. The absolute value of a number
19. Ten more than the product of a number and three

**Write the variable expression for each inequality**

 Verbal Expression Variable Expression

Example: Eight plus a number is at most 17 $8+x\leq 17$

1. Four plus a number plus 6 is at least 27
2. Six plus a number is no more than -22
3. Fourteen minus a number is less than -18
4. Four plus 7 times a number is greater than nine
5. Five more than twice a number is at most 17

**Resources**

**Tutorial Websites for Solving Multi-Step Equations**

<http://www.algebralab.org/lessons/lesson.aspx?file=Algebra_OneVariableMultiStep.xml>

<http://www.mathx.net/multi-step-equations/>

**Khan academy – search solving equations.**

**Video Links**

Simplifying expressions-<https://learnzillion.com/lessons/359>

Evaluate expressions involving exponents- <https://learnzillion.com/lessons/179-evaluate-expressions-involving-exponents>

Simplify exponential multiplication expressions- <https://learnzillion.com/lessons/172-simplify-exponential-multiplication-expressions>

Divide exponential expressions-<https://learnzillion.com/lessons/174-divide-exponential-expressions-part-1>

<https://learnzillion.com/lessons/175-divide-exponential-expressions-part-2>

Exponent rules video set-  <https://learnzillion.com/lessonsets/307>

Linear relationships as graphs- <https://learnzillion.com/lessonsets/705>

Solve inequalities and linear equations in one set-<https://learnzillion.com/lessonsets/741>

Inequalities and substitution video set- <https://learnzillion.com/lessonsets/527>

Values that make inequalities true set- <https://learnzillion.com/lessonsets/734>

**Games for Practicing Math Concepts**

 **Solving Multi-Step Equations**

<http://www.quia.com/rr/168572.html>

[https://jeopardylabs.com/play/solving-multi-step-equations1](http://jeopardylabs.com/play/solving-multi-step-equations1)

<http://www.xpmath.com/forums/arcade.php?do=play&gameid=64>

[http://www.ixl.com/math/grade-8/solve-multi-step-equations](http://www.ixl.com/math/grade-8/solve-multi-step-equations%20)

**Exponent Rules**

[http://www.math-play.com/Exponents-Jeopardy/Exponents-Jeopardy.html](http://www.math-play.com/Exponents-Jeopardy/Exponents-Jeopardy.html%20)

<http://www.quia.com/rr/180013.html?AP_rand=913458223>

[https://www.mangahigh.com/enus/math\_games/number/exponents/negative\_exponents](http://www.mangahigh.com/enus/math_games/number/exponents/negative_exponents)

<http://www.mathnook.com/math/pyramidmath.html>

<http://www.xpmath.com/forums/arcade.php?do=play&gameid=95>

<http://www.quia.com/ba/1000.html>

**Standard form and Slope-Intercept Form**

<http://www.ixl.com/math/algebra-1/standard-form-graph-an-equation>

[https://www.superteachertools.net/jeopardyx/jeopardy-review-game.php?gamefile=1412440629](http://www.superteachertools.net/jeopardyx/jeopardy-review-game.php?gamefile=1412440629)