Summer, 2018

Dear 2018-2019 Advanced Algebra Student:

Welcome to the Advanced Algebra Program. We are very excited to work with you next fall. In the past there has been summer work for the Advanced Algebra class. This year we are **not requiring** summer work. We do want to offer some resources that we feel would be helpful if you are interested. Students who were enrolled in Advanced Pre-Algebra in 7th grade and will be enrolled in Advanced Algebra in 8th grade may especially find these suggestions helpful.

The attached worksheet is designed to cover the basics of Algebra and review your studies from seventh grade. Most of the examples discuss basic number operations. We will spend some time reviewing concepts from chapter 1 the first week of school. We will have a Chapter 1 Assessment during the second week that will include concepts from both the in class discussions and the material from the attached worksheet.

To help with your practice, we are also including a worked out solution guide for you to use at your discretion.

If you have any questions, please don't hesitate to contact any of the teachers listed below.

See you in the fall!

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2018 Summer Review
Advanced Algebra   Name: _____

Please show all your work to each problem. <u>No calculator</u>.

1 – 8. Simplify each numerical expression.

1.) $5+3(18 \div 6)$

2.) $\dfrac{2^3 - 2(9)}{-5}$

3.) $2(3.5) - 13.2 - 7.2$

4.) $(20 - 3 + 7) \div (-8)$

5.) $15m(m-4)$

6.) $7x - 5x(3x - 4)$

7.) $\dfrac{1}{3} - \dfrac{5}{9} + \left| -\dfrac{7}{18} \right|$

8.) $6(3 - x) + 5x(x + 4)$

9 – 12. Evaluate each variable expression.

9.) $r + 6(5 - r)$ when r = 10

10.) $\dfrac{10x^2 - 8}{y}$ when x = -2 and y = 11

11.) $13 - (-m)$ when m = -5

12.) $-x^2 + 3x - 18$ when x = -3

13-16. Solve each equation.

13.) $4(y + 1) = 40$

14.) $3x + 5(x + 7) = 59$

15.) $5 - 3(x+2) = -14x - 2$

16.) $\dfrac{5}{2}x = 40$

17.) $\dfrac{y+1}{2} = 9$

18.) $3y - (5y + 6) = 3$

19-20. Write an equation or inequality to model each situation.

19.) Sarah makes $6 per hour babysitting. She earns $8 for driving to the house. Write an equation to represent her total amount earned. Be sure to identify the variables.

20.) The product of $25 and the number *m* of club memberships is greater than or equal to $500.

Functions.

21.) Using the equation y = 2x + 7, create a t-table using four values, identify the domain, and identify the range.

x	y

Domain: _____

Range: _____

Properties to know: (Give an example of each)
Commutative Property of Add/Multi   Associative Property of Add/Multi

Identity Property of Add/Multi   Property of Zero Addition/Multi

Multiplication Property of Opposites   Distributive Property

The local Girl Scout Troop is selling boxes of cookies at $3.50 each. The Troop needs to pay $2.00 per box.
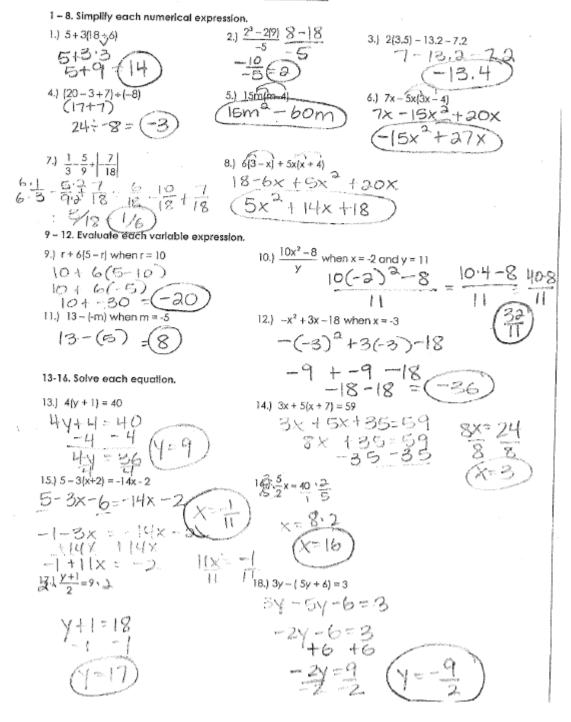
22.) Write an algebraic function for this situation. Please state what the variables represent.

23.) How may boxes of cookies does the Troop need to sell to make $1500?

Please show all your work to each problem. No calculator.

1 – 8. Simplify each numerical expression.

1.) $5 + 3(18 \div 6)$

$5 + 3 \cdot 3$

$5 + 9 = \boxed{14}$

2.) $\dfrac{2^3 - 2(9)}{-5}$ $\dfrac{8-18}{-5}$

$\dfrac{-10}{-5} = \boxed{2}$

3.) $2(3.5) - 13.2 - 7.2$

$7 - 13.2 - 7.2$

$\boxed{-13.4}$

4.) $(20 - 3 + 7) \div (-8)$

$(17 + 7)$

$24 \div -8 = \boxed{-3}$

5.) $15m(m-4)$

$\boxed{15m^2 - 60m}$

6.) $7x - 5x(3x - 4)$

$7x - 15x^2 + 20x$

$\boxed{-15x^2 + 27x}$

7.) $\dfrac{1}{3} - \dfrac{5}{9} + \left|\dfrac{7}{18}\right|$

$6 \cdot \dfrac{1}{3} - \dfrac{5}{9} \cdot \dfrac{2}{2} + \dfrac{7}{18}$ $\dfrac{6}{18} - \dfrac{10}{18} + \dfrac{7}{18}$

$= \dfrac{5}{18}$ $\boxed{1/6}$

8.) $6(3 - x) + 5x(x + 4)$

$18 - 6x + 5x^2 + 20x$

$\boxed{5x^2 + 14x + 18}$

9 – 12. Evaluate each variable expression.

9.) $r + 6(5 - r)$ when $r = 10$

$10 + 6(5 - 10)$

$10 + 6(-5)$

$10 + -30 = \boxed{-20}$

10.) $\dfrac{10x^2 - 8}{y}$ when $x = -2$ and $y = 11$

$\dfrac{10(-2)^2 - 8}{11} = \dfrac{10 \cdot 4 - 8}{11}$ $\dfrac{40-8}{11}$

$\boxed{\dfrac{32}{11}}$

11.) $13 - (-m)$ when $m = -5$

$13 - (5) = \boxed{8}$

12.) $-x^2 + 3x - 18$ when $x = -3$

$-(-3)^2 + 3(-3) - 18$

$-9 + -9 -18$

$-18 - 18 = \boxed{-36}$

13-16. Solve each equation.

13.) $4(y + 1) = 40$

$4y + 4 = 40$

$ -4 \quad -4$

$\dfrac{4y}{4} = \dfrac{36}{4}$ $\boxed{y = 9}$

14.) $3x + 5(x + 7) = 59$

$3x + 5x + 35 = 59$

$8x + 35 = 59$

$ -35 \quad -35$

$\dfrac{8x}{8} = \dfrac{24}{8}$ $\boxed{x = 3}$

15.) $5 - 3(x+2) = -14x - 2$

$5 - 3x - 6 = -14x - 2$

$-1 - 3x = -14x - 2$

$+14x \quad +14x$

$-1 + 11x = -2$ $\dfrac{11x}{11} = \dfrac{-1}{11}$ $\boxed{x = \dfrac{-1}{11}}$

16.) $\dfrac{5}{2}x = 40 \cdot \dfrac{2}{5}$

$\dfrac{2}{5} \cdot \dfrac{5}{2} x = 40 \cdot \dfrac{2}{5}$

$x = 8 \cdot 2$

$\boxed{x = 16}$

17.) $\dfrac{y+1}{2} = 9 \cdot 2$

$y + 1 = 18$

$ -1 \quad -1$

$\boxed{y = 17}$

18.) $3y - (5y + 6) = 3$

$3y - 5y - 6 = 3$

$-2y - 6 = 3$

$ +6 \quad +6$

$\dfrac{-2y}{-2} = \dfrac{9}{-2}$ $\boxed{y = -\dfrac{9}{2}}$

19-20. Write an equation or inequality to model each situation.

19.) Sarah makes $6 per hour babysitting. She earns $8 for driving to the house. Write an equation to represent her total amount earned. Be sure to identify the variables.

C = total cost
x = hours

$$C = 6x + 8$$

20.) The product of $25 and the number m of club memberships is greater than or equal to $500.

$$25m \geq 500$$

Functions.

21.) Using the equation y = 2x + 7, create a t-table using four values, identify the domain, and identify the range.

x	y
0	7
1	9
2	11
3	13

$y = 2x + 7$
$y = 2(0) + 7$
$y = 2(1) + 7$
$y = (2)2 + 7$
$y = 2(3) + 7$
$6 + 7$

(input)
Domain: 0, 1, 2, 3

Range: 7, 9, 11, 13
(output)

Properties to know: (Give an example of each)

Commutative Property of Add/Multi
(+) $2 + 3 = 3 + 2$
(x) $2 \cdot 3 = 3 \cdot 2$

Associative Property of Add/Multi
(+) $(1 + 2) + 3 = 1 + (2 + 3)$
(x) $(1 \cdot 2) \cdot 3 = 1 \cdot (2 \cdot 3)$

Identity Property of Add/Multi
(+) $5 + 0 = 5$
(x) $5 \cdot 1 = 5$

Property of Zero Addition/Multi
(+) $3 + -3 = 0$
(x) $3 \cdot 0 = 0$

Multiplication Property of Opposites
$6 \cdot -1 = -6$

Distributive Property
$2(x + 1) = 2x + 2$

The local Girl Scout Troop is selling boxes of cookies at $3.50 each. The Troop needs to pay $2.00 per box.

22.) Write an algebraic function for this situation. Please state what the variables represent.

profit per box = $1.50
C = total   x = # boxes

$$C = 1.50x$$

23.) How may boxes of cookies does the Troop need to sell to make $1150?

$$\frac{1500}{1.50} = \frac{1.50x}{1.50}$$

$x = 1,000$ boxes