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Algebra 2 Summer Assignment

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Dear Parent(s) or Guardian(s):

Your child is currently scheduled to take Algebra 2 next year. Algebra 2 is an extremely important, and at times, challenging course. Additionally, the SAT includes Algebra 2 topics.

A solid algebra foundation is needed to be successful in this class. Because it has been two years since your child took Coordinate Algebra, we feel it is vital for them to review these key topics before beginning Algebra 2.

Please encourage your child to return the completed packet on the first day of school. Their teacher will check this assignment and review the answers with them. It is expected that students will complete all problems in the packet. Completion of this packet is not mandatory but will serve two purposes. First is to keep mathematical topics fresh in students' minds over the summer. Second is to help students and teachers identify the prerequisite concepts that each student has and has not mastered. It covers concepts that your child learned while successfully completing Coordinate Algebra as well as some Geometry.

If your child is struggling with any of these concepts, the suggested links listed at the end of this packet may be a helpful resource to assist in helping your child grasp these concepts.

The mathematics department thanks you for your cooperation and wishes you and your family a happy, restful summer.

Thank you,

Mary Frances Stewart
Principal

Algebra Two Summer Review

Name _____

Remember the course just before Geometry? Yeah, that's right, Algebra One! In Algebra Two we learn concepts that expand upon those you learned in Algebra One. This means you have to be skilled in Algebra 1 topics to be successful in Algebra 2. This Summer Review packet will remind you of basic and essential topics. You are expected to be able to do these problems with ease, so get some help this summer if you don't remember!

ORDER OF OPERATIONS

1) **EVALUATE USING ORDER OF OPERATIONS** – show work! No calculators

- a) -3^2 b) $(-3)^2$ c) $4 - 3(8 + 12 \div 4)$
- d) $6(3 + 4^2) - 12 \div 2$ e) $-3 - 6 \div 2 - 12$

SIMPLIFYING EXPRESSIONS

2) **SIMPLIFY THE FOLLOWING EXPRESSIONS BY COMBINING LIKE TERMS**

- a) $8m + m + m$ b) $5x - 2x$ c) $8m - m - 9 + 3m + 5$
- d) $3x^2 - 5x + 8x - 3 + x^2 - 6x^2 + 12$ e) $4x^2y + xy - 3xy^2$

3) **SIMPLIFY THE FOLLOWING EXPRESSIONS BY USING THE DISTRIBUTIVE PROPERTY**

- a) $4(3x + 7)$ b) $7(1 - 6w)$ c) $-6(4a + 3)$ d) $-(6m - 5)$

4) **SIMPLIFY THESE USING DISTRIBUTIVE PROPERTY & COMBINING LIKE TERMS**

- a) $3(m + 2) - 4m$ b) $9x - 4(2x - 1)$ c) $5(x + 1) + 2(4 - x)$

SOLVING BASIC EQUATIONS

5) **SOLVE ONE STEP EQUATIONS** (show work on both sides)

- a) $-2x = -36$ b) $x - 7 = -12$ c) $\frac{mm}{\underline{\quad}} = -8$ d) $\frac{-2}{5}x = -12$

6) SOLVE TWO STEP EQUATIONS (show work on both sides)

a) $-3n - 5 = 16$

b) $5x + 2 = -18$

c) $\frac{h}{3} - 7 = -4$

d) $\frac{-2}{3}h + 18 = 98$

e) $\frac{2}{5}y + 1 = -11$

f) $\frac{-2}{3} - \frac{1}{2} = \frac{5}{6}$

7) SOLVING MULTI STEP EQUATIONS

a) $4n + 8n = 48$

b) $3x + 4 + 8x = 15$

c) $2(r - 8) = -12$

d) $-6(12 - b) = 36$

e) $2x - 9 = -x$

f) $-6 + 5x = 8x - 9$

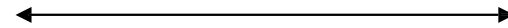
SOLVING INEQUALITIES

8) SOLVE EACH INEQUALITY (like equation solving but with a twist)

Graph your solution on a number line.

a) $x + 5 < 8$

b) $2x - 7 \geq -13$



c) $9 - 3x \geq 24$

d) $56 < \frac{x}{-2} + 32$



PROPERTIES OF EXPONENTS

9) SIMPLIFY EACH EXPRESSION:

a) $x^5 \cdot x^2$

b) $(3ab)^2$

c) $(m^2n^3)^4$

d) $(5x^2)^3 \cdot (x^3)^2$

e) b^0

f) $\frac{a^{10}}{a^4}$

g) $\left(\frac{m^3}{n^5}\right)^2$

h) $\frac{x^3 \cdot x^5}{x^2}$

i) 5^{-2}

SIMPLIFYING RADICALS

10) Simplify each radical (NO DECIMAL ANSWER)

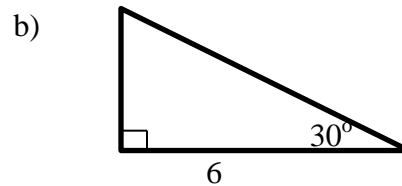
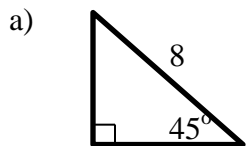
a) $\sqrt{20}$

b) $\sqrt{72}$

c) $5\sqrt{12}$

SPECIAL RIGHT TRIANGLES

11) Find the lengths of the missing sides of the triangles. Exact answers only. No decimals.



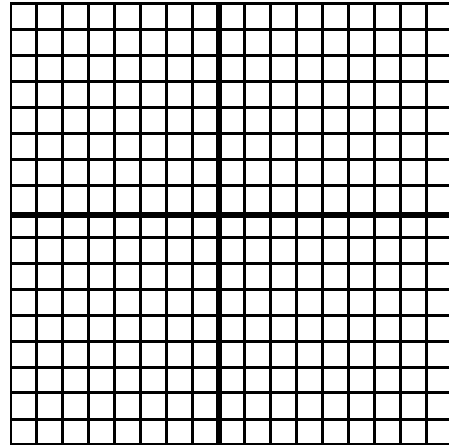
12) The area of a square measures 25 cm^2 . Find the length of its diameter.

13) An equilateral triangle has a perimeter of 24 in. Find the area of the triangle.

LINEAR EQUATIONS & GRAPHING

14) GIVEN THE LINEAR EQUATION $y = 3x + 4$

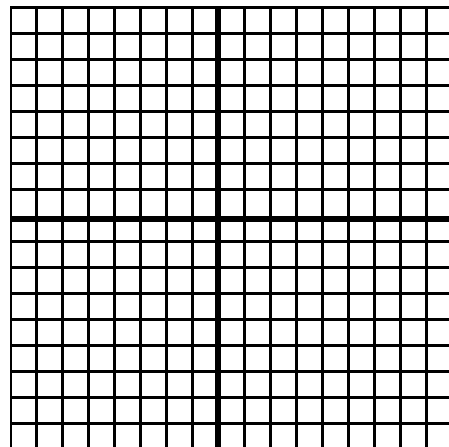
- a) What is the slope? _____
- b) What is the y-intercept? _____
- c) graph it:



15) GRAPH THIS LINEAR EQUATION:

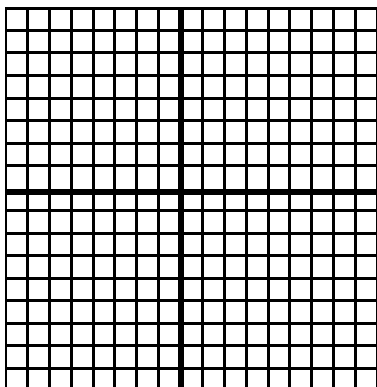
$$x + 2y = 8$$

- a) What is the x-intercept? _____
- b) What is the y-intercept? _____
- c) What is the slope of this line? _____
- d) Graph the line.

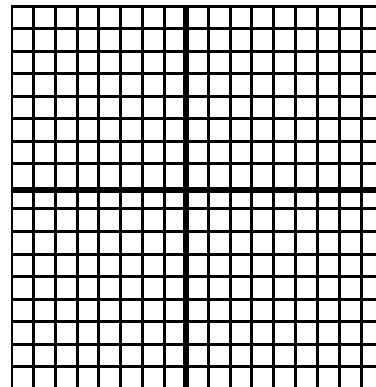


16) GRAPH THESE TWO EQUATIONS

a) $y = 5$



b) $x = -3$



17) FIND THE LINEAR EQUATION WITH THE FOLLOWING CHARACTERISTICS:

a) has a y-intercept of (0,3) and a slope of -2

b) contains points (4,2) and (12,-8)

c) contains the point (3,-2) and is perpendicular to the line $\diamond = 3\diamond - 7$

OPERATIONS WITH POLYNOMIALS

18) SIMPLIFY EACH EXPRESSION USING THE INDICATED OPERATIONS

a) Add $(2x^2 + 5x - 9) + (3x^2 - 11x + 2)$

b) Subtract $(3x^3 + x^2 + 1) - (x^3 - 5x^2 + 7x + 3)$

19) MULTIPLY

a) $-3(x^2 - 5x + 4)$

b) $2x(6x^2 - 8x + 7)$

c) $(x - 6)(x + 6)$

d) $(x - 3)(x - 5)$

e) $(2x + 1)(x - 4)$

f) $(x + 7)^2$

20) FACTOR - that is “work backwards” to find the factors of the polynomials

a) $x^2 + 8x + 15$

b) $x^2 - 7x + 10$

c) $x^2 + 6x + 9$

d) $x^2 + 5x - 14$

e) $x^2 - x - 6$

f) $x^2 - 25$

ONLINE ALGEBRA 2 RESOURCES

KHAN ACADEMY

<https://www.khanacademy.org/math/algebra2>

ALGEBRA 2 MATH BITS

<http://mathbits.com/MathBits/TeacherResources/Algebra2/Algebra2.htm>

STUDENT GUIDE COMPLETE LIST OF ONLINE MATH RESOURCES

<http://www.studentguide.org/a-complete-list-of-online-math-resources/>

DISCOVERY EDUCATION MATHWEB.COM

<http://webmath.com/>

ACCESS TO ONLINE ALGEBRA 2 TEXTBOOK

http://myschooldesk.net/jones/teachersite.aspx#site.43439_pid.168505_mid.337817