Algebra I (High School) Summer Packet

Algebra I covers algebraic skills and concepts necessary for an understanding of all future mathematics to be studied. Abstract and numerical reasoning are emphasized. Topics include: the Real Number System, absolute value, linear, quadratic, polynomial, radical, rational and exponential equations, functions, systems of equations and inequalities. Graphing calculators are employed to extend concepts. Students learn a variety of problem solving techniques and will apply arithmetic principles to specific algebraic topics. Standardized test preparation is integrated throughout the course. **The completion of a summer assignment is required.**

To be successful in Algebra 1, you will need:

- A lot of pencils
- Graph paper
- A binder with loose-leaf paper
- A TI-83 or 84 graphing calculator

Over the summer, it is your responsibility to review and master the concepts in this packet.

- You will be required to hand in the answers on **THE THIRD DAY OF SCHOOL (September 1)**. No exceptions.
- You must show all steps to solve each problem in order to receive credit
- This assignment is a 20 **point homework grade.**
- You will have a **quiz** on these topics, during the week of September 5th
- This packet should be done **WITHOUT** a calculator.
- Use khanacademy.org to assist with any topics that you forgot how to do.

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ADDING & SUBTRACTING FRACTIONS

Add or subtract the fractions. Simplify your answer.

Ex:

$\frac{1}{2}+\frac{5}{4}=$ $\frac{2}{9}+\frac{1}{3}=$ $\frac{1}{4}+\frac{2}{16}=$

$\frac{2}{4}+\frac{5}{4}=\frac{7}{4}$

$\frac{2}{3}-\frac{1}{5}=$ $\frac{3}{6}-\frac{5}{4}=$ $\frac{1}{2}-\frac{8}{7}=$

$\frac{5}{8}-\frac{7}{5}=$ $-\frac{5}{4}-\frac{1}{9}=$ $-\frac{3}{10}+\frac{7}{3}=$

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MULTIPLYING & DIVIDING FRACTIONS

Multiply or divide the fractions. Simplify your answer.

Ex:

$-\frac{2}{5}*\frac{3}{5}=\frac{-6}{25}$ $\frac{3}{6}*-\frac{5}{6}=$ $-\frac{1}{4}*-\frac{8}{7}=$

$4(\frac{5}{8})=$ $-3(\frac{2}{3})=$ $-2(\frac{4}{9})=$

$\frac{1}{2}\div\frac{5}{4}=$ $\frac{2}{9}\div\frac{1}{3}=$ $\frac{1}{4}\div\frac{2}{5}=$

EVALUATING EXPRESSIONS

* Must Show ALL Steps

Evaluate each expression given the following values for each variable.

a = 2	b = -3	c = 4	d = -5	e = 6	f = -7

Ex!

1. $2a + 3d$

$2(2) + 3(-5)$

$4 + -15$

-11

2. $b^2 - e^2$

3. $-3c - (a + d) + f$

4. $2(b - e) + (f + c)^2$

5. $\frac{d - c}{3} - 4(ab + f)$

6. $c(ab - 1) + de - f^2$

COMBINING LIKE TERMS

Combine like terms for each expression.

EXPRESSION	SIMPLIFIED
Ex! $x + x + 3x + y$	$5x + y$
$y + 2y + 5x + x$	
$5 + z + z + 4z - 6$	
$3x + 4x - 5$	
$3(x + 2) - 4$	
$-5(x - 3) + 7x$	
$5m - 6n - 9m$	
$-8a - 9b - 10a + 9b$	
$2(x + 4) + 5x - 3$	
$-10(2 + x) - 3x$	

SOLVING ONE-STEP EQUATIONS

Solve the one-step equations.

Ex: $x - 9 = 1$
$+9 \quad +9$
$x = 10$

$-5 + x = -2$

$4 = x - 7$

$5x = 75$

$-2x = -64$

$-7.5 = 1.25x$

$\frac{x}{4} = 7$

$-\frac{x}{2} = 8$

$-3 = -\frac{x}{9}$

$\frac{3}{4}x = 7$

$-\frac{1}{2}x = 8$

$-5 = -\frac{2}{9}x$

SOLVING TWO-STEP EQUATIONS

Solve the two-step equations. Leave your answer as a simplified fraction.

Ex: $5x + 10 = 75$

$-10 \quad -10$

$\frac{5x}{5} = \frac{65}{5}$

$x = 13$

$-2x + 8 = -64$

$-7.5 = 1.25x + 2.5$

$\frac{x}{4} - 6 = 7$

$-\frac{x}{2} + 3 = 8$

$-3 = 8 - \frac{x}{9}$

$\frac{3}{4}x + 5 = 7$

$-\frac{1}{2}x - 4 = 8$

$-5 = -\frac{2}{9}x + 2$

SOLVING PROPORTIONS

Solve each proportion. Leave your answer as a simplified fraction or decimal.

Ex: $\frac{x}{3} = \frac{4}{6}$

$\frac{6x}{6} = \frac{12}{6}$

$x = 2$

$\frac{6}{5} = \frac{x}{4}$

$\frac{3}{5} = \frac{6}{x}$

$\frac{x}{7} = \frac{1}{6}$

$\frac{6}{x} = \frac{2.5}{2}$

$\frac{4.5}{3} = \frac{9}{x}$

$\frac{x}{3} = \frac{4.2}{10}$

$\frac{11}{x} = \frac{2.5}{5.5}$

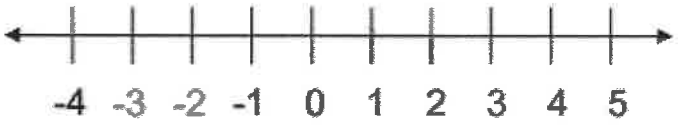
$\frac{6}{5} = \frac{12}{x}$

GRAPHING INEQUALITIES

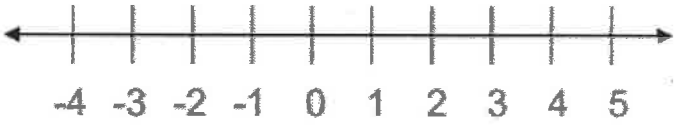
Graph each inequality on the number line shown.

Ex! $x > 2$

$x < -3$

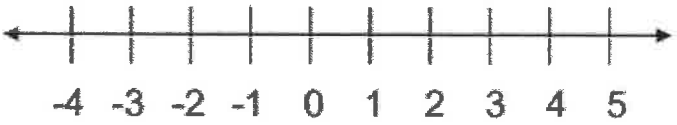


$x \geq -1$



$x \leq 4$

$x < 0$



SEQUENCES & PATTERNS

Determine the pattern of each sequence and find the next 3 terms.

Ex: 2, 4, 8, 16, 32, 64, 128, 256 multiply by 2

5, 10, 15, 20, 25, _____, _____, _____

-5, -3, -1, 1, 3, _____, _____, _____

0.4, 0.2, 0, -0.2, -0.4, _____, _____, _____

3, -6, 12, -24, 48, _____, _____, _____

$\frac{3}{9}, \frac{4}{9}, \frac{5}{9}, \frac{6}{9}, \frac{7}{9}$ _____, _____, _____

$\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32}$ _____, _____, _____

6, -3, -12, -21, -30, _____, _____, _____

2, 5, 12.5, 31.25, 78.125, _____, _____, _____