



SAGEMONT

PREPARATORY SCHOOL

**Summer Mathematics Packet
Students Entering College Algebra Readiness**

(30 Points towards First Semester Grade)

Name _____

Grade Entering _____

Simplify each expression:

$$|15 - 7| - |14 - 6|$$

$$|17 - 8| - |13 - 4|$$

$$18 - |2(8 - 3)|$$

$$15 - |3(8 - 5)|$$

$$48 + (-16)$$

$$34 + (-19)$$

$$-14 + (-12) + 4$$

$$-17 + (-18) + 6$$

$$19 + 2(-3 + 8)$$

$$24 + 3(-5 + 9)$$

Evaluate each expression using the variable values given;

· $y + (-14)$ when

Ⓐ $y = -33$ Ⓑ $y = 30$

· $x + (-21)$ when

Ⓐ $x = -27$ Ⓑ $x = 44$

· $(x + y)^2$ when

$x = -3, y = 14$

· $(y + z)^2$ when

$y = -3, z = 15$

· $3x^2 - 4xy + 2y^2$ when

$x = -2, y = -3$

· $4x^2 - xy + 3y^2$ when

$x = -3, y = -2$

Add or subtract the pairs of fractions that are given:

$$\frac{7}{12} + \frac{5}{8}$$

$$\frac{5}{12} + \frac{3}{8}$$

$$\frac{7}{12} - \frac{9}{16}$$

$$\frac{7}{16} - \frac{5}{12}$$

$$-\frac{13}{30} + \frac{25}{42}$$

$$-\frac{23}{30} + \frac{5}{48}$$

$$-\frac{39}{56} - \frac{22}{35}$$

$$-\frac{33}{49} - \frac{18}{35}$$

$$\frac{x}{3} + \frac{1}{4}$$

$$\frac{x}{5} - \frac{1}{4}$$

$$\frac{5 \cdot 6 - 3 \cdot 4}{4 \cdot 5 - 2 \cdot 3}$$

$$\frac{8 \cdot 9 - 7 \cdot 6}{5 \cdot 6 - 9 \cdot 2}$$

$$\frac{5^2 - 3^2}{3 - 5}$$

$$\frac{6^2 - 4^2}{4 - 6}$$

$$\frac{7 \cdot 4 - 2(8 - 5)}{9 \cdot 3 - 3 \cdot 5}$$

$$\frac{9 \cdot 7 - 3(12 - 8)}{8 \cdot 7 - 6 \cdot 6}$$

Add or subtract to simplify each pair of decimals:

$$-16.53 - 24.38$$

$$-19.47 - 32.58$$

$$-38.69 + 31.47$$

$$-29.83 + 19.76$$

$$72.5 - 100$$

$$86.2 - 100$$

$$91.75 - (-10.462)$$

$$94.69 - (-12.678)$$

Convert each fraction or decimal to a percent number:

$$\frac{17}{20}$$

$$\frac{17}{4}$$

$$\frac{310}{25}$$

$$\frac{18}{11}$$

71%

150%

39.3%

7.8%

Solve each of these linear equations:

$$4n - 2n = 4$$

$$3 = x + 3 - 5x$$

$$-12 = 3 - 2k - 3k$$

$$-1 = -3r + 2r$$

$$-3(4r - 8) = -36$$

$$75 = 3(-6n - 5)$$

Solve these linear inequalities:

$$4v \geq 9v - 40$$

$$5u \leq 8u - 21$$

$$13q < 7q - 29$$

$$9p > 14p - 18$$

$$12x + 3(x + 7) > 10x - 24$$

$$9y + 5(y + 3) < 4y - 35$$

Solve each formula for the variable shown:

$$P = IRT \quad (T)$$

$$y = 5x - 6 \quad (x)$$

$$\frac{x+y}{3} = 5 \quad (x)$$

$$ax + by = c \quad (y)$$

$$V = LWH \quad (L)$$

$$V = \pi r^2 h \quad (h)$$

Solve each pair of linear equations using any strategy:

$$\begin{cases} 2x + y = -4 \\ 3x - 2y = -6 \end{cases}$$

$$\begin{cases} 2x + y = -2 \\ 3x - y = 7 \end{cases}$$

$$\begin{cases} x - 2y = -5 \\ 2x - 3y = -4 \end{cases}$$

$$\begin{cases} x - 3y = -9 \\ 2x + 5y = 4 \end{cases}$$

$$\begin{cases} 5x - 2y = -6 \\ y = 3x + 3 \end{cases}$$

Factor these polynomials using the best strategy for each problem:

$$24x^3 + 44x^2$$

$$24a^4 - 9a^3$$

$$16n^2 - 56mn + 49m^2$$

$$6a^2 - 25a - 9$$

$$5u^4 - 45u^2$$

$$n^4 - 81$$

$$64j^2 + 225$$

$$5x^2 + 5x - 60$$

$$b^3 - 64$$

Solve each rational equation:

$$\frac{1}{2} + \frac{2}{3} = \frac{1}{x}$$

$$1 - \frac{2}{m} = \frac{8}{m^2}$$

$$\frac{1}{b-2} + \frac{1}{b+2} = \frac{3}{b^2-4}$$

Solve these equations using the Quadratic Formula:

$$4x^2 - 5x + 1 = 0$$

$$7y^2 + 4y - 3 = 0$$

$$r^2 - r - 42 = 0$$

$$t^2 + 13t + 22 = 0$$

$$4v^2 + v - 5 = 0$$