Basic Algebra Worksheet

Exponents

1. Simplify $\left(\frac{2}{3}\right)^3$

2. Simplify $\left(4x^2\right)^2\left(2x^3\right)^3$

3. Simplify $\left(4a^5b^3\right)^0$

4. Simplify with positive exponents only $\frac{\left(x^{-3}\right)^2\left(x^{-5}\right)^{-3}}{\left(x^{-3}\right)^{-4}}$

5. Simplify as much as possible $\frac{\left(x^{-3}y^{1/2}\right)^4}{x^{10}y^{3/2}}$

Linear Equations

1. Determine whether -12 is a solution of $\frac{1}{3}x+2=-\frac{1}{4}x+1$

2. Find the solution set for $3a-5=-6a+1$

3. Solve $-15+3x=3(x-5)$

Linear Inequalities

1. Solve and graph $3x+3<2x-1$

2. Solve $3(2x-4)-7x\le -3x$

3. Solve $2x-3y<6$ for y

4. A company that manufactures ink cartridges finds that they can sell x cartridges each week at p dollars, according to $x=1300-100p$.
What price should they charge if they want to sell at least 300 cartridges?

Absolute Value Equations

1. Solve $|2a-1|=7$

2. Solve $|3a-6|=-4$

3. Solve $\left|\frac{2}{3}x-3\right|+5=12$

4. Solve $|3a+2|=|2a+3|$

Graphing Lines

1. Graph $4x+5y=20$

2. Graph $y=3x-2$

3. Graph $y=-\frac{2}{3}x+1$

4. Graph each of the lines: a. $y=\frac{1}{2}x$ b. $x=3$ c. $y=-2$

Slope

1. Find the slope of the line through the given points (3,1) and (5,4)

2. Find the slope of the line through the given points (-3,2) and (3, -2)

3. Find the slope of the line with an *x*-intercept of 4 and a *y*-intercept of 2.

4. Find *a* if the line through (5,a) and (4,2) has a slope of 3.

5. Find *y* if the line through $(2, y^2)$ and $(1, y)$ if perpendicular to a line with slope $-\frac{1}{6}$

Systems of Linear Equations

1. Solve $\begin{cases} x - 3y = -1 \\ 2x - 3y = 4 \end{cases}$

2. Solve $\begin{cases} 4x + 2y = 8 \\ y = -2x + 4 \end{cases}$

3. One number is 2 more than 3 times another. Their sum is 26. Find the two numbers.

4. Suppose 850 tickets were sold for a game for a total of $1100. If adult tickets cost $1.50 each and children's tickets cost $1.00, how many tickets were sold?