1-2 LINEAR EQUATIONS

A linear equation has no operations other than addition, subtraction and multiplication of a variable by a constant. Or, for us non-math geniuses, there are no exponents other than ONE.

Examples of linear equations or functions. Write yes or no in the blank to indicate whether each is linear.

1) __Y__ $y = 2x - 11$

2) __N__ $f(x) = 3x^2 + 2x - 1$

3) __N__ $x + \sqrt{y-5} = 2$

4) __N__ $x^3 - y^2 = 10$

5) __Y__ $f(x) = \dfrac{x}{4} + \dfrac{5y}{6} = \dfrac{1}{2}$

6) __N__ $\dfrac{4}{y} = \dfrac{6}{5x} + \dfrac{1}{2}$

Put the following equations in **STANDARD FORM**.

The standard form of an equation is: $Ax + By = C$ where A, B and C are integers whose greatest common factor is 1. $A \geq 0$, and A and B are not both zero.
NO FRACTIONS
NO DECIMALS
NO NEGATIVE "x"

7) $1 - 3x = 7y$

$1 = 7y + 3x$
x-term cannot be negative
$3x + 7y = 1$

8) $10 + 4x = 3y$

$4x = 3y - 10$
$4x - 3y = -10$

9) $0.4x + 1.5 = 0.32y$

$40x + 150 = 32y$
$40x = 32y - 150$
$40x - 32y = -150$

10) $\dfrac{x}{5} + \dfrac{3y}{2} = \dfrac{1}{15}$

Find common denom.s
$\dfrac{6x}{30} + \dfrac{45y}{30} = \dfrac{2}{30}$
Erase (ignore) denom.s
$6x + 45y = 2$

Determine the x & y-intercepts for each equation.

One way to find an intercept is to plug zero into the opposite variable and solve the equation for the remaining variable.

11) $3x + 7y = -21$

$3x+7(0)=-21$ & $3(0)+7y=-21$
$3x + 0 = -21$ $0 + 7y = -21$
$3x = -21$ $7y = -21$
x-int = -7   y-int = -3

12) $-y = 4 - 2x$

$0 = 4 - 2x$ & $-y = 4 - 2(0)$
$-4 = -2x$ $-y = 4$
$2 = x$ $y = -4$
x-int = 2   y-int = -4

13) $2y = 5x - 18$

$2(0)=5x-18$ & $2y=5(0)-18$
$0 = 5x - 18$ $2y = 0 - 18$
$18 = 5x$ $2y = -18$
x-int = 18/5   y-int = -9

14) $\dfrac{3}{5}x = 6$

$3x = 30$ There is no
$x = 10$ "y" in the
                     problem, so
x-int = 10   y-int = none