**"Finding X"**                                                                 Name: _____

In general:

- Deal with things added to/subtracted from the term with the variable, then things multiplied onto/divided into the variable.
- Look at what the number is doing relative to the variable, remove the number, and do the opposite to the other side.

A.  Numbers being added/subtracted relative to the term with the variable.

Example. Solve for X:

$$X + 5 = 2$$
$$X + 5 - 5 = 2 - 5$$
$$X = -3$$

| Or, simply:    X + 5 = 2 |
| --- |
| X + 5 = 2 − 5 |
| X = -3 |
| Take to the other side and do opposite operation |
| (Opposite of + is -) |

Try These. Solve for X:

   a.  X + 3 = 6        b. X − 3 = 6        c. 3 + X = -6        d. 3 − X = 6

B.  Numbers being multiplied/divided relative to the term with the variable

Examples. Solve for X:

a.  5X = 15

5X/5 = 15/5

X = 3

(Op. of mult is divide)

| Or, simply:  5X = 15 |
| --- |
| 5X = 15÷5 |
| X = 3 |
| Take to the other side and do opposite operation |

b. ½ X = 5

½ X *2 = 5*2

X = 10

(Op. of divide is mult.)

| Or, simply:  ½ X = 5 |
| --- |
| ½ X = 5*2 |
| X = 10 |
| Take to the other side and do opposite operation |

Try These. Solve for X:

   a.  3X = 24        b. -3X = 24        c. X÷4 = 6        d. ¼ X = -6

C. Putting it all together.

Example. Solve for the variable:

$$3X - 5 = 40$$

$3X - 5 + 5 = 40 + 5$ (deal with the term added/subtracted from the X term first)

$$3X = 45$$

$3X \div 3 = 45 \div 3$ (then deal with the number multiplied or divided onto X)

$$X = 15$$

Try These. Solve for the variable:

a.  $4X + 5 = 21$     b. $-6A + 2 = 20$     c. $\frac{1}{2} R - 3 = 7$     d. $4 + 5Y = 19$

e. $7 - H = -9$     f. $-2 - 2F = -2$     g. $-\frac{1}{4} V + 8 = 5$     h. $X \div 5 + 2 = \frac{1}{5}$

i. $5 = 4Y - 3$     j. $7 = \frac{2}{5}H + 1$     k. $\frac{1}{4} = \frac{1}{4}R + 2$     l.  $7 = 9 + 5V$

m. $2K + 3 = 3K + 5$     n. $5N - 3 = 4 - 7N$   o. $\frac{1}{2}M + \frac{1}{3} = 1 - M$     p. $-2P + \frac{4}{5} = 3 + \frac{1}{3}P$