

"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:

$$\begin{aligned} X + 5 &= 2 \\ X + 5 - 5 &= 2 - 5 \\ X &= -3 \end{aligned}$$

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: $5X = 15$

$5X = 15 \div 5$

$X = 3$

Take to the other side and do
opposite operation

b. $\frac{1}{2}X = 5$

$\frac{1}{2}X * 2 = 5 * 2$

$X = 10$

(Op. of divide is mult.)

Or, simply: $\frac{1}{2}X = 5$

$\frac{1}{2}X = 5 * 2$

$X = 10$

Take to the other side and do
opposite operation

Try These. Solve for X:

a. $3X = 24$

b. $-3X = 24$

c. $X \div 4 = 6$

d. $\frac{1}{4}X = -6$

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. $-2P + \frac{4}{5} = 3 + \frac{1}{3}P$