

Warm-Up:

Solve using mental math.

1. $x + 2 = 17$ 1. 15

2. $\frac{x}{6} = 4$ 2. 24

3. $x - 7 = 3$ 3. 10

4. $9x = 54$ 4. 6

5. Katrina divided her photos into three albums. Each album contains 26 photos. How many photos did Katrina have to begin with?

3 albums $3 \times 26 = 78$ pics.
26 pics in each

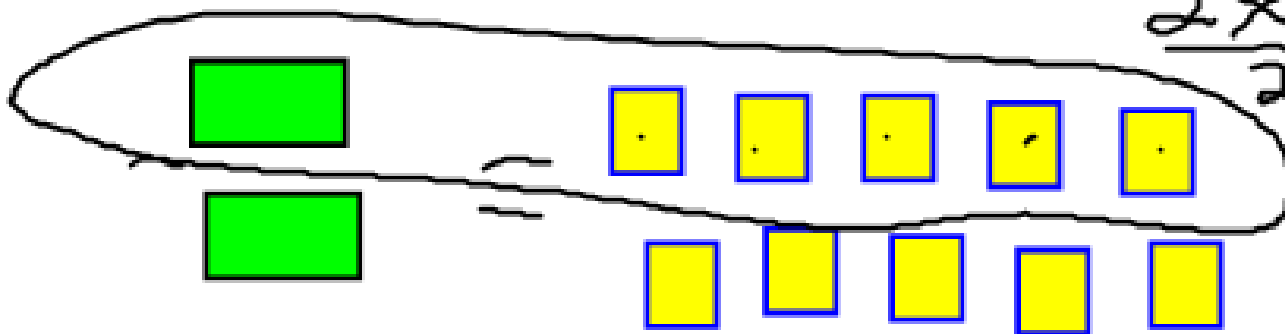
Model One-Step Equations:



1-tile: represents the # 1

x-tile: represents the variable x

Solve $x + 2 = 5$ by modeling:



$$13. \quad 2x = 10$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

Solving Equations:

Goal: To get $1x$ by itself on one side of the equal sign.

To do this, we have to get rid of everything else that is on the same side of the equal sign as x .

$$\begin{array}{r} x + 7 = 4 \\ -7 \quad -7 \\ \hline \end{array}$$

$$~~x + 7 = -3~~$$

$$\boxed{x = -3}$$

$$-\frac{2}{7}x = 4$$

$$\begin{array}{r} \cancel{x} \\ \frac{x}{4} = 5 \cdot 4 \\ x = 20 \end{array}$$

$$\begin{array}{r} x - 5 = 6 \\ +5 \quad +5 \\ \hline x = 11 \end{array}$$

Solve equations using subtraction:

1. ~~$x + 7 = 4$~~
 ~~$-7 -7$~~

2. $y + 7 = 10$
 $-7 -7$

$y = 3$

3. $x + 9 = 3$
 $-9 -9$

$x = -6$

Solve equations using addition:

$$\begin{array}{r} 1. \ x - 12 = 3 \\ \quad +12 \quad +12 \\ \hline x = 15 \end{array}$$

$$2. \ \cancel{x - 5 = 6}$$

$$\begin{array}{r} 3. \ q - 11 = -5 \\ \quad +11 \quad +11 \\ \hline q = 6 \end{array}$$

Solve equations using division:

$$1. \quad \frac{-6x}{-6} = \frac{48}{-6}$$

$$x = -8$$

$$2. \quad \frac{-65}{-5} = \frac{-5y}{-5}$$

$$+13 = y$$

$$3. \quad \frac{6w}{6} = \frac{-54}{6}$$

$$w = -9$$

Solve equations using multiplication:

1. ~~$\frac{x}{4} = 5$~~

2. $\frac{t}{-3} = 9$

3. $\frac{a}{5} = -11$

~~$\frac{t}{-3} = 9 \cdot -3$~~

$t = -27$

~~$\frac{a}{5} = -11 \cdot 5$~~

$a = -55$

Addition Property of Equality

Words Adding the same number to each side of an equation produces an equivalent equation.

Algebra If $x - a = b$, then $x - a + a = b + a$, or $x = b + a$.

Inverse Operations
Equivalent equations

Subtraction Property of Equality

Words Subtracting the same number from each side of an equation produces an equivalent equation.

Algebra If $x + a = b$, then $x + a - a = b - a$, or $x = b - a$.

Multiplication Property of Equality

Words Multiplying each side of an equation by the same nonzero number produces an equivalent equation.

Algebra If $\frac{x}{a} = b$ and $a \neq 0$, then $a \cdot \frac{x}{a} = a \cdot b$, or $x = ab$.

Division Property of Equality

Words Dividing each side of an equation by the same nonzero number produces an equivalent equation.

Algebra If $ax = b$ and $a \neq 0$, then $\frac{ax}{a} = \frac{b}{a}$, or $x = \frac{b}{a}$.

OLYMPICS In the 2004 Olympics, Shawn Crawford won the 200 meter dash. His winning time was 19.79 seconds.

Find his average speed to the nearest tenth of a meter per second.

same as $\frac{d}{t}$

$$D = rt$$

200 m

$$\frac{200 \text{ m}}{19.79 \text{ s}} = \frac{r \cdot 19.79 \text{ s}}{19.79 \text{ s}}$$

19.79 s

$$\frac{200 \text{ m}}{19.79 \text{ s}}$$

$$\frac{200 \text{ m}}{19.79 \text{ s}} = r$$

$$r = 10.1 \text{ m/s}$$

Homework:

p 137

#'s 1, 2-28E, 43-48,
53, 55, 56

$$\begin{array}{r} 4. \quad m + 9 = 2 \\ \quad \quad - 9 \quad - 9 \\ \hline \quad \quad m = -7 \end{array}$$