

Warmup

15:59 & 6:00

# 1.3 Solve Linear Equations

Ques

Trans

An equation says two things are equal.

$$3+4=7, \quad x=2, \quad 5y-3=12$$

A linear equation is expressed in form of  $ax+b=0$ ,

where  $a \neq 0$ .  $a$  &  $b$  are constants &  $a \neq 0$

$$\begin{array}{l} \boxed{3}x + \boxed{5} = \boxed{0} \\ \boxed{a}x + \boxed{b} = \boxed{0} \end{array}$$

## Tools to solve equations

Addition Property of Equality

$$\text{If } a = b$$

$$\text{then } a+c = b+c$$

Subtraction Property of Equality

$$\text{If } a = b$$

$$\text{then } a-c = b-c$$

Multiplication Property of Equality

$$\text{If } a = b$$

$$\text{then } a \cdot c = b \cdot c \quad (c \neq 0)$$

Division Property of Equality

$$\text{If } a = b$$

$$\text{then } a \div c = b \div c \quad c \neq 0$$

$$\text{or } \frac{a}{c} = \frac{b}{c}$$

\* Do unto one side of the equation as to the other

Example - Solve

(a)  $4x + 9 = 21$

$$\begin{array}{r} 4x + 9 = 21 \\ -9 \Delta -9 \end{array}$$

$$4x = 12 \leftarrow 4 \text{ times } x, \text{ undo means}$$

$$\div y \quad \div \quad \text{to divide}$$

$$x = 3$$

tie shoe

untie shoe

open door

shut door

add 2

subtract 2

$$\textcircled{b} \frac{4}{5}x + 8 = 20$$

$$\textcircled{c} 7p + 13 = 9p - 5$$

$$\textcircled{d} 3(5x - 8) = \cancel{-2x + 7} - \cancel{2x} + 10x - 14$$

$$15x - 24 = -10x - 14$$

$$+10x \quad +10x$$

$$25x - 24 = -14$$

$$+24 \quad +24$$

$$25x =$$

p21: 4-18e, 19

$$\boxed{4x} - 7 = 17$$

$$+7 \quad +7$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$\frac{1x}{1} = 6$$

$$x = 6$$

+2

2

3