

Extra Credits { Women's Basketball Saturday 2pm
 Men's Basketball Saturday 4:30pm
 Softball & Baseball Sunday 11:30~3:30

Quiz This Friday

2.1a Solving Linear Equation

(1) Conditional Equations (only 1 solution)

e.g. $3x + 3 = 24$
 $3x = 21$
 $x = 7$ } equivalent equations
 [equations with the same solution set]

The solution set is $\{7\}$

↑ ↑

this denotes a set is inside the curly brackets.

(2) Contradiction (no solution)

e.g. $9z + 6 = 9(z + 3) - 25$
 $9z + 6 = 9z + 27 - 25$
 $9z + 6 = 9z + 2$
 $9z + 4 = 9z$
 $4 = 0$

observations:

- ① the variable disappears
 - ② false statements
- } ⇒ then no solution

The solution set is the empty set, $\{ \}$ or \emptyset .

(3). Identity (infinite number of solutions)

e.g. $6w + 8 = 6(w + 2) - 4$

$$6w + 8 = 6w + 12 - 4$$

$$6w + 8 = 6w + 8$$

$$0 = 0$$

→ you can stop here by realizing one side of the equation is exactly the same as the other

Observations:

① Variable disappears

② True statement

The solution set is the set of real numbers, \mathbb{R}

Equations Involving Decimals

Example: $0.25(x - 3) + 0.08 = 0.15x$

$$25(x - 3) + 8 = 15x$$

$$25x - 75 + 8 = 15x$$

$$25x - 67 = 15x$$

$$-67 = -10x$$

$$\boxed{6.7 = x}$$

$$0.25x - 0.75 + 0.08 = 0.15x$$

$$0.25x - 0.67 = 0.15x$$

$$0.25x - 0.15x = 0.67$$

$$0.1x = 0.67$$

$$\boxed{x = 6.7}$$

★ This is an example of a conditional equation because it has only 1 solution.

Equation with Fractions

Example: $\frac{y}{6} + \frac{2y - 1}{2} = \frac{y + 1}{3}$

$$\frac{6 \cdot y}{6} + \frac{6(2y - 1)}{6} = \frac{6(y + 1)}{6}$$

Steps:

① find the least common multiple of the denominators

② multiply each term by (2)

③ cancel the denominators.

$$1 \cdot y + 3(2y-1) = 2(y+1)$$

$$y + 6y - 3 = 2y + 2$$

$$7y - 3 = 2y + 2$$

$$5y - 3 = 2$$

$$5y = 5$$

$$\boxed{y = 1}$$