

Study Guide: Test 2.2

① $\frac{y}{3} - 5 = 1$

$+5$ $+5$

$3 \cdot \frac{y}{3} = 6 + 3$

$y = 18$

Basic
2-step
Equation

② $6x + 29 = 5$

-29 -29

$6x = -24$

$\div 6$ $\div 6$

$x = -4$

③ $8 + 4x + 2 = 6x + 14$

$10 + 4x = 6x + 14$

$-6x$ $-6x$

$10 - 2x = 14$

-10 -10

$-2x = 4$

$\div -2$ $\div -2$

$x = -2$

④ $3(x+2) = 3x+6$

$3x+6 = 3x+6$

Same coefficient
for x,
same constant.

Infinitely Many
Solutions

⑤ $9x+6 = 3(3x+4)$

$9x+6 = 9x+12$

Same coefficient
for x,
different constant

No Solution

$$\textcircled{6} \quad 2(2x-10)-8 = -2(14-3x)$$

$$4x-20-8 = -28+6x$$

$$\begin{array}{r} 4x-28 \\ -6x \end{array} \quad \begin{array}{r} -28+6x \\ -6x \end{array}$$

$$-2x - 28 = -28$$

$$+28 \quad +28$$

$$-2x = 0$$

$$\frac{-2x}{-2} = \frac{0}{-2}$$

$$x = 0$$

A. One Solution

$$\textcircled{7} \quad 8x-16 = 8x+16 \quad (\text{No Solution})$$

same coefficient, different constant

$$-3x-17 = -1(17+3x)$$

$$-3x-17 = -17-3x$$

Infinitely Many Solutions

same coefficient, same constant

$$9x+27 = 27$$

$$-27 \quad -27$$

$$9x = 0$$

$$\frac{9x}{9} = \frac{0}{9}$$

$$x = 0$$

One Solution

$$\textcircled{8} \text{ A. } 3x + 2(x + 10) = x - 20$$

$$\textcircled{3x} + \textcircled{2x} + 20 = x - 20$$

$$5x + 20 = x - 20$$

$$\begin{array}{r|l} -x & -x \\ \hline 4x + 20 & -20 \end{array}$$

$$4x + 20 = -20$$

$$\begin{array}{r|l} -20 & -20 \\ \hline 4x & -40 \end{array}$$

$$4x = -40$$

$$\frac{4x}{4} = \frac{-40}{4}$$

$$x = -10 \quad \text{one solution}$$

$$\text{B. } \textcircled{5x} + \textcircled{2x} - 6 = 3x + 6$$

$$7x - 6 = 3x + 6$$

$$\begin{array}{r|l} -3x & -3x \\ \hline 4x - 6 & 6 \end{array}$$

$$4x - 6 = 6$$

$$\begin{array}{r|l} +6 & +6 \\ \hline 4x & 12 \end{array}$$

$$4x = 12$$

$$\frac{4x}{4} = \frac{12}{4}$$

$$x = 3 \quad \text{one solution}$$

$$\text{C. } 3(2x + 11) = 6x + 33$$

$$6x + 33 = 6x + 33$$

exactly the same on both sides

Infinitely Many Solutions.

$$D. \quad 2(2x+3) = 4(x+1) + 8$$

$$4x + 6 = 4x + 4 + 8$$

$$\begin{array}{l} 4x + 6 \\ \hline \end{array} = \begin{array}{l} 4x + 12 \\ \hline \end{array}$$

same coefficient
different constants.

No Solution