

Review Problems:

Simplify.

$$1) 2(6 - 7x + 5x^2) - 3(x - 2)$$

$$= \underline{12} - \underline{14x} + \underline{10x^2} - \underline{3x} + \underline{6}$$

$$= \boxed{10x^2 - 17x + 18}$$

Note:

Expressions get simplified.

Equations get solved.

2) Simplify.

$$\frac{3}{4}x^2 - \frac{2}{3}x + \frac{1}{5} - 8x - \frac{2}{7}x^2 + \frac{1}{4}$$

$$= \frac{3}{4}x^2 - \frac{2}{7}x^2 - \frac{2}{3}x - \frac{8}{1}x + \frac{1}{5} + \frac{1}{4}$$

$$= \frac{3}{4}x^2 \left(\frac{7}{7}\right) - \frac{2}{7}x^2 \left(\frac{1}{1}\right) - \frac{2}{3}x - \frac{8}{1}x \left(\frac{3}{3}\right) + \frac{1}{5} \left(\frac{4}{4}\right) + \frac{1}{4} \left(\frac{5}{5}\right)$$

$$= \frac{21}{28}x^2 - \frac{2}{28}x^2 - \frac{2}{3}x - \frac{24}{3}x + \frac{4}{20} + \frac{5}{20}$$

$$= \boxed{\frac{13}{28}x^2 - \frac{26}{3}x + \frac{9}{20}}$$

Note: Careful! Avoid diagonal fraction bars.

$$3/7(5/8) = 15/56$$

$$\frac{3}{7} \left(\frac{5}{8} \right) = \frac{15}{56} \quad \text{clearer and less confusing}$$

$2/3x$ is the x in the numerator or denominator?

$$\frac{2}{3}x = \frac{2}{3} \cdot \frac{x}{1} = \frac{2x}{3}$$

To write $\frac{2}{3x}$ with a diagonal fraction bar, you need parentheses

$$\frac{2}{3x} = 2/(3x)$$

$$3) \quad 2x - 7 = 6 + 3x \quad \text{Solve.}$$

$$2x = 6 + 7 + 3x$$

$$2x = 13 + 3x$$

$$2x - 3x = 13$$

$$-x = 13$$

$$x = -13$$

$$\text{Solution Set: } \boxed{\{-13\}}$$

Check:

$$2x - 7 = 6 + 3x$$

$$x = -13 \Rightarrow$$

$$2(-13) - 7 = 6 + 3(-13)$$

$$-26 - 7 = 6 - 39$$

$$-33 = -33 \quad \checkmark \text{ok}$$

$$\frac{13}{39}$$

$$4) \quad 6(1+3x) = 8(2x-1) + x$$

$$6 + 18x = 16x - 8 + x$$

$$6 + 18x = 17x - 8 \quad \left. \begin{array}{l} -17x \quad -17x \end{array} \right\} 6 + 18x - 17x = -8$$

$$6 + x = -8$$

$$x = -8 - 6$$

$$x = -14$$

$$\text{Sol'n Set: } \boxed{\{-14\}}$$

2.2: Multiplicative Property of Equality

Ex: What value of x solves $3x = 15$?

Solution: 5

$$\begin{array}{l} \text{Check: } 3x = 15 \\ 3(5) = 15 \\ 15 = 15 \quad \text{true} \end{array}$$

Multiplicative Property of Equality

If $a = b$, then $ac = bc$. (For $c \neq 0$).

In other words, we can multiply (or divide) both sides by the same nonzero number.

Ex: Solve $3x = 15$.

$$\frac{3x}{3} = \frac{15}{3}$$

$$x = 5.$$

Sol'n Set: $\{5\}$

Ex: $4x - 3 = 8$ Solve.

$$4x = 8 + 3$$

$$4x = 11$$

$$\frac{4x}{4} = \frac{11}{4}$$

$$x = \frac{11}{4}$$

Sol'n Set: $\{\frac{11}{4}\}$

Ex: Solve. $-\frac{2}{7}x = \frac{3}{4}$

$$\left(-\frac{7}{2}\right)\left(-\frac{2}{7}x\right) = \frac{3}{4}\left(-\frac{7}{2}\right)$$

$$\frac{14}{14}x = -\frac{21}{8}$$

$$x = -\frac{21}{8}$$

Sol'n Set: $\{-\frac{21}{8}\}$