

Key Concepts T#3 - M311 Sp12

Ex. 1: (a) $273 + x = 908$
 $\begin{array}{r} 273 + x = 908 \\ -273 \quad \quad = -273 \\ \hline x = 635 \end{array}$

✓ $273 + (635) \stackrel{?}{=} 908$
 $908 = 908$ ✓

(b) $-36 = x + 2$
 $\begin{array}{r} -36 = x + 2 \\ -2 \quad \quad = -2 \\ \hline -38 = x \end{array}$

✓ $-36 \stackrel{?}{=} \frac{(-38) + 2}{-(38-2)}$
 $-36 = -36$ ✓

(c) $x - 4 = -2$
 $\begin{array}{r} x - 4 = -2 \\ +4 \quad \quad = +4 \\ \hline x = 2 \end{array}$

✓ $\frac{(2) - 4 \stackrel{?}{=} -2}{\frac{2 + (-4)}{-(4-2)}} = -2$
 $-2 = -2$ ✓

(d) $\frac{1}{5} + x = \frac{7}{15}$
 $\begin{array}{r} \frac{1}{5} + x = \frac{7}{15} \\ -\frac{1}{5} \quad \quad = -\frac{3}{15} \\ \hline x = \frac{4}{15} \end{array}$

✓ $\frac{1}{5} + (\frac{4}{15}) \stackrel{?}{=} \frac{7}{15}$
 $\frac{3}{15} + \frac{4}{15} \stackrel{?}{=} \frac{7}{15} \Rightarrow \frac{7}{15} = \frac{7}{15}$ ✓

(e) $27.3 + x = 87.0$
 $\begin{array}{r} 27.3 + x = 87.0 \\ -27.3 \quad \quad = -27.3 \\ \hline x = 59.7 \end{array}$

✓ $27.3 + (59.7) \stackrel{?}{=} 87$
 $87.0 = 87$ ✓

(f) $2\frac{1}{3} + x = 7\frac{3}{4}$
 $\begin{array}{r} 2\frac{1}{3} + x = 7\frac{3}{4} \\ -2\frac{1}{3} \quad \quad = -2\frac{1}{3} \\ \hline x = 5\frac{5}{12} \end{array}$

✓ $2\frac{1}{3} + (5\frac{5}{12}) \stackrel{?}{=} 7\frac{3}{4}$
 $2\frac{4}{12} + 5\frac{5}{12} \stackrel{?}{=} 7\frac{3}{4}$
 $7\frac{9}{12} \stackrel{?}{=} 7\frac{3}{4} \Rightarrow 7\frac{3}{4} = 7\frac{3}{4}$ ✓

Ex 2: (a) $27x = 483$
 $\begin{array}{r} 27x = 483 \\ \frac{27}{27} \quad \quad = \frac{27}{27} \\ \hline x = 17\frac{8}{9} \end{array}$

✓ $\frac{27}{27} (\frac{483}{27}) \stackrel{?}{=} 483 \Rightarrow 483 = 483$ ✓

(b) $1.12x = 26.8$
 $\begin{array}{r} 1.12x = 26.8 \\ \frac{1.12}{1.12} \quad \quad = \frac{1.12}{1.12} \\ \hline x = 2.233 \end{array}$

✓ $1.12(2.233) \stackrel{?}{=} 26.8$
 $26.8 = 26.8$ ✓

To check this use either fractions or a calculator with 2.233333 to fill register "x" * 1.12.

Key Concepts T3 con'd p.2

Ex2: (a) $2\frac{1}{3}x = \frac{5}{6} \Rightarrow \frac{3}{7} \cdot \frac{7}{3}x = \frac{5}{6} \cdot \frac{3}{7} \Rightarrow \boxed{x = \frac{5}{14}}$

✓ $2\frac{1}{3}(\frac{5}{14}) = \frac{5}{6} \Rightarrow \frac{7}{3} \cdot \frac{5}{14} = \frac{5}{6} \Rightarrow \frac{5}{6} = \frac{5}{6}$ ✓

Ex3: (a) $-(-(-\frac{2}{3})) = \boxed{-\frac{2}{3}}$ (b) $| -2.57 | = \boxed{2.57}$ (c) $-| -5\frac{1}{3} | = \boxed{-5\frac{1}{3}}$

(d) $-| -(-2850) | = -| 2850 | = \boxed{-2850}$

Ex4: (a) $-(-5) \boxed{>} | -5 |$ (b) $| -\frac{2}{5} | \boxed{<} -(-\frac{3}{7})$

(c) $-(-(-3.8)) \boxed{>} -(-3.08)$

Ex5: (a) $\sqrt{169} = \boxed{13}$ (b) $\sqrt{-12}$ NoR solution (c) $\sqrt{144/196} = \frac{\sqrt{144}}{\sqrt{196}} = 12/14 = \boxed{\frac{6}{7}}$

(d) $\sqrt{0.0016} \Rightarrow \frac{\sqrt{16}}{w/4 \text{ decimals}} \Rightarrow \boxed{0.04}$ or $\sqrt{\frac{16}{10000}} = \frac{\sqrt{16}}{\sqrt{10000}} = \frac{4}{100} = 0.04$

Key Concepts T3 cond p.4

Ex 8: (a) $-275 + 69 = -(275 - 69)$

$$\begin{array}{r} 275 \\ - 69 \\ \hline 206 \end{array}$$

$$= \boxed{-206}$$
 (b) $-2754 + 3000$

$$\begin{array}{r} 3000 \\ - 2754 \\ \hline 246 \end{array}$$

$$= +(3000 - 2754)$$

$$= \boxed{246}$$

(c) $-157 + -46$

$$\begin{array}{r} 157 \\ + 46 \\ \hline 203 \end{array}$$

$$= -(157 + 46)$$

$$= \boxed{-203}$$

(d) $485 + -33$

$$\begin{array}{r} 485 \\ - 33 \\ \hline 452 \end{array}$$

$$= +(485 - 33)$$

$$= \boxed{452}$$

(e) $789 + -1708$

$$\begin{array}{r} 1708 \\ - 789 \\ \hline 919 \end{array}$$

$$= -(1708 - 789)$$

$$= \boxed{-919}$$

(f) $-501 + 501$
 Anything plus its opposite is zero → Inverse prop of addition

$$= \boxed{0}$$
 or $(501 - 501) = 0$

Ex. 9: (a) $275 - 1600$

$$= \boxed{275 + -1600}$$

(b) $-38 - 475$

$$= \boxed{-38 + -475}$$

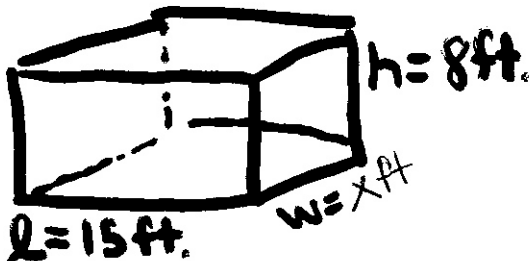
(c) $-27 - (-389)$

$$= \boxed{-27 + 389}$$

(d) $789 - (-762)$

$$= \boxed{789 + 762}$$

Ex 10:



The width is 12 feet

$$V = L \cdot W \cdot h = 1440 \text{ ft}^3$$

$$(15)(x)(8) = 1440$$

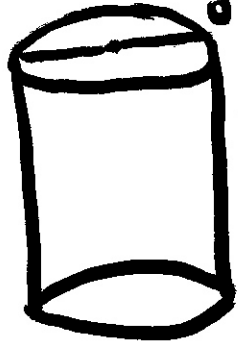
$$(15 \cdot 8)x = 1440$$

$$\downarrow 120 \cdot x = \frac{1440}{120}$$

$$x = 12 \text{ feet}$$

Key Concepts T3 cond p.5

Ex 11:



$$d = 22\text{ft.}$$

$$h = 66\text{ft.}$$

$$r = \frac{d}{2} = \frac{22}{2} = 11$$

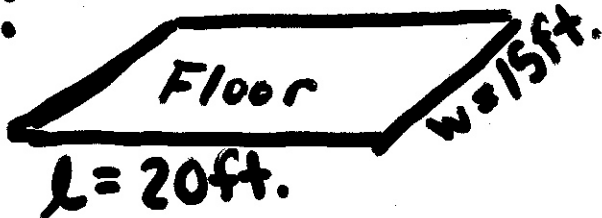
$$\pi \approx 3.14$$

$$V = \pi r^2 h$$

$$\approx (3.14)(11)^2(66)$$

$$= \boxed{(3.14)(121)(66) \text{ ft}^3}$$

Ex 12:



Carpet requires area

$$A = l \cdot w$$

$$= (20)(15) = \boxed{300\text{ft}^2 \text{ of carpet}}$$

Baseboards require perimeter

$$P = 2l + 2w$$

$$= 2(20) + 2(15)$$

$$= 40 + 30 = \boxed{70\text{ft. of material}}$$