

August 24, 2015

* Quiz #1 - Wednesday

1.1 \neq Start of
1.2 Power Tools

Questions \rightarrow 4 points each

$$\frac{16}{16} = 100$$

$$\frac{12}{16} = 75$$

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Algebra's Power Tools

① Commutative Tool

+ $a + b = b + a$
 \cdot $a \cdot b = b \cdot a$
 $ab = ba$

$23 \neq 2 \cdot 3$ or $2(3)$ or 2×3

* Order Changes, but the result is the same.

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② Associative Tool

$$a + (b + c) = (a + b) + c$$

$$a(bc) = (a \cdot b)c$$

* Order does not change, but what is associated does change. But the result is the same.

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③ Distributive Tool

$a(b+c) = ab + ac$

* Multiplication over Addition

$$3(y+4) = 3y + 3 \cdot 4$$

$$= 3y + 12$$

Simplify

$$\frac{3y + 12}{3} = \frac{3(y+4)}{3} = y+4$$

if $y=1$

$$\frac{3y+12}{3} = 5$$

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$$\frac{6x-9}{3} = \frac{3(2x-3)}{3} = 2x-3$$

① $\frac{6x-9}{3} = \frac{6x-3}{3} = \frac{6(2)-3}{3} = \frac{10-3}{3} = \frac{7}{3}$

② $\frac{6x-9}{3} = \frac{2x-9}{3} = \frac{2(2)-9}{3} = \frac{10-9}{3} = \frac{1}{3}$

③ $\frac{6x-9}{3} = \frac{2x-3}{3} = \frac{2(2)-3}{3} = \frac{10-3}{3} = \frac{7}{3}$

④ $\frac{6x-9}{3} = \frac{6(5)-9}{3} = \frac{30-9}{3} = \frac{21}{3} = 7$

⑤ $\frac{6x-9}{3} = \frac{6x}{3} - \frac{9}{3} = 2x-3$

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$$5(x+4) + 2 = 10$$

$$5x + (20+2) = 10$$

$$5x + 22 = 10$$

$$\frac{5x + 0}{5} = \frac{-12}{5}$$

$$5x = -12$$

$$x = -\frac{12}{5}$$

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④ Additive Inverse

$$a + (-a) = 0$$

Additive Identity

$4 + (-4) = 0$
 $-16 + (16) = 0$
 $\frac{3}{4} + (-\frac{3}{4}) = 0$

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⑤ Multiplicative Inverse

$$\frac{a}{1} \cdot \frac{1}{a} = 1$$

Multiplicative Identity

$$\frac{a}{a} = 1$$

$11 \cdot \frac{1}{11} = \frac{11}{11} = 1$
 $\frac{2}{3} \cdot \frac{3}{2} = \frac{6}{6} = 1$

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$$\begin{array}{r} x + 2 = 4 \\ + 0 \quad - 2 \quad - 2 \\ \hline x + 0 = 2 \\ \boxed{x = 2} \end{array}$$

or

$$2 + 2 = 4$$

$$4 = 4 \checkmark$$

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$$\frac{2x}{2} = \frac{4}{2}$$

$$\frac{1 \rightarrow 2}{2 \rightarrow 1} \cdot \frac{x}{1} = \frac{4}{1} \cdot \frac{1}{2}$$

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

$$1 \cdot x$$

$$x = 2$$

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⑥ Additive Identity

$$a + 0 = a$$

$$6 + 0 = 6$$

⑦ Multiplicative Identity

$$a \cdot 1 = a$$

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① $4(x+5) + 6 = 2(x+1) + 4$

② $4x + (20 + 6) = 2x + (2 + 4)$

③ $4x + 26 = 2x + 6$

$$\begin{array}{r} 4x + 26 = 2x + 6 \\ -2x \quad -26 \quad -2x \quad -26 \\ \hline 2x + 0 = 0 - 20 \\ \frac{2x}{2} = \frac{-20}{2} \\ \boxed{x = -10} \end{array}$$

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$$\begin{aligned}
 (1) \quad & 6 + 3(y+1) = 12 + 2(y+4) \\
 (2) \quad & (6 + 3y) + 3 = (12 + 2y) + 8 \\
 & \text{Dist.} \\
 (3) \quad & (3y + 6) + 3 = (2y + 12) + 8 \\
 & \text{Assoc.} \\
 & \text{Comm.} \\
 (4) \quad & 3y + 6 + 3 = 2y + 12 + 8 \\
 & \text{Assoc.} \\
 (5) \quad & \begin{array}{r} 3y + 9 \\ -2y \quad -9 \end{array} = \begin{array}{r} 2y + 20 \\ -2y \quad -9 \end{array} \\
 (6) \quad & \boxed{y = 11} \quad \text{A.J.}
 \end{aligned}$$

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$$\Delta(\text{☺} + \text{☐}) - \$ = \infty$$

Solve for ☺

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