September 15, 2015

* Quiz #3 - Wed
  1.1 — 1.7
  * 1.4 — 1.7
* Exam #1 → (a) 9/23 (Wed) or (b) 9/28 (Monday)
  Chp #1, 2, 3

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2.1 & 2.2

Absolute Value

* Key: Distance from zero and distance is always positive

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Addition w/ opposite "signs"

$-9 + 4$

① $|-9| = 9$
② $|4| = 4$ } abs → magnitude
③ $4 < 9$ true
④ Subtract the smaller magnitude value from the larger and attach the "sign" that was attached to larger magnitude.
$9 - 4 = 5$
⑤ But $9 = |-9|$
-5

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$24 - 56 = 24 + (-56)$

* Don't write $24 + -56$

① $|24| = 24$
* ② $|-56| = 56$
③ $24 < 56$
④ $56 - 24 = 32$
⑤ -32

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$6 + (-2) - (-8) - 10$

$6 + (-2)(-1)(-8) - 10$

$6 + (-2) + 8 - 10$

$6 + (-2) + 8 + (-10)$

$4 + 8 + (-10)$

$12 + (-10)$

2

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$[-7 + 8] + (-9) + 12$

$1 + (-9) + 12$

$-8 + 12$

4

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Multiplication (Division) of Integers

① Same "Sign" → Positive Result

$+5 \cdot +3 = +15$

$(-5) \cdot (-3) = +15$

$3 \cdot 3 = 9$ (-3)
$3 \cdot 2 = 6$ (-3)
$3 \cdot 1 = 3$ (-3)
$3 \cdot 0 = 0$ (-3)
$3 \cdot (-1) = -3$ (-3)
$3 \cdot (-2) = -6$
$3 \cdot (-3) = -9$

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$-3 \cdot 3 = -9$ (+3)
$-3 \cdot 2 = -6$ (+3)
$-3 \cdot 1 = -3$ (+3)
$-3 \cdot 0 = 0$ (+3)
$-3 \cdot (-1) = 3$ (+3)

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Proof: neg times a neg is a positive

Let x be a Real Number

① $x = ab + (-a)(b) + (a)(-b)$
$= ab + -a(b + (-b))$
$= ab + -a(0)$
$= ab + 0$
$x = ab$

② $x = ab + (-a)b + (-a)(-b)$
$= b(a + (-a)) + (-a)(-b)$
$= b(0) + (-a)(-b)$
$= 0 + (-a)(-b)$
$x = (-a)(-b)$

① $x = ab$
② $x = (-a)(-b)$
$x = x$ trans
$ab = (-a)(-b)$
Pos Pos

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② Opposite "Signs" → negative Result

$5 \cdot (-3) = -15$

$-4 \cdot 6 = -24$

$\frac{-28}{7} = -4$

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2.5 #79)

$|9(-3)| + 12(-2)$

$|-27| + 12(-2)$

$27 + (-24)$

$27 - 24$

$\boxed{3}$

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2.5 #86)

$\frac{10^2 + 4^2}{1 - 6 \cdot 5}$

$\frac{100 + 16}{1 - 30}$

$\frac{+116}{-29} = \frac{4}{-1} = -4$

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Fractions

Fundamental Principle of Fractions

$$\frac{a}{b}\cdot\frac{c}{c}=\frac{ac}{bc}$$

"ONE"

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

$\frac{3}{4}$ of some whole

$\frac{4}{4}$

$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$

$$\frac{3}{4}\cdot\frac{7}{7}=\frac{21}{28}$$

"ONE"

Equivalent Fractions

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Equivalent

$$\frac{48}{96}=\frac{2\cdot2\cdot2\cdot2\cdot3}{2\cdot2\cdot2\cdot2\cdot2\cdot3}=1\cdot1\cdot1\cdot1\cdot\frac{1}{3}\cdot1=\frac{1}{2}$$

$48=2^4\cdot 3$

$96=2^5\cdot 3$

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Operations on Fractions

① Multiplication

$$\frac{a}{b}\cdot\frac{c}{d}=\frac{ac}{bd}$$

(a) $\frac{5}{7}\cdot\frac{3}{8}=\frac{15}{56}$

(b) $\frac{5}{8}\cdot\frac{2}{9}=\frac{10}{72}=\frac{5}{36}$

3.6

$\frac{5}{4}\cdot\frac{2}{3\ 3}=\frac{5}{4}\cdot\frac{1}{9}=\frac{5}{36}$

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Division

$$\frac{a}{b}\div\frac{c}{d}=\frac{a}{b}\cdot\frac{d}{c}=\frac{ad}{bc}$$

K C F

Keep Change Flip to mult.

$$\frac{5}{11}\div\frac{1}{2}=\frac{5}{11}\cdot\frac{2}{1}=\frac{10}{11}$$

K C F

Complex Fraction

$$\frac{\frac{5}{11}}{\frac{1}{2}}=\frac{5}{11}\cdot\frac{2}{1}=\frac{10}{11}$$

K C F

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③ Addition w/ Like Denominators

$$\frac{a}{b}\pm\frac{c}{b}=\frac{a\pm c}{b}$$

$$\frac{2}{13}+\frac{5}{13}=\frac{2+5}{13}=\frac{7}{13}$$

$$\frac{3}{5x}-\frac{8}{5x}=\frac{3-8}{5x}=\frac{-5}{5x}=\frac{-1}{x}=-\frac{1}{x}$$

FACT

$$-\frac{a}{b}=\frac{-a}{b}=\frac{a}{-b}$$

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