S-A2 Algebra 2 Sessim 3 6/10

Determine whether each is rational. If so, why?

1.) 9 rational counting, whole, integer

2.) 0 rational whole, integer

3.) 0.2222... rational repeating decimal

4.) 0.453453... rational repeating

5.) -7 rational integer

6.) $\sqrt{48}$ irrational

7.) $\sqrt{36}$ rational perfect square

8.) 0.767676... rational repeating

9.) 0.1238... irrational

10.) 0.51111 rational terminal

11.) π irrational

12.) $3/5$ rational fraction

Name property.

1.) $b + 0 = b$ identity

2.) $3(x + 2y) = 3x + 6y$ distributive

3.) $s + t = t + s$ commutative

4.) $a * \frac{1}{a} = 1$ inverse

5.) $2 + (a+b) = (2+a)+b$ associative

Associative
Commutative
distributive
identity
inverse

$3x^2 + 6y^3$ $\quad x = -4 \quad y = 2$

$3(-4)^2 + 6(2)^3$

$3(16) + 6(8)$

$48 + 48 = \boxed{96}$

$3(a^2 - 4b) - 2(5a^2 + 8b)$ $\quad a = -2 \quad b = 3$

$3((-2)^2 - 4(3)) - 2(5(-2)^2 + 8(3))$

$3(4 - 4(3)) - 2(5(4) + 8(3))$

$3(4 - 12) - 2(20 + 24)$

$3(-8) - 2(44)$

$-24 - 88 = \boxed{-112}$

$3(a^2 - 4b) - 2(5a^2 + 8b)$ $\quad a = -2 \quad b = 3$

$3a^2 - 12b - 10a^2 - 16b$

$-7a^2 - 28b$

$-7(-2)^2 - 28(3)$

$-7(4) - 28(3) = -28 - 84$

$= \boxed{-112}$

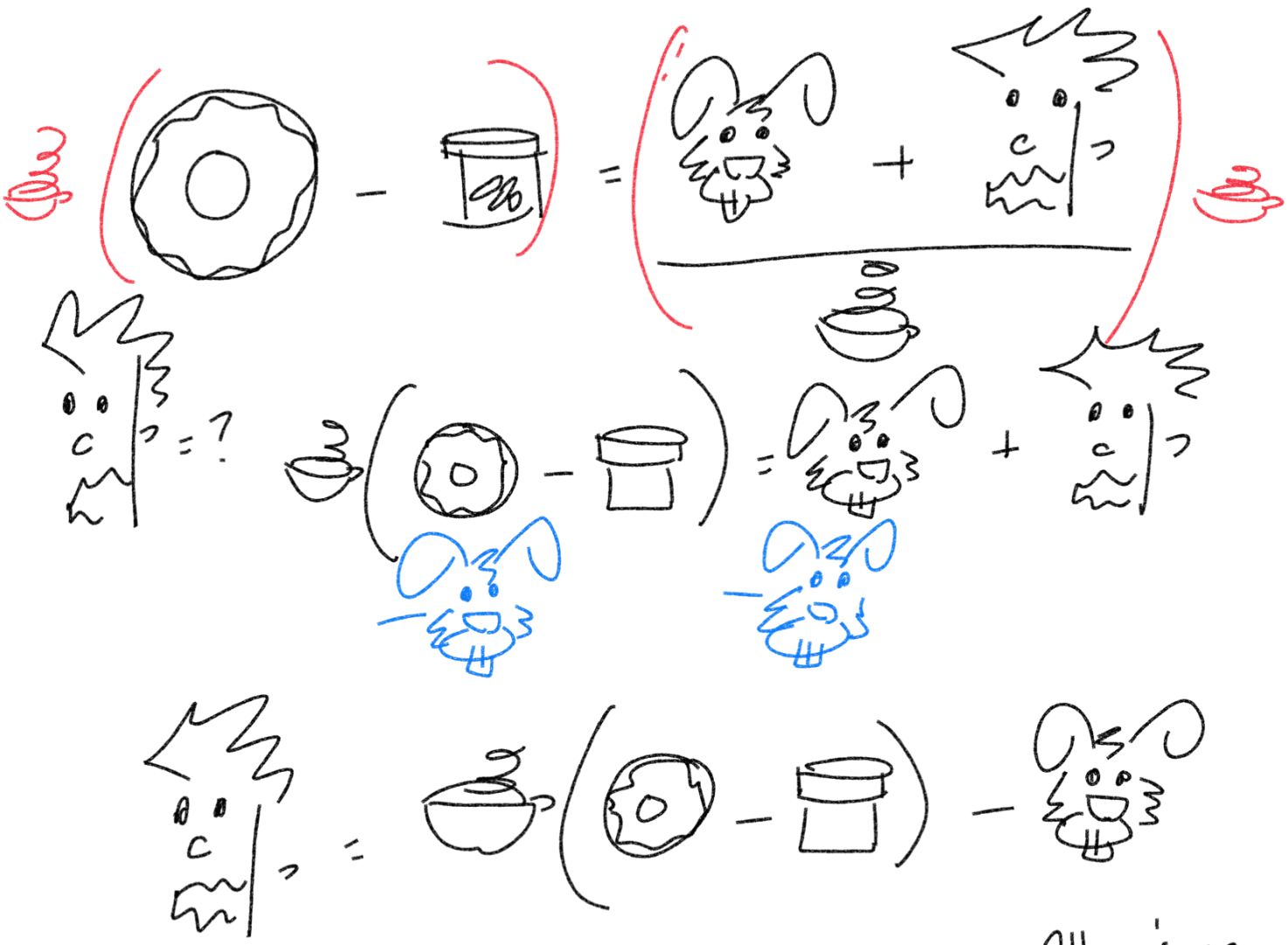
$$\frac{F}{RT} = \frac{ART}{RT} \qquad A = \frac{F}{RT}$$

$$\frac{PV}{nT} = \frac{nRT}{nT} \qquad R = \frac{PV}{nT}$$

$$A = \pi r^2 \qquad r = \pm\sqrt{\frac{A}{\pi}}$$

$$\frac{A}{\pi} = \frac{\pi r^2}{\pi} \qquad \sqrt{\frac{A}{\pi}} = \sqrt{r^2} \qquad r = \pm\sqrt{\frac{A}{\pi}}$$

PEMDAS ↑



$$3m - n = 2m + n$$

$$-2m \qquad -2m$$

$$m - n = n$$

$$+n \qquad +n$$

$$\boxed{m = 2n}$$

$m =$ All n's on one side, everything else on the other.

$2(u+3v) = w - 5u$ solve for u.

$2u + 6v = w - 5u$

$+5u \qquad +5u$

$\frac{7u}{7} = \frac{w-6v}{7}$

$7u + 6v = w$

$-6v \quad -6v$

$$u = \frac{w-6v}{7}$$

$ax + b = cx + d$ solve for x.

$-b \qquad -b$

$ax = cx + d - b$

$-cx \quad -cx$

- All x's on one side
- factor out x (anti-distribution)

$ax - cx = d - b$

$\frac{x(a-c)}{a-c} = \frac{d-b}{a-c}$

$$x = \frac{d-b}{a-c}$$

$12\left(\frac{2}{3}f + \frac{5}{12}g\right) = \left(3 - fg\right)12$ $\quad f =$

$4\frac{12}{1}\cdot\frac{2}{3}f + \frac{12}{1}\cdot\frac{5}{12}g$

$\frac{24}{3}f \left[\, 8f + 5g = 36 - 12fg \,\right]$

$-5g \qquad\qquad -5g$

$8f = 36 - 12fg - 5g$

$+12fg \qquad\quad +12fg$

$12fg + 8f = 36 - 5g$

$\frac{f(12g+8)}{12g+8} = \frac{36-5g}{12g+8}$

$$\boxed{f = \frac{36-5g}{12g+8}}$$

$$\frac{x+a}{b} = \frac{4}{5}$$

$$5(x+a) = 4b$$

$$5x + 5a = 4b$$
$$-5a \quad -5a$$

$$\frac{5x}{5} = \frac{4b-5a}{5}$$

$$\boxed{x = \frac{4b-5a}{5}}$$

$x =$

why distribute? $\frac{5(x+a)}{5} = \frac{4b}{5}$

$$x + a = \frac{4b}{5}$$
$$-a \quad -a$$

$$\boxed{x = \frac{4b}{5} - a}$$

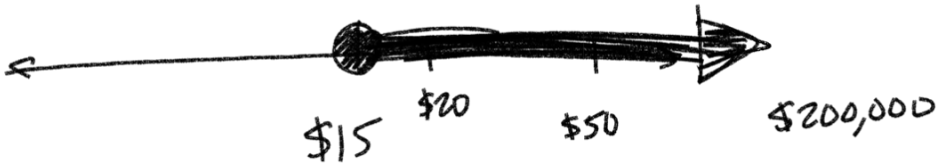
Inequalities

$x \geq \$15$

$> <$

0

$\geq \quad \leq \quad \geqq \quad \leqq$



$2t + 30 \leq 40$

$-30 \quad -30$

$\frac{2t}{2} \leq \frac{10}{2}$

$t \leq 5$

Think:

$2t + 30 = 40$

5

$2(m+3) + 1 > 23$

$2m + 6 + 1 > 23$

$2m + 7 > 23$

$-7 \quad -7$

$\frac{2m}{2} > \frac{16}{2}$

$m > 8$

8

$$\frac{5(1-2m)}{5} \geq \frac{85}{5}$$

$$1 - 2m \geq 17$$

$$-1 \qquad -1$$

$$\frac{-2m}{-2} \geq \frac{16}{-2}$$

$$\boxed{m \leq -8}$$

Remember: you must flip the inequality when you multiply or divide by a negative.