

# Cumulative Review 11/20

① Rational

$3.4\overline{56}$

$\sqrt{81}$

$0$

$\sqrt{1.69}$

$\sqrt{\frac{4}{9}}$

$.38$

Irrational

$\sqrt{50}$

$2\pi$

$\sqrt{\frac{2}{9}}$

② A)  $\frac{1}{5}x + 13 + x = -\frac{1}{10}(x + 40) + 4$

$$\frac{1}{5}x + 13 + x = -\frac{1}{10}x - \frac{40}{10} + 4$$

$$10 \left( \frac{1}{5}x + 13 + x \right) = \left( -\frac{1}{10}x - \frac{40}{10} + 4 \right) 10$$

$$2x + 130 + 10x = -1x - 40 + 40$$

$$130 + 12x = -1x$$

$$-12x = -12x$$

$$\frac{130}{-13} = \frac{-13x}{-13}$$

$$-10 = x$$

$-10 = x$  One Solution

(A)

③  $3 \neq 4$  means there is no solution. 3 does not equal 4.

④ B

⑤ C

⑥ A

⑦ A

⑧ B

⑨ C

⑩ \* Tells us to multiply mass and speed.

$$(3.3 \overset{\text{mass}}{\times} 10^4) (\overset{\text{speed}}{3.2} \times 10^3)$$

$$(3.3 \times 3.2) (10^4 \times 10^3)$$

$$10.56 \times (10^{4+3})$$

$$10.56 \times 10^7 = \boxed{1.056 \times 10^8}$$



(11)  $4.5 \times 10^2$  (1 second)

How long?

$$\frac{1.8 \times 10^{10}}{4.5 \times 10^2} = \frac{1.8}{4.5} \times 10^{10-2}$$

$$= \frac{4}{10} \times 10^8$$
$$\boxed{4 \times 10^7} \text{ seconds}$$

(12)  $0.\overline{74} = \frac{74}{99}$   $0.\overline{74}$  is rational because it can be written as a fraction. Any number that can be written as a fraction is rational.

(13)  $3^3 x^2 \cdot 4x^5$   
 $27x^2 \cdot 4x^5$   
 $108x^2 \cdot x^5$   
 $108x^{2+5}$   
 $= 108x^7$   
 $\boxed{C}$

(14)  $3^2 \cdot 3^{-3} = 3^{2+(-3)}$   
 $= 3^{2-3}$   
 $= 3^{-1} = \frac{3^{-1}}{1} = \frac{1}{3} \quad \boxed{B}$

(15)  $8y^{-2} = \frac{8 \cancel{y^{-2}}}{y^2} = \frac{8}{y^2} \quad \boxed{D}$

(16)  $4(x-1) - 3x = -2x - 4 + 3x$

$$4x - 4 - 3x = -2x - 4 + 3x$$

$$-4 + x = x - 4$$

$$-4 + x - x = x - 4 - x$$

$$-4 = -4$$

infinitely many  $\boxed{D}$



17)  $(3^4)^2 = 3^{4 \cdot 2} = \boxed{3^8}$

18)  $4a \times 4a \times 4a$   
 $= 4 \cdot 4 \cdot 4 \times a \times a \times a$   
 $\boxed{64a^3}$

19)

x	y
0	-7
2	-3
4	1
6	5

← y-intercept is always when x=0

$b = -7$

$m = \frac{y_2 - y_1}{x_2 - x_1}$        $(4, 1) (6, 5)$   
 $x_1 \ y_1 \ x_2 \ y_2$

Equation:  $y = 2x - 7$

$m = 2$        $\frac{5-1}{6-4} = \frac{4}{2} = 2$

20)  $m = \frac{1}{3} \frac{\text{rise}}{\text{run}}$   
 $b = -3$  y-intercept

21)  $y = 4x - 10$       x to see if an ordered pair lies on a graph plug in each one for (x,y). If both sides of the equation equal, the point is on the line.

(A)  $(4, -10)$        $-10 = 4(4) - 10$   
 $x \ y$        $-10 = 16 - 10$   
 $-10 \neq 6$   
 No

(B)  $(4, 6)$        $6 = 4(4) - 10$   
 $x \ y$        $6 = 16 - 10$   
 $6 = 6$   
 Yes!

(C)  $(-4, 6)$        $6 = 4(-4) - 10$   
 $x \ y$        $6 = -16 - 10$   
 $6 \neq -26$   
 No

(D)  $(-4, 10)$        $10 = 4(-4) - 10$   
 $x \ y$        $10 = -16 - 10$   
 $10 \neq -26$  No

**B**



$$\begin{aligned} (22) \quad b &= 2 & y &= mx + b \\ m &= -2 & y &= -2x + 2 \end{aligned}$$

C

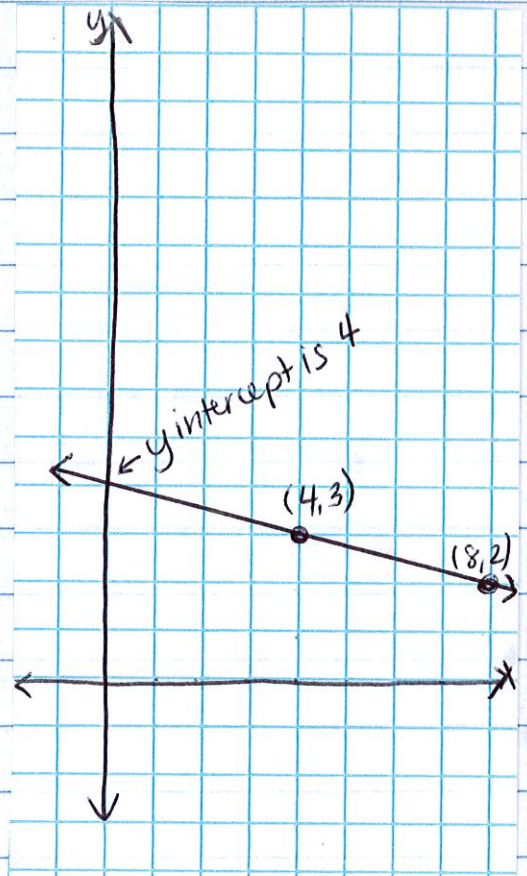
$$(23) \quad \begin{matrix} (4, 3) & (8, 2) \\ x_1, y_1 & x_2, y_2 \end{matrix}$$

$$m = \frac{2-3}{8-4} = \frac{-1}{4}$$

$$b = 4$$

$$y = -\frac{1}{4}x + 4$$

- ① I found the slope
- ② Plotted the points
- ③ Found y-intercept
- ④ Wrote equation in  $y = mx + b$ .



$$\begin{aligned} (24) \quad & (2.5 \times 10^8)(1.2 \times 10^7) \\ & (2.5 \times 1.2)(10^8 \times 10^7) \\ & 3 \times (10^{8+7}) \\ & \boxed{3 \times 10^{15}} \end{aligned}$$

$$\begin{aligned} (25) \quad & (8.25 \times 10^8) \div (1.5 \times 10^{-2}) \\ & \frac{8.25 \times 10^8}{1.5 \times 10^{-2}} = \frac{8.25}{1.5} \times 10^{8 - (-2)} \\ & 5.5 \times 10^{8+2} \\ & \boxed{5.5 \times 10^{10}} \end{aligned}$$