

## REVIEW: MATH POKER: MAY 20

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1) The owner of a cupcake business has one employee, who is paid an hourly rate of \$25. The owner estimates his weekly profit using the function  $P(x) = 8600 - 25x$ . In this function,  $x$  represents the number of

- (1) cupcakes made per week
  - (2) hours worked per week
  - (3) customers served per week
  - (4) days worked per week
- $\$25(\text{hrs})$

2) Scarlett was given \$3000 when she turned 2 years old. Her parents invested it at a 2% interest rate compounded annually. No deposits or withdrawals were made. Which expression can be used to determine how much money Scarlett had in the account when she turned 18?

- (1)  $3000(1 + 0.02)^{16}$
- (2)  $3000(1 + 0.02)^{18}$
- (3)  $3000(1 - 0.02)^{16}$
- (4)  $3000(1 - 0.02)^{18}$

$$A = P(1+r)^n$$

$$A = 3000(1 + 0.02)^{16}$$

$\frac{18}{2} = 9$   
16 yrs

3) Which table of values represents a linear relationship?

x	f(x)
-1	-3
0	-2
1	1
2	6
3	13

x	f(x)
-1	$\frac{1}{2} \times 2$
0	1
1	2
2	4
3	8

x	f(x)
-1	-3
0	-1
1	1
2	3
3	5

x	f(x)
-1	-1
0	0
1	1
2	8
3	27

(1) (2) exponential (3) (4)

4) State the linear equation to question #3.

$y = mx + b$

$y = 2x - 1$

y-intercept (0, -1)

\* can use 4, 8 & 2  
Linear Reg.

Glue on page 55

5) Which domain would be the most appropriate set to use for a function that predicts the number of household online-devices in terms of the number of people in the household?

(1) integers *no neg. devices*

(2) irrational numbers

(3) whole numbers  $\rightarrow 0, 1, 2, \dots$

(4) rational numbers  $\rightarrow$  fraction

6) The inequality  $-\frac{2}{3}x < x - 8$  is equivalent to  $-\frac{2}{3}x < x - 8$  clear fraction

(1)  $x > 9$

(2)  $x > -\frac{3}{5}$

(3)  $x < 9$

(4)  $x < -\frac{3}{5}$

$$\begin{aligned} 3 \left[ -\frac{2}{3}x < x - 8 \right] \\ -2x < 3x - 24 \\ -3x < -3x - 24 \\ \frac{5x}{5} < \frac{-24}{5} \\ x < -\frac{24}{5} \end{aligned}$$

*Flip when  $\div$  by a neg.*

7) Some banks charge a fee on savings accounts that are left inactive for an extended period of time. The equation  $y = 5000(0.98)^x$  represents the value,  $y$ , of one account that was left inactive for a period of  $x$  years. What is the y-intercept of this equation and what does it represent?

(1) 0.98, the percent of money in the account initially

(2) 0.98, the percent of money in the account after  $x$  years

(3) 5000, the amount of money in the account initially

(4) 5000, the amount of money in the account after  $x$  years

8) Write the equation in vertex form and state the vertex of the equation:  $x^2 + 6x - 7 = 0$   $\rightarrow (-3, -16)$

$$(x+3)^2 - 16 = 0 \text{ vertex form}$$

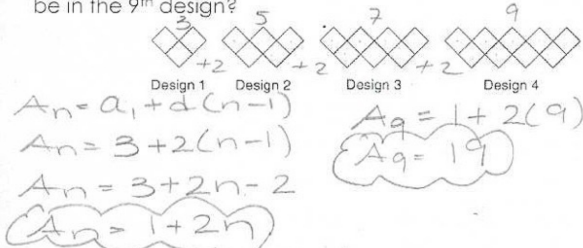
bonus:  
zeros:

$$\begin{aligned} (x+3)^2 - 16 &= 0 \\ \sqrt{(x+3)^2} &= \sqrt{16} \\ x+3 &= \pm 4 \\ x &= -3 \pm 4 \\ x &= -3+4 = 1 \\ x &= -3-4 = -7 \end{aligned}$$

9) Ahad is given a rectangular piece of paper. If the length of Ahad's piece of paper is represented by  $2x - 6$  and the width is represented by  $3x + 5$ , then the paper has a total area represented by

$$\begin{aligned} (2x-6)(3x+5) &\text{ or } 3x \begin{array}{|c|c|} \hline 6x^2 & -18x \\ \hline +5 & 10x & -30 \\ \hline \end{array} \\ 2x(3x+5) - 6(3x+5) & \\ 6x^2 + 10x - 18x - 30 & \\ 6x^2 - 8x - 30 & \leftarrow \text{same} \end{aligned}$$

10) If the pattern below continues, what formula will represent the number of squares in this sequence? How many squares will be in the 9<sup>th</sup> design?



$$\begin{aligned} A_n &= a_1 + d(n-1) \\ A_n &= 3 + 2(n-1) \\ A_n &= 3 + 2n - 2 \\ A_n &= 1 + 2n \end{aligned}$$

$$\begin{aligned} A_9 &= 1 + 2(9) \\ A_9 &= 19 \end{aligned}$$

11) Solve the equation  $4x^2 - 12x + 7 = 0$  algebraically for  $x$ .

$$\begin{aligned} 4x^2 - 12x + 7 &= 0 \\ (4x^2 - 14x) + (2x - 7) &= 0 \\ 2x(2x - 7) + 1(2x - 7) &= 0 \\ (2x+1)(2x-7) &= 0 \\ \begin{array}{l} 2x+1=0 \\ -1 \quad -1 \\ \hline 2x = -1 \\ x = -\frac{1}{2} \end{array} & \quad \begin{array}{l} 2x-7=0 \\ +7 \quad +7 \\ \hline 2x = 7 \\ x = \frac{7}{2} \end{array} \end{aligned}$$

$$\begin{aligned} & \begin{array}{r} ac \\ -28 \\ \hline -14 \quad 2 \\ \hline -12 \\ b \end{array} \\ & a=4 \end{aligned}$$