

Name: Key

Algebra I Midterm Review 3

Date: _____

1. A construction worker needs to move 120 ft^3 of dirt by using a wheelbarrow. One wheelbarrow load holds 8 ft^3 of dirt and each load takes him 10 minutes to complete. One correct way to figure out the number of hours he would need to complete this job is

4

(1) $\frac{120 \text{ ft}^3}{1} \cdot \frac{10 \text{ min}}{1 \text{ load}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{1 \text{ load}}{8 \text{ ft}^3}$

(2) $\frac{120 \text{ ft}^3}{1} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{8 \text{ ft}^3}{10 \text{ min}} \cdot \frac{1}{1 \text{ load}}$

(3) $\frac{120 \text{ ft}^3}{1} \cdot \frac{1 \text{ load}}{10 \text{ min}} \cdot \frac{8 \text{ ft}^3}{1 \text{ load}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$

(4) $\frac{120 \text{ ft}^3}{1} \cdot \frac{1 \text{ load}}{8 \text{ ft}^3} \cdot \frac{10 \text{ min}}{1 \text{ load}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$

$\frac{\text{min}^2}{\text{hr}}$

$\frac{\text{ft}^6}{\text{hr} \cdot \text{load}}$

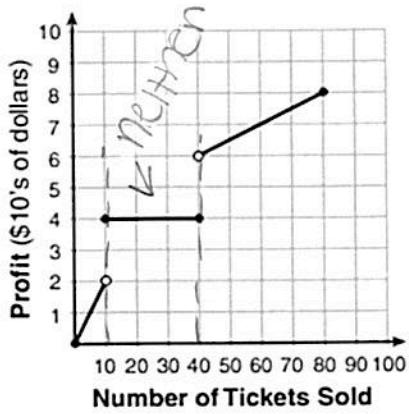
$\frac{\text{ft}^6 \text{ hr}}{\text{min}^2}$

$\frac{\text{hr}}{1} \leftarrow \text{units in hours}$

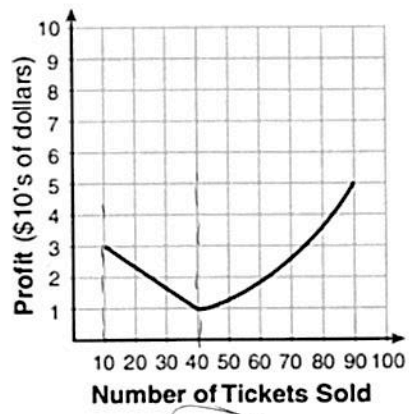
doesn't make sense

2. To keep track of his profits, the owner of a carnival booth decided to model his ticket sales on a graph. He found that his profits only declined when he sold between 10 and 40 tickets. Which graph could represent his profits?

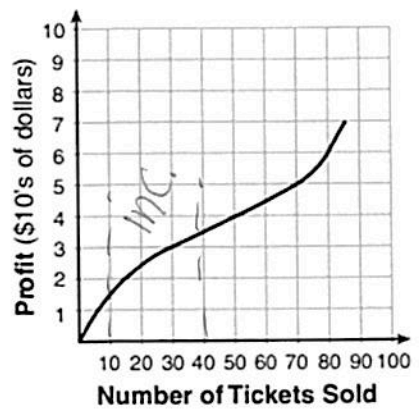
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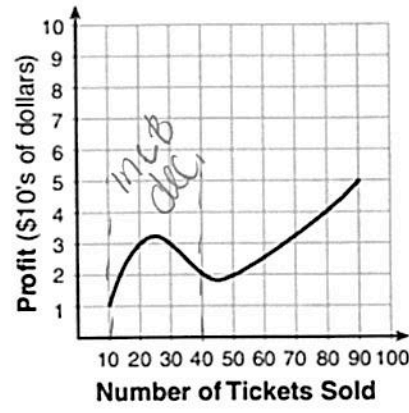
(1)



(3)



(2)

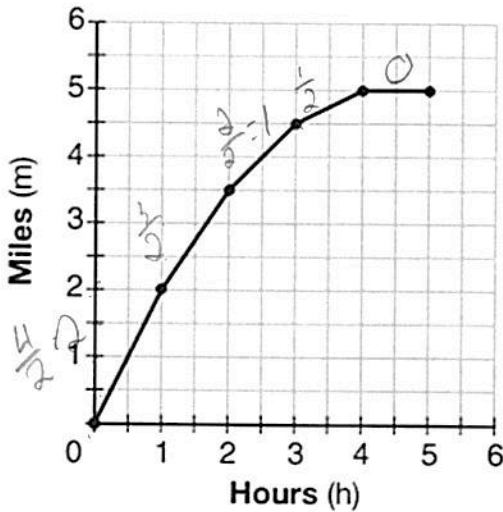


(4)

3. One characteristic of all linear functions is that they change by

- (1) equal factors over equal intervals
- (2) unequal factors over equal intervals
- (3) equal differences over equal intervals
- (4) unequal differences over equal intervals

4. The graph below shows the distance in miles, m , hiked from a camp in h hours.



Which hourly interval had the greatest rate of change?

- (1) hour 0 to hour 1
- (2) hour 1 to hour 2
- (3) hour 2 to hour 3
- (4) hour 3 to hour 4

5. Which chart could represent the function $f(x) = -2x + 6$?

x	f(x)
0	6
2	10
4	14
6	18

(1)

x	f(x)
0	8
2	10
4	12
6	14

(3)

x	f(x)
0	4
2	6
4	8
6	10

(2)

x	f(x)
0	6
2	2
4	-2
6	-6

(4)

* plug in calc $y =$

* LOOK AT TABLE

6. The formula for blood flow rate is given by $F = \frac{p_1 - p_2}{r}$, where F is the flow rate, p_1 the initial pressure, p_2 the final pressure, and r the resistance created by blood vessel size. Which formula can *not* be derived from the given formula?

(1) $p_1 = Fr + p_2$

(3) $r = F(p_2 - p_1)$

$v \cdot F = \frac{p_1 - p_2}{r} \cdot v$

(2) $p_2 = p_1 - Fr$

(4) $r = \frac{p_1 - p_2}{F}$

$Fr = p_1 - p_2$

7. An equation is given below.

$$4(x - 7) = 0.3(x + 2) + 2.11$$

The solution to the equation is

(1) 8.3

(3) 3

(2) 8.7

(4) -3

$4(x-7) = 0.3(x+2) + 2.11$
 $4x - 28 = .3x + 0.6 + 2.11$

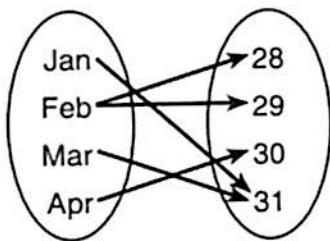
$4x - 28 = .3x + 2.71$
 $-3x \quad -3x$

$3.7x - 28 = 2.71$
 $+28 \quad +28$

 $3.7x = 30.71$
 $\frac{3.7x}{3.7} = \frac{30.71}{3.7}$

$x = 8.3$

8. A mapping is shown in the diagram below.



This mapping is

(1) a function, because Feb has two outputs, 28 and 29

(2) a function, because two inputs, Jan and Mar, result in the output 31

(3) not a function, because Feb has two outputs, 28 and 29

(4) not a function, because two inputs, Jan and Mar, result in the output 31

9. What is the solution to the system of equations below?

$$y = 2x + 8$$

$$3(-2x + y) = 12$$

$3(-2x + y) = 12$

$-6x + 3y = 12$

$-6x + 3(2x + 8) = 12$

$-6x + 6x + 24 = 12$

$24 = 12$

(1) no solution

(3) (-1, 6)

(2) infinite solutions

(4) $(\frac{1}{2}, 9)$

10. Which value would be a solution for x in the inequality $47 - 4x < 7$?

(1) -13

(3) 10

(2) -10

(4) 11

$$\begin{array}{r} 47 - 4x < 7 \\ -47 \quad -47 \\ \hline -4x < -40 \\ \hline -4 \quad -4 \\ \hline x > 10 \end{array}$$

* Flip inequality symbol when dividing or mult. by a negative.

11. Lynn, Jude, and Anne were given the function $f(x) = -2x^2 + 32$, and they were asked to find $f(3)$. Lynn's answer was 14, Jude's answer was 4, and Anne's answer was ± 4 . Who is correct?

(1) Lynn, only

(3) Anne, only

(2) Jude, only

(4) Both Lynn and Jude

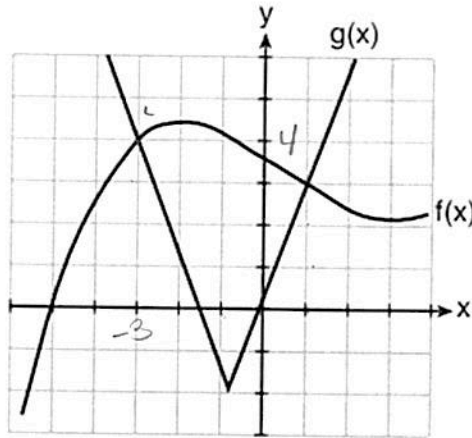
$$f(3) = -2(3)^2 + 32$$

$$f(3) = -2(9) + 32$$

$$f(3) = -18 + 32$$

$$f(3) = 14$$

12. The graph below shows two functions, $f(x)$ and $g(x)$. State all the values of x for which $f(x) = g(x)$.



$(-3, 4)$ and $(1, 3)$

13. State whether $7 - \sqrt{2}$ is rational or irrational. Explain your answer.

doesn't repeat }
doesn't end } Irrational

$$7 - \sqrt{2} = 5.585786438, \dots$$

Irrational, b/c when you subtract a rational # and irrational # the difference is irrational.

14. Solve the equation below for x in terms of a .

$$4(ax + 3) - 3ax = 25 + 3a$$

$$4ax + 12 - 3ax = 25 + 3a$$

$$ax + 12 = 25 + 3a$$

$$\begin{array}{r} ax + 12 = 25 + 3a \\ -12 \quad -12 \\ \hline \end{array}$$

$$\frac{ax}{a} = \frac{13}{a} + \frac{3a}{a}$$

$$\boxed{x = \frac{13}{a} + 3}$$

15. Express in simplest form: $(3x^2 + 4x - 8) - (-2x^2 + 4x + 2)$

$$\begin{array}{r} 3x^2 + 4x - 8 \\ - (-2x^2 + 4x + 2) \\ \hline \end{array}$$

$$\begin{array}{r} 3x^2 + 4x - 8 \\ + 2x^2 - 4x - 2 \\ \hline 5x^2 - 10 \end{array}$$

