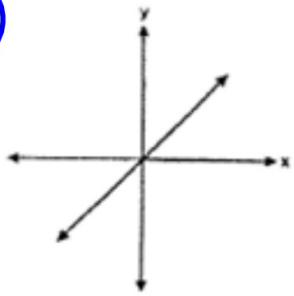
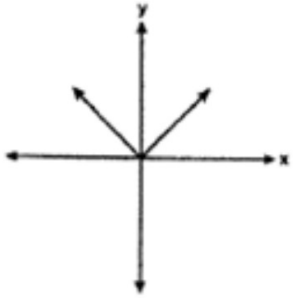
1. Which graph represents a linear function?

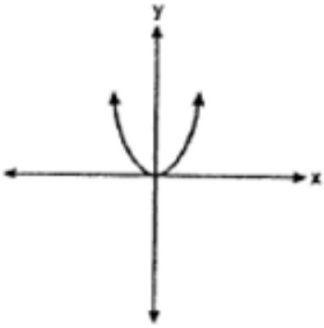
A.



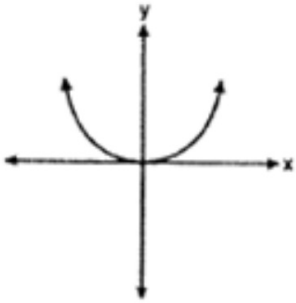

C.




B.




D.




2. What is the slope of the line that passes through the points (-6, 1) and (4, -4)?

A. -2

C. $-\frac{1}{2}$

B. 2

D. $\frac{1}{2}$

$$\text{slope}(m) = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4-1}{4+(+6)} = \frac{-5}{10}$$

$$-\frac{1}{2}$$

3. Students in a ninth grade class measured their heights, $h$, in centimeters. The height of the shortest student was 155 cm, and the height of the tallest student was 190 cm. What inequality represents the range of heights?

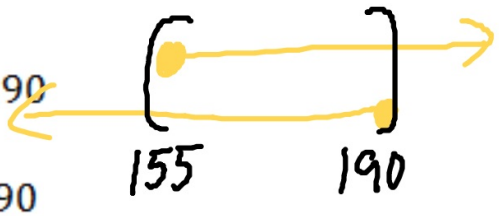
A. $155 < h < 190$

B. $155 \leq h \leq 190$

C. $h \geq 155$ or $h \leq 190$

D. $h > 155$ or $h < 190$

$h \geq 155$ and $h \leq 190$




You are looking for the overlap.

4. The faces of a cube are numbered from 1 to 6. If the cube is tossed once, what is the probability that a prime number or a number divisible by 2 is obtained?

A. $\frac{6}{6}$

B. $\frac{5}{6}$

C. $\frac{4}{6}$

D. $\frac{1}{6}$

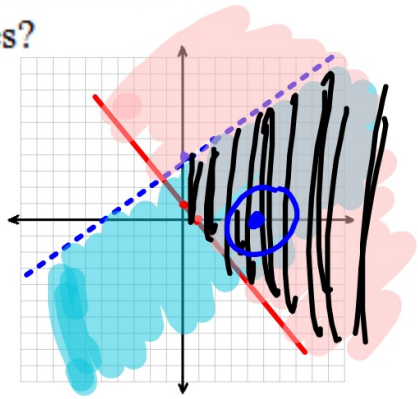
even #'s: 2, 4, 6

prime #'s: 2, 3, 5

5. Which ordered pair is a solution set of the following system of inequalities?

$$y < \frac{1}{2}x + 4$$

$$y \geq -x + 1$$



A. $(-5,3)$

C. $(3,-5)$

B. $(0,4)$

D. $(4,0)$

x, y

6. Which expression is equivalent to $(3x^2)^3$?

A. $9x^5$

C. $27x^5$

B. $9x^6$

D. $27x^6$

$3x^2 \cdot 3x^2 \cdot 3x^2 = 27x^6$

7. Jack bought 3 slices of cheese pizza and 4 slices of mushroom pizza for a total cost of $12.50. Grace bought 3 slices of cheese pizza and 2 slices of mushroom pizza for a total cost of $8.50. What is the cost of one slice of mushroom pizza?

A. $1.50
C. $3.00
B. $2.00
D. $3.50

Let c = cost of a cheese slice
Let m = cost of a mushroom slice
Note: (−) implies the use of subtraction for elimination (from both sides)

Jack: $3c+4m=12.50$
Grace: $3c+2m=8.50$ (−)

$2m=4$

$\frac{2m}{2}=\frac{4}{2}$

$m=2$

8. What is half of $2^6$?

A. $1^3$
C. $2^3$
B. $1^6$
D. $2^5$

$$\frac{2^6}{2^1}=2^5$$

$$\frac{2\cdot2\cdot2\cdot2\cdot2\cdot2}{2}$$

9. Which equation represents a line that is parallel to the line $y = -4x + 5$?

Same slope

$y = mx + b$ (m = slope)

(A) $y = -4x + 3$

B. $y = -\frac{1}{4}x + 5$

C. $y = \frac{1}{4}x + 3$

D. $y = 4x + 5$

10. Pam is playing with red and black marbles. The number of red marbles she has is three more than twice the number of black marbles she has. She has 42 marbles in all. How many red marbles does Pam have?

A. 13

B. 15

(C) 29

D. 33

$2(13)+3=26+3=29$

$2b+3$ = # red marbles

$b$ = # black marbles

$b+2b+3=42$

$3b+3=42$

$-3 \quad -3$

$\frac{3b}{3} = \frac{39}{3}$

$b = 13$

11. What is $\frac{\sqrt{32}}{4}$ expressed in simplest radical form?

A. $\sqrt{2}$

C. $\sqrt{8}$

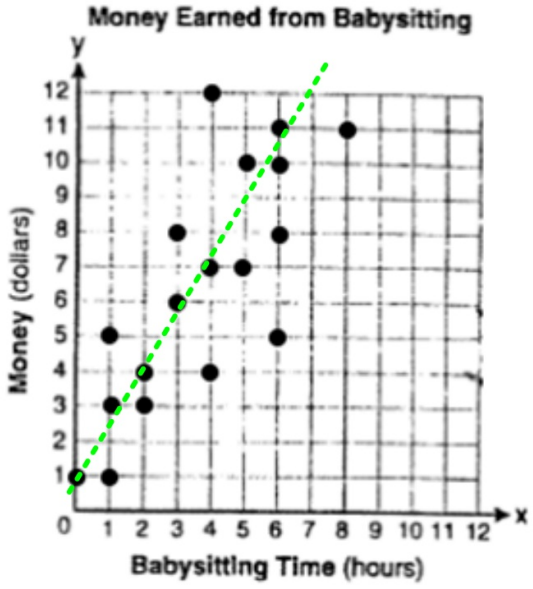
B. $4\sqrt{2}$

D. $\frac{\sqrt{8}}{2}$

$\frac{\sqrt{32}}{4} = \frac{\sqrt{16}\cdot\sqrt{2}}{4} = \frac{4\sqrt{2}}{4} = \sqrt{2}$

Note: This is not the only way to break it down, but it is the most efficient because 16 is the largest perfect square factor of 32.

12. Which equation most closely represents the line of best fit for the scatter plot below?




A. $y = x$

C. $y = \frac{3}{2}x + 4$

B. $y = \frac{2}{3}x + 1$

D. $y = \frac{3}{2}x + 1$

13. In a linear equation the independent (x) variable increases at a constant rate while the dependent variable (y) increases at a constant rate. The slope of this line is

A. Zero

B. Negative

C. Positive

D. Undefined

Exs: dep. ind.

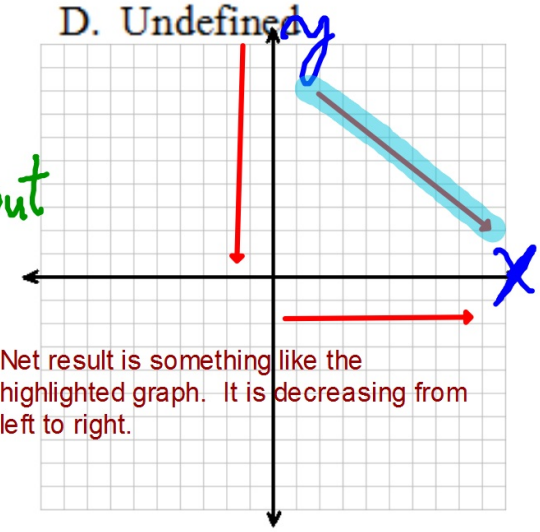
$y = 2x - 3$

$y = x^2$

$y = 2|x| + 5$

x | y

input | output




Net result is something like the highlighted graph. It is decreasing from left to right.

14. Which ordered pair is a solution to the system of equations $y = x$ and $y = x^2 - 2$?

A. $(-2,-2)$

B. ~~$(-1,1)$~~

~~C.~~ $(0,0)$

D $(2,2)$

First, plugged in and used process of elimination.

$y = x$ $\quad y = x^2 - 2$

$2 = 2$ $\quad 2 = 2^2 - 2$

$\checkmark$ $\quad 2 = 4 - 2$

$2 = 2$ $\checkmark$

Algebraically,

$y = x$

$y = x^2 - 2$

$x = x^2 - 2$

$-x \quad -x$

$0 = x^2 - 1x - 2$

$0 = (x-2)(x+1)$

$x = 2$ or $x = -1$

$y = 2$

15. The gas tank in a car holds a total of 16 gallons of gas. The car travels 75 miles on 4 gallons of gas. If the gas tank is full at the beginning of a trip, which graph represents the rate of change in the amount of gas in the tank?

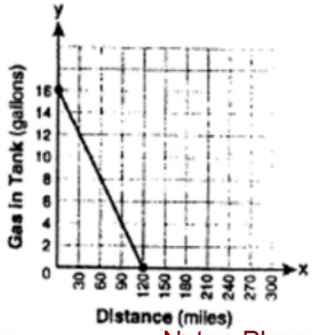
$g = \frac{-4}{75}m + 16$

$g = \frac{-4}{75}(75) + 16$

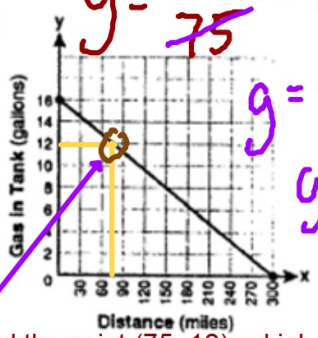
$g = -4 + 16$

$g = 12$

A.

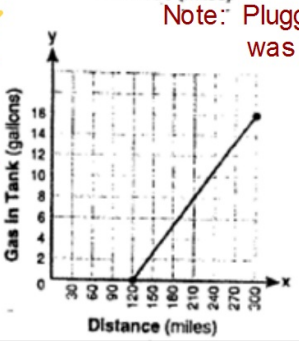



B.

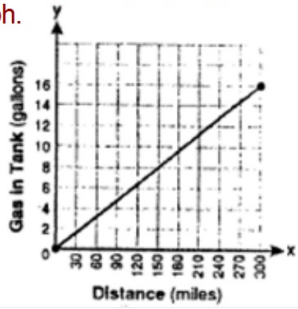



Note: Plugged in to find the point (75, 12), which was on this graph.

C. ✗




D.




Eliminated C and D right away because they did not have a y-intercept of 16 for 16 gallons.

16. If $3ax + b = c$, then $x$ equals

A. $c - b + 3a$

C. $\frac{c-b}{3a}$

B. $c + b - 3a$

D. $\frac{b-c}{3a}$

$3ax + b = c$

$-b \quad -b$

$\frac{3ax}{3a} = \frac{c-b}{3a}$

$x = \frac{c-b}{3a}$