K-12

CC-G8-Math
Common Core Grade 8 Mathematics Exam

Latest Version: 6.0

Question: 1

Which fraction is equivalent to 0.375?

a. $\frac{4}{25}$
b. $\frac{1}{6}$
c. $\frac{3}{8}$
d. $\frac{3}{20}$

A. Option A
B. Option B
C. Option C
D. Option D

Answer: C

Explanation:

Changing 0.375 into a fraction by writing $\frac{375}{1000}$ because 0.375 is in the thousandths. Then reduce the fraction by dividing the numerator and the denominator by the greatest common factor of 125 to get $\frac{3}{8}$.

Question: 2

$2\sqrt{5}$ is between which two numbers?

A. 4 and 5
B. 2 and 3
C. 3 and 4
D. 10 and 11

Answer: A

Explanation:

Compare the square of $2\sqrt{5}$ to the square of the whole numbers. $(2\sqrt{5})^2 = 2^2\sqrt{5}^2 = 4 \times 5 = 20$. See that 20 is between 16 and 25, or 4^2 and 5^2, so $2\sqrt{5}$ is between 4 and 5. Checking with a calculator, $2\sqrt{5} \approx 4.472$

Question: 3

A square has an area of 64 square units. What is the length of one side square?

A. 7
B. 6
C. 10
D. 8

Answer: D

Explanation:

The formula for the area of a square is $A = s^2$, where s is the length of one side of the square. In this case, $64 = s^2$. To solve for s, just square root both sides of the equation and s=8.

Question: 4

The total length of the world's coastlines is about 315,000 miles. Which answer expresses this in scientific notation?

a. 3.15×10^{-6}
b. 3.15×10^{-5}
c. 3.15×10^{6}
d. 3.15×10^{5}

A. Option A
B. Option B
C. Option C
D. Option D

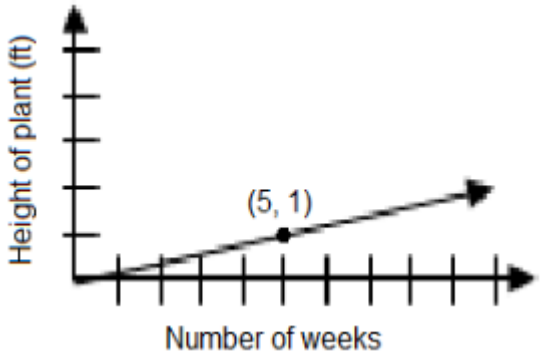
Answer: D

Explanation:

To write a number in scientific notation, the form is $a \times 10^n$, where $1 \leq a < 10$. The decimal need to move 5 spaces to the left so it is immediately to the right of the 3. Because it moved 5 spaces to the left, $n = 5$, so the answer is 3.15×10^5

Question: 5

Marla is a growing a plant. The plants growth is graphed below. Based on the graph how many feet does the plant grow each week?

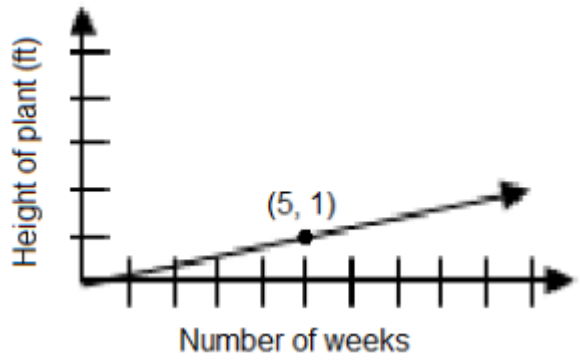


A. For answer see Explanation below.

Answer: A

Explanation:

The point on the graph is at (5,1), which shows that after 5 weeks the plant has grown 1 foot. This means that the plant grows $\frac{1}{5}$ft. per week.



Question: 6

John's Gym charges its members according to the equation C = 40m where m is the number of months and C represents the total cost to each customer after m months. Ralph's Recreation Room charges its members according to the equation C = 45m. What relationship can be determined about the monthly cost to the members of each company?

A. John's monthly membership fee is equal to Ralph's monthly membership fee.
B. John's monthly membership fee is more than Ralph's monthly membership fee.
C. John's monthly membership fee is less than Ralph's monthly membership fee.
D. No relationship between the monthly membership fees can be determined.

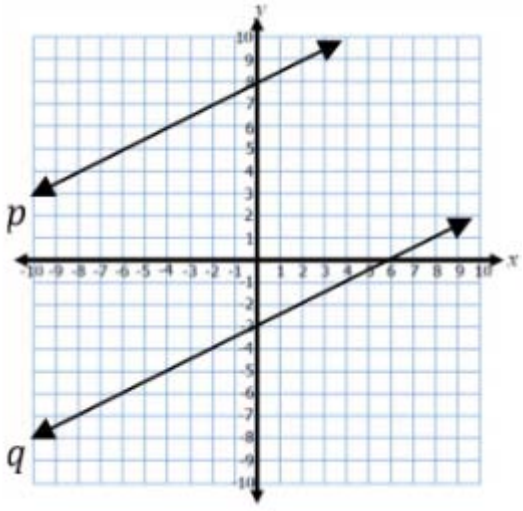
Answer: C

Explanation:
In both equations, the coefficient of m is the rate of change. In this problem, the rate of change

represents the customer's monthly cost. Therefore the customers at John's Gym pay $40 per month, and the customers at Ralph's Recreation Room pay $45 per month. Thus, John's monthly membership fee is less than Ralph's monthly membership fee.

Question: 7

What relationship can be determined about the slopes of line p and line q?



A. The slope of line p is equal to the slope of line q.
B. The slope of line p is greater than the slope of line q.
C. The slope of line p is less than the slope of line q.
D. No relationship can be determined from the graph.

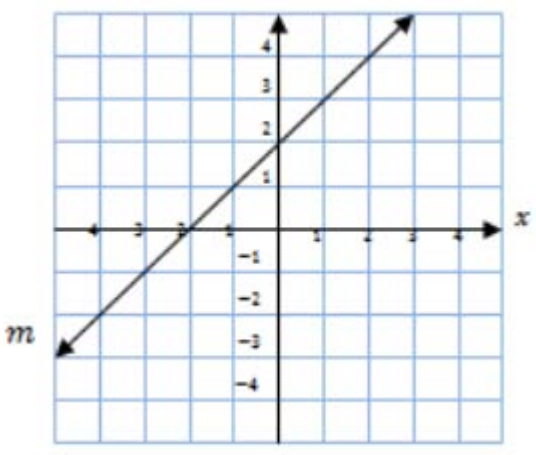
Answer: A

Explanation:

The slope of a line is its rate of change, or vertical change over horizontal change. For every 2 the line p moves right, it moves up 1. The slope for line p is $\frac{1}{2}$ and the slope of line q is also $\frac{1}{2}$. Therefore, the slope of line p is equal to the slope of line q.

Question: 8

Write an equation for line m in slope-intercept form.



A. y = x -1
B. y = x +2
C. y = x +3
D. y = x +4

Answer: B

Explanation:

Writing the equation of the line in slope-intercept form $y = mx + b$, the y-intercept, b, is (0,2) and the slope, m, or rate of change is $\frac{1}{1} = 1$. Substituting these numbers into the equation the answer is $y = x + 2$.

Question: 9

Given the equation +1 = _ x + _. Create an equation with no solutions, one solution, and infinitely many solutions.

Equation with no solutions

$$6x + 1 = \square x + \square$$

Equation with one solution

$$6x + 1 = \square x + \square$$

Equation with infinitely many solutions

$$6x + 1 = \square x + \square$$

A. x = 1
B. x = 2
C. x = 3
D. x = 4

Answer: D

Explanation:
An example of an equation with no solutions is 6x +1 = 6x + 3.
To solve this equation, we can subtract 6x off of both sides. This leaves 3=1 which is not true so there is no solution to this equation.
An example of an equation with one solution is 6x + 1 = 4x + 9.
The equation is solved below:

$6x+1=4x+9$	Subtract $4x$ from both sides of the equation
$2x+1=9$	Subtract 1 from both sides of the equation
$2x=8$	Divide by 2 on both sides of the equation
$x=4$	So there is one solution to this equation.

An example of an equation with infinite solutions is 6x + 1 = 6x + 1. For any value of x that is plugged in each side will always equal the other side.

Question: 10

How many solutions does the equation 2(7x —5) = 14x— 8 have?

A. None
B. One
C. Two
D. Infinitely many solutions

Answer: A

Explanation:
The equation is solved below:

$2(7x-5)=14x-8$	Distribute 2 across the parentheses
$14x-10=14x-8$	Subtract $14x$ from both sides of the equation
$-10=-8$	

Because $-10 \neq -8$, no solution exists for the equation.

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