GED
GED-Mathematical-Reasoning
GEDMathematical Reasoning Certification Exam

Questions&AnswersPDF

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Question: 1

A rectangle is twice as long as it is wide. If it were 3 inches shorter and 3 inches wider, it would be square. What is the width in inches of the rectangle?

A. 4
B. 6
C. 8
D. 12

Answer: B

Explanation:

If x represents the width of the shape, its length is equal to $2x$. Since we are told it would be a square if it were 3 inches shorter and 3 inches wider, and the sides of a square are equal, we can use the following equation to solve for x.

$$2x - 3 = x + 3$$
$$x - 3 = 3$$
$$x = 6$$

So, the shape is 6 inches wide.

Question: 2

The equation below calculates the growth of an apple tree, where h is the height in feet and y is the number of years since the tree was planted. How many inches does the tree grow each year?
h = 2.5+ 0. 75y

A. 0.75
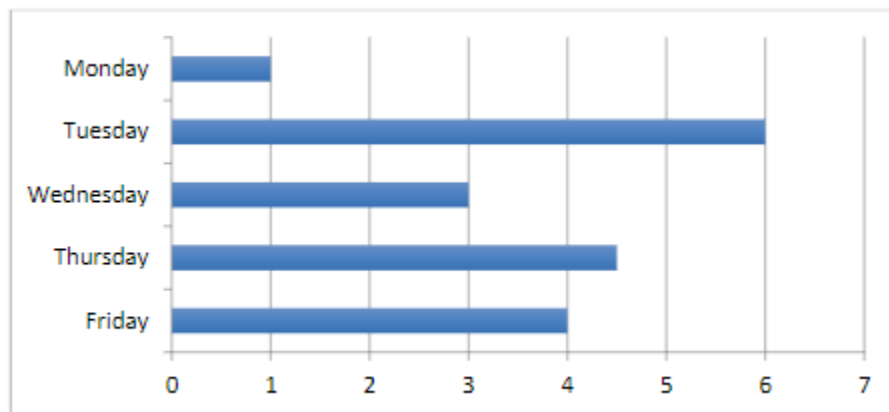B. 2.5
C. 9
D. 30

Answer: C

Explanation:
The equation can be translated:
Height = (original height when planted) + 0.75(number of years since planted)
In other words, it grows 0.75 feet every year. The question asks for the number of inches, so we multiply 0.75 by 12 to obtain 9 inches per year.

The graph below shows the number of miles Jen runs each day, Monday through Friday. What fraction of the time does she run at least four miles?

A. $\frac{3}{7}$

B. $\frac{3}{2}$

C. $\frac{2}{5}$

D. $\frac{3}{5}$

Answer: D

Explanation:

The graph shows five days that Jen runs. On three of the days (Tuesday, Thursday, and Friday), she runs four or more miles. So three out of five days, or $\frac{3}{5}$ of the time, she runs at least four miles.

Question: 4

Simplify the following: $\frac{x^2}{y^2} + \frac{x}{y^3}$

A. $\frac{x^3 + x}{y^3}$

B. $\frac{x^2 + xy}{y^3}$

C. $\frac{x^2 y + xy}{y^3}$

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

Explanation:

To add the two fractions, first rewrite them with the least common denominator, which is in this case y^3. This is already the denominator in $\frac{x}{y^3}$, and we can rewrite $\frac{x^2}{y^2}$ as $\frac{x^2 \times y}{y^2 \times y} = \frac{x^2 y}{y^3}$. Thus, $\frac{x^2}{y^2} + \frac{x}{y^3} = \frac{x^2 y}{y^3} + \frac{x}{y^3} = \frac{x^2 y + x}{y^3}$.

Question: 5

A man invested S150 in the stock market. During the first week, he lost S45. During the second week, he tripled his money. How much does he have at the end of the second week?

A. $105
B. $210
C. $315
D. $420

Answer: C

Explanation:

First, calculate how much he had at the end of the first week by subtracting $45 from the amount he invested.

$$\$150 - \$45 = \$105$$

Since he tripled his money the second week, this value by 3.

$$\$105 \times 3 = \$315$$

The man has $315 at the end of the second week.

Question: 6

What is the area of a square inscribed in a circle of radius r?
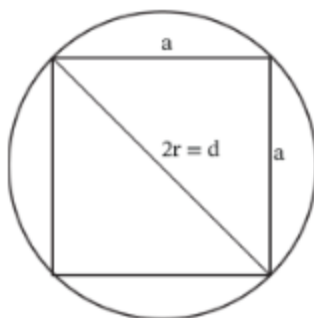
A. $2r^2$
B. $2r^3$
C. $2\pi r$
D. $4r^2$

Answer: A

Explanation:

The diagonal of the square corresponds to the diameter of the circle. This allows for calculation of the side a by the Pythagorean theorem, where the diameter is $d = 2r$.

$$d^2 = a^2 + a^2$$
$$(2r)^2 = 2a^2$$
$$4r^2 = 2a^2$$
$$2r^2 = a^2$$

Since the area of the square is a^2, we can say the area of a square inscribed within a circle is $2r^2$.

Question: 7

Determine the volume of a rectangular box with a length of 5 inches, a height of 7 inches, and a width of 9 inches.

A. 445 in^3

B. 315 in^3

C. 45 in^3

D. 35 in^3

Answer: B

Explanation:
    The volume of a rectangular box can be determined using the formula $V = l \times w \times h$, where l is the length of the box, w is the width of the box, and h is the height of the box. Therefore, the volume of the box described in this question is equal to $5 \times 7 \times 9$, or 315 in^3.

Question: 8

Expand the following: $9x(3x^2 + 2x - 9)$

A. $27x^2 + 18x - 81$

B. $27x^3 + 18x^2 - 81x$

C. $12x^3 + 11x^2 - x$

D. $27x^3 + 18x^2 - 18x$

Explanation:

To simplify, multiply the value outside of the parentheses by each value inside of the parentheses.

$$9x(3x^2 + 2x - 9) = 9x(3x^2) + 9x(2x) + 9x(-9)$$
$$= 27x^3 + 18x^2 - 81x$$

Question: 9

What is the average of $\frac{7}{5}$ and 1.4?

A. 1.4
B. 2.8
C. 4.2
D. 7.4

Explanation:

The value of the fraction $\frac{7}{5}$ can be evaluated by dividing 7 by 5, which yields 1.4. The average of 1.4 and 1.4 is $\frac{1.4+1.4}{2} = 1.4$.

Question: 10

An airplane leaves Atlanta at 2 PM and flies north at 250 miles per hour. A second airplane leaves Atlanta 30 minutes later and flies north at 280 miles per hour. At what time will the second airplane overtake the first?

A. 6:00 PM
B. 6:20 PM
C. 6:40 PM
D. 6:50 PM

Explanation:

Define the variable t as the elapsed time (in minutes) from the time the first airplane takes off. Then, at any time, the distance traveled by the first plane is $d_1 = 250t$. The second plane takes off 30 minutes later so that at any time, the distance that it has traveled is $d_2 = 280(t - 30)$. This plane will overtake the first when the two distances are equal, which is when $d_1 = d_2$, or when $250t = 280(t - 30)$. First, use the distributive property to get rid of the parentheses.

$$250t = 280t - 8,400$$

Next, subtract $280t$ from each side of the equation.

$$-30t = -8,400$$

Next, divide both sides by -30.

$$t = 280$$

This gives the value of t in minutes. Convert to hours by dividing 280 by 60 minutes per hour, which yields an elapsed time of 4.67 hours, or 4 hours and 40 minutes. Since the first plane left at 2 PM, 4 hours and 40 minutes later is 6:40 PM.