



SAT2-MATHEMATICS^{Q&As}

SAT Section 2: Mathematics

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QUESTION 1

What is the tenth term of the sequence: 5, 15, 45, 135 . . . ?

A. 5^{10}

B. $\frac{3^{10}}{5}$

C. $(5 \times 3)^9$

D. 5×3^9

E. 5×3^{10}

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: D

The first term in the sequence is equal to 5×3^0 , the second term is equal to 5×3^1 , and so on. Each term in the pattern is equal to $5 \times 3^{n-1}$, where n is the position of the term in the pattern. The tenth term in the pattern is equal to $5 \times 3^{(10-1)}$, or 5×3^9 .

QUESTION 2

A. $\{-8, 1\}$

B. $\{8, -1\}$

C. $\{0, -8, 1\}$

D. $\{0, 8, -1\}$

E. $\{0, -1, -8, 1, 8\}$

Correct Answer: C



QUESTION 3

SIMULATION

What is the distance from the point where the line given by the equation $3y = 4x + 24$ crosses the x-axis to the point where the line crosses the y-axis?

A. 10

Correct Answer: A

Write the equation in slope-intercept form

$$\{y=mx+b\}: 3y=4x+24, y=\frac{4}{3}x+8.$$

The line crosses the y-axis at its y-intercept, (0,8). The line crosses the x-axis when

$$y=0: \frac{4}{3}x+8=0, \frac{4}{3}x=-8, x=-6.$$

Use the distance formula to find the distance from

$$(0,8) \text{ to } (-6,0):$$

$$\text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\text{Distance} = \sqrt{((-6) - 0)^2 + (0 - 8)^2}$$

$$\text{Distance} = \sqrt{6^2 + (-8)^2}$$

$$\text{Distance} = \sqrt{36 + 64}$$

$$\text{Distance} = \sqrt{100}$$

$$\text{Distance} = 10 \text{ units.}$$



QUESTION 4

SIMULATION

If $-6b + 2a - 25 = 5$ and $a/b + 6 = 4$, what is the value of $(b/a)^2$?

A. $1/4$

Correct Answer: A

Solve $-6b + 2a - 25 = 5$ for a in terms of b : $-6b + 2a - 25 = 5$, $-3b + a = 15$, $a = 15 + 3b$. Substitute a in terms of b into the second equation:

$$\frac{15 + 3b}{b} + 6 = 4, \quad \frac{15}{b} + 3 + 6 = 4, \quad \frac{15}{b} = -5, \quad b = -3.$$

Substitute b into the first equation to find the value of a : $-6b + 2a - 25 = 5$, $-6(-3) + 2a - 25 = 5$, $18 + 2a = 30$, $2a = 12$, $a = 6$. Finally, ,

$$\left(\frac{b}{a}\right)^2 = \left(\frac{-3}{6}\right)^2 = \left(-\frac{1}{2}\right)^2 = \frac{1}{4}.$$

QUESTION 5

If the height of a cylinder is doubled and the radius of the cylinder is halved, the volume of the cylinder

- A. remains the same.
- B. becomes twice as large.
- C. becomes half as large.
- D. becomes four times larger.
- E. becomes four times smaller.

Correct Answer: C

The volume of a cylinder is equal to $\pi r^2 h$, where r is the radius of the cylinder and h is

$$\pi \left(\frac{1}{2}\right)^2 (2) (1) = \pi \left(\frac{1}{4}\right) 2 = \frac{1}{2} \pi.$$

the height. The volume of a cylinder with a radius of 1 and a height of 1 is π . If the height is doubled and the radius is halved, then the volume becomes

The volume of the cylinder has become half as large.



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