



# PCAT-SECTION3<sup>Q&As</sup>

Pharmacy College Admission Test - Quantitative

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### QUESTION 1

Solve for x:  $x^2 - 12x = -36$

- A. 2
- B. 3
- C. 4
- D. 6

Correct Answer: D

The first thing to do in solving the equation  $x^2 - 12x = -36$  for x is to rewrite the equation by adding 36 to both sides and then to express the equation in terms of factors:  $x^2 - 12x + 36 = 0$   $(x - 6) \cdot (x - 6) = 0$  Solving the equation for x yields  $x = 6$ .

### QUESTION 2

What is the equation of a line that passes through the point (2, 3) and has a slope of  $-\frac{1}{2}$ ?

A.  $y = -\frac{1}{2}x + 2$       B.  $y = -\frac{1}{2}x - 2$       C.  $y = \frac{1}{2}x + 2$       D.  $y = \frac{1}{2}x - 2$

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

Correct Answer: B

### QUESTION 3

Evaluate the following derivative:

$$\frac{d}{dx}(6x^4 - 4x^3)$$

- A.  $24x^3 - 12x^2$
- B.  $24x^3 + 12x^2$
- C.  $24x^3 - 12x^2$



D.  $24x^3 + 12x^2$

Correct Answer: C

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#### QUESTION 4

What is the probability of randomly selecting a ten card from a standard deck of cards?

A.  $1/52$

B.  $1/13$

C.  $12/13$

D.  $51/12$

Correct Answer: B

To determine the probability that a selected card is a ten, you should first note that a card can be selected from a deck in = 52 different ways. Since there are four ten cards, one ten for each of the four suits, a ten can be drawn from the deck in = 4 different ways. Thus, the probability that the selected card is a ten is:

$$p = \frac{s}{n} = \frac{4}{52} = \frac{1}{13}.$$

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#### QUESTION 5

Chemistry students performed nine volume measurements of a solution during a lab and obtained the

following results:

{2.4mL, 3.2mL, 3.7mL, 3.7mL, 4.5mL, 6.8mL, 7.3mL, 8.1mL, 12.2mL}

What is the median of the data set?

A. 3.7mL

B. 4.5mL

C. 5.8mL

D. 9.8mL

Correct Answer: B

The median is the middle or center value of the data set arranged in ascending numerical order, or 4.5mL.

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### QUESTION 6

Evaluate the following indefinite integral: A. Option A

$$\int t^2 \left( \frac{5}{t} - \frac{t}{5} \right) dt$$

A.  $\frac{5t^2}{2} + \frac{t^4}{20} + C$     B.  $\frac{5t^2}{2} + \frac{t^4}{20} - C$     C.  $-\frac{5t^2}{2} - \frac{t^4}{20} + C$     D.  $-\frac{5t^2}{2} + \frac{t^4}{20} + C$

B. Option B

C. Option C

D. Option D

Correct Answer: B

### QUESTION 7

Evaluate the following derivative:

$$\frac{d}{dx}(25 - 7x^3) \text{ at } x = -2$$

A. 35

B. 84

C. -84

D. 120

Correct Answer: C

You first must calculate the derivative before you can evaluate the derivative at a given point.

$$\frac{d}{dx}(25 - 7x^3) = -21x^2.$$

The derivative can now be evaluated at  $x=2$  by plugging in the value of 2 for  $x$  in the derivative or



$$\frac{d}{dx}(25 - 7x^3) \Big|_{x=-2} = -21 \cdot (-2)^2 = -21 \cdot 4 = -84.$$

### QUESTION 8

Express in scientific notation: 13.9

- A.  $1.39 \times 10^1$
- B.  $1.39 \times 10^1$
- C.  $13.9 \times 10^1$
- D.  $13.9 \times 10^1$

Correct Answer: B

In scientific notation, the number 13.9 is  $1.39 \times 10^1$ .

### QUESTION 9

- A. -7
- B. 2
- C. 6
- D. 7

Correct Answer: D

### QUESTION 10

Evaluate the following derivative: A. Option A

$$\frac{d}{dx} \left( \frac{15}{3x^8} \right)$$

A.  $-\frac{40}{x^9}$

B.  $\frac{40}{x^9}$

C.  $-\frac{40}{x^{-9}}$

D.  $\frac{40}{x^{-9}}$

B. Option B



C. Option C

D. Option D

Correct Answer: A

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### QUESTION 11

Solve for x:  $x^3 - 64x = 0$

A.  $x = \pm 8$

B.  $x = \pm 6$

C.  $x = \pm 4$

D.  $x = \pm 2$

Correct Answer: A

In order to solve the equation  $x^3 - 64x = 0$  for x, you can apply factor analysis and solve for x in each term:

$$\begin{aligned}\frac{x^3}{x} - \frac{64x}{x} &= \frac{0}{x} \\ x^2 - 64 &= 0 \\ x &= \pm 8.\end{aligned}$$

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### QUESTION 12

Evaluate the following definite integral:

$$\int_2^4 (x^4 - 6x) dx$$

A. 123.6

B. 162.4

C. 183.7

D. 250.2

Correct Answer: B



You begin by solving the integral and then evaluating the result between the limits of 2 and 4.

$$\int_2^4 (x^4 - 6x) dx = \left( \frac{x^5}{5} - \frac{6x^2}{2} \right) = \left( \frac{x^5}{5} - 3x^2 \right) \Big|_2^4 = \left( \frac{(4)^5}{5} - 3(4)^2 \right) - \left( \frac{(2)^5}{5} - 3(2)^2 \right)$$
$$= \left( \frac{1024}{5} - 48 \right) - \left( \frac{32}{5} - 12 \right) = \frac{812}{5} = 162.4$$

### QUESTION 13

What is the slope of a line that passes through the points (3, 3) and (3, 3)?

- A. 3
- B. -3
- C. 0
- D. undefined

Correct Answer: C

The slope of a line that passes through the points (3, 3) and (3, 3) can be found by:

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 3}{3 - (-3)} = \frac{0}{6} = 0.$$

### QUESTION 14

The ratio of boys to girls in the graduating class of a school is 3:2. If there are a total of 430 students in the class, how many girls are in the graduating class?

- A. 74
- B. 86
- C. 172
- D. 215

Correct Answer: C

To find the total number of girls in the science class, we must first find the fraction of students in the class who are girls. For every set of 5 students, 2 students are girls, yielding a fraction of 2/5 . Thus, the total number of girls in the class is



$$\frac{2}{5} \times 430 = 172.$$



**QUESTION 15**

Evaluate the following derivative

$$\frac{d}{dx}(24x^3 - 9x^2 + 3x - 11) \text{ at } x = 3.$$

A. 597

B. 325

C. 154

D. 96

Correct Answer: A

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