

# FAST NU Basic Mathematics Test # 01

For FAST-NUCES Entry Test Preparation

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| Total MCQs: 30 | Topic: Basic Mathematics | Format: MCQs |
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Instruction: Choose the correct option for each question. This question paper is designed for classroom and YouTube explanation practice.

Q1) A tap fills a tank in 8 hours and another empties the full tank in 16 hours. If the tank is empty and both taps are opened, in how many hours will the tank be filled?

- a) 8
- b) 5
- c) 9
- d) 16
- e) 6

Q2) Six consecutive integers are given. The sum of the first three is 27. What is the sum of the last three?

- a) 33
- b) 29
- c) 36
- d) 32
- e) 30

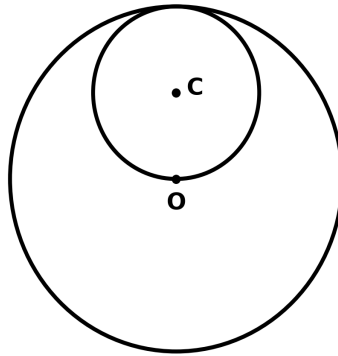
Q3) A can complete a job in 4 hours and B can complete it in 6 hours. How much time will they take together to finish the job?

- a) 2 hours
- b) 2 hours 24 minutes
- c) 3 hours
- d) 4 hours
- e) 4.5 hours

Q4) If 1200 men in a fort have provisions for 28 days. After 4 days, 300 men leave the fort. How long will food last now?

- a) 26
- b) 28
- c) 30
- d) 32
- e) 34

Q5) A smaller circle with center C touches a larger circle internally and passes through the center O of the larger circle. If the area of the smaller circle is  $200 \text{ cm}^2$ , find the area of the larger circle.



- a) 1000
- b) 800
- c) 400
- d) 600

Q6) In covering a distance of 30 km, Amir takes 2 hours more than Hameed. If Amir doubles his speed, he would take 1 hour less than Hameed. Amir's speed is:

- a) 6 km/hr
- b) 5 km/hr
- c) 6.25 km/hr
- d) 7.5 km/hr

Q7) In an examination, a candidate has to score 40% of the marks to pass. If a candidate scores 190 marks and fails by 10 marks, the total number of marks in the examination is:

- a) 500
- b) 360
- c) 600
- d) 400

Q8)  $\log(a^2 - b^2)$  equals:

- a)  $\log(a^2/b^2)$
- b)  $\log a^2 - \log b^2$
- c)  $\log((a + b)/(a - b))$
- d)  $2 \log a - 2 \log b$
- e)  $\log(a + b) + \log(a - b)$

Q9) How many faces does an octahedron have?

- a) 8
- b) 6
- c) 12
- d) 4

Q10) The set of numbers on a clock face is:

- a) {1, 2, 3, 4, 5, 6, 7, 8, 9, 12}
- b) {3, 9, 12}
- c) None of these
- d) {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}
- e) {3, 4, 5}

Q11) If  $x < y$ ,  $z = (1/2)x$  and  $a = (1/2)y$ , then:

- a)  $2a > y$
- b)  $z > a$
- c)  $2x > 2z$
- d)  $a > z$

Q12) A water tank in the shape of a cube is half filled with water. What is the volume of the water in the tank if the surface area of the water is  $16 \text{ cm}^2$ ?

- a)  $32 \text{ cm}^3$
- b)  $44 \text{ cm}^3$
- c)  $30 \text{ cm}^3$
- d)  $18 \text{ cm}^3$
- e)  $26 \text{ cm}^3$

Q13) A vertical pole 6 feet high casts a shadow 4 feet long. At the same time, a tree makes a shadow 64 feet long. What is the height of the tree?

- a) 192 feet
- b) 72 feet
- c) 80 feet
- d) 96 feet

Q14) In what proportion must a man mix milk at Rs. 11 a litre with milk at Rs. 6 a litre, so that the mixture may be worth Rs. 8 a litre?

- a) 5 : 6
- b) 2 : 3
- c) 3 : 2
- d) 5 : 2

Q15) Two cars start towards each other from points 400 miles apart. One car travels at 40 miles an hour and the other travels at 35 miles an hour. How far apart, in miles, will the two cars be after 4 hours of continuous travelling?

- a) 70
- b) 75
- c) 50
- d) 100

Q16) The value of  $x$  satisfying  $\log_{32} x = 0.8$  is:

- a) 16
- b) 25.6
- c) 10
- d) 12.8

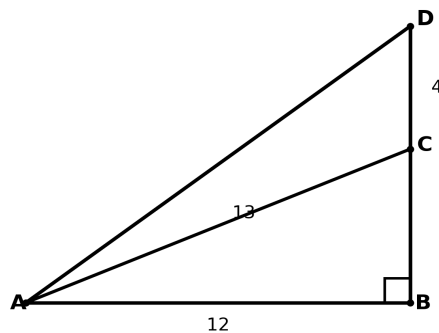
Q17) A train 20 meters long is running at a speed of 45 km/hour in the same direction in which a man who is 240 meters ahead of the engine of the train is running at a speed of 9 km/hour. In how much time will the train pass the man?

- a) 36 seconds
- b) 30 seconds
- c) 24 seconds
- d) 15 seconds

Q18) Solve  $10^{(-2x)} = 10$ .

- a) 10
- b) -0.5
- c) -2
- d) -1

Q19) In the figure,  $\angle ABD = 90^\circ$ ,  $AB = 12$  cm,  $AC = 13$  cm and  $CD = 4$  cm. Calculate  $AD$ .



- a)  $\sqrt{200}$
- b) 9
- c) 15
- d) 5

Q20) The volume of a wooden block is  $280 \text{ cm}^3$ . What is its height if the length is 8 cm and the breadth is 5 cm?

- a) 9 cm
- b) 7 cm
- c) 10 cm
- d) 14 cm

Q21) If  $X + [[0, -9], [6, 2]] = [[-1, 0], [4, 6]]$ , then  $X$  is equal to:

- a)  $[[ -2, 9], [ -1, 4]]$
- b)  $[[ -1, 4], [ 2, 9]]$
- c)  $[[ 4, -2], [ -9, 2]]$
- d)  $[[ -1, 9], [ -2, 4]]$

Q22) Let  $A = \{1, 2, 3, 4, 5\}$ ,  $B = \{2, 4, 6, 8\}$  and  $C = \{3, 4, 5, 6\}$ , then  $(A \cup B) \cap C$  is:

- a)  $\{1, 2, 3, 4, 6, 8\}$
- b)  $\{3, 4, 5, 6\}$
- c)  $\{4, 6\}$
- d)  $\{3, 4\}$

Q23) An equation equivalent to the quadratic equation  $x^2 - 6x + 5 = 0$  is:

- a)  $|x - 3| = 2$
- b)  $x^2 - 5x + 6 = 0$
- c)  $6x^2 - 5x + 1 = 0$
- d)  $5x^2 - 6x + 1 = 0$

Q24) The number of times a particular item occurs in a given data is called its:

- a) variation
- b) frequency
- c) cumulative frequency
- d) time period
- e) none of these

Q25) Area of a sector with a central angle of 1 radian in a circular region whose radius is 2 m is:

- a)  $1 \text{ m}^2$
- b)  $0.5 \text{ m}^2$
- c)  $2 \text{ m}^2$
- d)  $\pi/6 \text{ m}^2$

Q26) After deducting a commission of 5%, a TV costs Rs. 15200. Its gross value, in rupees, is:

- a) 16400
- b) 14440
- c) 15960
- d) 15860

Q27) If your daily income increases from \$60 to \$72, what is the percentage increase?

- a) 12%
- b) 16%
- c) 120%
- d) 84%
- e) 20%

Q28) If  $U = \{11, 12, 13, 14, 15\}$ ,  $C = \{15, 14\}$ , then  $C' = ?$

- a)  $\{11, 12, 13\}$
- b)  $\{14, 15, 13\}$
- c)  $\{11, 12, 14\}$
- d)  $\phi$
- e)  $\{11, 14, 15\}$

Q29) The perimeter of a square is 8 cm. What is its area?

- a)  $4 \text{ cm}^2$
- b)  $16 \text{ cm}^2$
- c)  $32 \text{ cm}^2$
- d)  $2 \text{ cm}^2$

Q30) In the given function,  $y$  is directly proportional to  $k$  and inversely proportional to  $h$ . Which of the following is an equation that satisfies these conditions if  $x$  is a proportionality constant?

- a) None of these
- b)  $hx/k$
- c)  $y = hkx$
- d)  $y = kx/h$
- e)  $x/(hk)$

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