

XPERTSTEM Mathematics Sample Test for Division 3 (Grade 7-8)

1) Simplify: $3/4 \div 2/3$

A) 9/8

B) 8/9

C) 1/2

D) 3/8

2) What is the square root of 121?

A) 11

B) 12

C) 10

D) 13

3) Which of the following is a rational number?

A) $\sqrt{2}$

B) π

C) -5

D) 2/3

4) Solve for x if $3x - 7 = 2$

A) 3

B) 4

C) 2

D) 5

5) Which of the following represents an inequality?

A) $x + 3 = 7$

B) $x > 3$

C) $x^2 = 9$

D) $x - 2 = 4$

6) Calculate: $5,6 \times 0,5$

A) 2,8

B) 3,6

C) 2,5

D) 4,8

7) What is the square of -9?

A) -81

B) 81

C) 72

D) -72

8) Simplify: $(2/3)^3$

A) 8/27

B) 4/9

C) 6/27

D) 27/8

9) Identify the property: $a + b = b + a$

A) Associative

B) Commutative

C) Distributive

D) Identity

10) Solve for x if $4x + 5 = 17$

A) 2

B) 3

C) 4

D) 5

11) Solve for x and y for equations:

$x + y = 10$ and

$x - y = 4$

A) $x=6, y=4$

B) $x=7, y=3$

C) $x=5, y=5$

D) $x=8, y=2$

12) Which of the following is a linear equation?

A) $x^2 + y^2 = 9$

B) $y = 2x + 3$

C) $xy = 12$

D) $x^3 - y^3 = 8$

13) What is the probability of rolling a 3 on a standard six-sided die?

A) 1/3

B) 1/6

C) 1/2

D) 1/4

14) If the ratio of boys to girls in a class is 2:3 and there are 20 students, how many are boys?

A) 8

B) 10

C) 12

D) 6

15) Solve:

$2x + 3y = 12$,

if $y = 2$

A) $x = 3$

B) $x = 2$

C) $x = 6$

D) $x = 4$

16) A coin is tossed 3 times. What is the total number of possible outcomes?

A) 3

B) 6

C) 8

D) 12

17) Find the missing number in the proportion: $4/5 = x/20$

A) 16

B) 15

C) 18

D) 20

18) What is the slope of the line passing through points (1, 2) and (4, 8)?

A) 2

B) 3

C) 4

D) 6

19) A bag contains 5 red balls and 3 blue balls. What is the probability of drawing a red ball?

A) 5/8

B) 3/8

C) 1/2

D) 3/5

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20) The sum of two numbers is 45, and their ratio is 2:3. What is the smaller number?

- A) 15
- B) 18**
- C) 20
- D) 25

21) A regular hexagon has how many sides?

- A) 5
- B) 6**
- C) 7
- D) 8

22) Calculate the circumference of a circle with a radius of 7 cm. (Use $\pi = 22/7$)

- A) 22 cm
- B) 44 cm**
- C) 14 cm
- D) 21 cm

23) What is the length of the hypotenuse of a right triangle with legs of 6 cm and 8 cm?

- A) 10 cm**
- B) 12 cm
- C) 14 cm
- D) 15 cm

24) Which of the following triangles are congruent?

- A) Two triangles with equal sides**
- B) Two triangles with equal areas
- C) Two triangles with equal angles
- D) None of the above

25) Find the area of a triangle with a base of 10 cm and a height of 8 cm.

- A) 40 cm²**
- B) 80 cm²
- C) 100 cm²
- D) 20 cm²

26) A cylinder has a radius of 3 cm and a height of 5 cm. What is its volume? (Use $\pi = 3.14$)

- A) 141.3 cm³**
- B) 45 cm³
- C) 150 cm³
- D) 70.8 cm³

27) A prism has a base area of 12 cm² and a height of 10 cm. What is its volume?

- A) 120 cm³**
- B) 130 cm³
- C) 140 cm³
- D) 150 cm³

28) What is the surface area of a cube with a side length of 4 cm?

- A) 16 cm²
- B) 64 cm²
- C) 96 cm²**
- D) 48 cm²

29) A rectangle has a length of 12 cm and a width of 5 cm. What is its diagonal length?

- A) 13 cm**
- B) 14 cm
- C) 15 cm
- D) 16 cm

30) How many diagonals does a regular pentagon have?

- A) 5**
- B) 7
- C) 10
- D) 12