

### Class X competency-based assessment in Mathematics:

1. What is the value of  $(3x+5)(2x-4)(3x+5)(2x-4)$  when  $x=2$ ?
  - a) 14
  - b) 22
  - c) 26
  - d) 32
2. If the radius of a circle is doubled, how does the area of the circle change?
  - a) It remains the same
  - b) It doubles
  - c) It quadruples
  - d) It halves
3. What is the value of  $34+1643+61$ ?
  - a) 512125
  - b) 5665
  - c) 1221
  - d) 3553
4. In a right-angled triangle, if one acute angle is 30 degrees, what is the measure of the other acute angle?
  - a) 45 degrees
  - b) 60 degrees
  - c) 75 degrees
  - d) 90 degrees
5. What is the perimeter of a rectangle with length 6 cm and width 8 cm?
  - a) 14 cm
  - b) 20 cm
  - c) 24 cm
  - d) 48 cm
6. Solve for  $x$  in the equation  $2x-7=11$ .
  - a) 3
  - b) 9

- c) 9.5
- d) 18

7. What is the square root of 121?

- a) 11
- b) 12
- c) 13
- d) 14

8. If a box contains 12 red balls, 8 blue balls, and 6 green balls, what is the probability of drawing a blue ball randomly?

- a)  $\frac{1}{4}$
- b)  $\frac{1}{3}$
- c)  $\frac{2}{9}$
- d)  $\frac{4}{9}$

9. The volume of a cube is 64 cubic units. What is the length of one side of the cube?

- a) 2 units
- b) 4 units
- c) 6 units
- d) 8 units

10. What is the slope of the line passing through the points (2, 5) and (4, 9)?

- a) 2
- b) 3
- c) 4
- d) 5

11. In a right-angled triangle, if the length of one leg is 5 and the length of the hypotenuse is 13, what is the sine of the angle opposite the leg?

- a)  $\frac{5}{13}$
- b)  $\frac{12}{13}$
- c)  $\frac{5}{12}$

d) 125512

12. In a right-angled triangle, if the length of one leg is 6 and the length of the hypotenuse is 10, what is the cosine of the angle opposite the leg?

a) 3553

b) 4554

c) 5665

d) 6556

13. If  $\sin \theta = \frac{35}{53}$ , what is the value of  $\theta$  in degrees?

a)  $30^\circ$

b)  $45^\circ$

c)  $53.13^\circ$

d)  $60^\circ$

14. If  $\cos \theta = \frac{47}{74}$ , what is the value of  $\theta$  in degrees?

a)  $36.87^\circ$

b)  $45^\circ$

c)  $53.13^\circ$

d)  $60^\circ$

15. In a right-angled triangle, if the length of one leg is 3 and the length of the other leg is 4, what is the tangent of the angle between these legs?

a) 3443

b) 4334

c) 3553

d) 4554

16. If  $\tan \theta = 5/12$ ,  $\tan \theta = 12/5$ , what is the value of  $\theta$  in degrees?

- a)  $22.62^\circ$
- b)  $30^\circ$
- c)  $38.66^\circ$
- d)  $63.43^\circ$

17. In a right-angled triangle, if the length of one leg is 8 and the length of the hypotenuse is 10, what is the sine of the angle opposite the leg?

- a)  $4/5$
- b)  $3/5$
- c)  $4/8$
- d)  $8/10$

18. In a right-angled triangle, if the length of one leg is 9 and the length of the hypotenuse is 15, what is the cosine of the angle opposite the leg?

- a)  $3/5$
- b)  $4/5$
- c)  $9/15$
- d)  $15/9$

19. If  $\sin \theta = 1/2$ ,  $\sin \theta = 2/1$ , what is the value of  $\theta$  in degrees?

- a)  $30^\circ$
- b)  $45^\circ$
- c)  $60^\circ$
- d)  $90^\circ$

20. If  $\cos \theta = 1/2$ ,  $\cos \theta = 2/1$ , what is the value of  $\theta$  in degrees?

- a)  $30^\circ$
- b)  $45^\circ$

- c)  $60^\circ$
- d)  $90^\circ$

21. What is the value square root of 144?

- a) 10
- b) 12
- c) 14
- d) 16

22. If  $3^{\diamond} = 15$  and  $9^{\diamond} = 915$ , what is the value of  $\diamond^x$ ?

- a) 2
- b) 3
- c) 4
- d) 5

23. Solve for  $\diamond^x$  in the equation  $2^{\diamond} - 7 = 11$  and  $2^x - 7 = 11$ .

- a) 3
- b) 9
- c) 9.5
- d) 18

24. What is the value of  $(3^{\diamond} + 5)(2^{\diamond} - 4)(3x + 5)(2x - 4)$  when  $\diamond = 2x = 2$ ?

- a) 14
- b) 22
- c) 26
- d) 32

25. In a right-angled triangle, if one acute angle is 30 degrees, what is the measure of the other acute angle?

- a) 45 degrees
- b) 60 degrees
- c) 75 degrees
- d) 90 degrees

26. What is the perimeter of a rectangle with length 6 cm and width 8 cm?

- a) 14 cm
- b) 20 cm
- c) 24 cm
- d) 48 cm

27. If a box contains 12 red balls, 8 blue balls, and 6 green balls, what is the probability of drawing a blue ball randomly?

- a)  $\frac{1}{4}$
- b)  $\frac{1}{3}$
- c)  $\frac{2}{9}$
- d)  $\frac{4}{9}$

28. What is the square root of 121?

- a) 11
- b) 12
- c) 13
- d) 14

29. The volume of a cube is 64 cubic units. What is the length of one side of the cube?

- a) 2 units
- b) 4 units
- c) 6 units

d) 8 units

30. What is the slope of the line passing through the points (2, 5) and (4, 9)?

- a) 2
- b) 3
- c) 4
- d) 5

**Class IX competency-based assessment in Mathematics:**

1. What is the value of  $3\diamond + 73x + 7$  when  $\diamond = 4x - 4$ ?

- a) 10
- b) 11
- c) 13
- d) 19

2. What is the perimeter of a square with side length 5 cm?

- a) 15 cm
- b) 20 cm
- c) 25 cm
- d) 30 cm

3. Which of the following is the prime factorization of 36?

- a)  $23 \times 323 \times 3$
- b)  $22 \times 3222 \times 32$
- c)  $32 \times 432 \times 4$
- d)  $42 \times 342 \times 3$

4. Solve for  $x$  in the equation  $2(x+3)=16$ .

a) 5

b) 6

c) 7

d) 8

5. The ratio of boys to girls in a class is 3:2. If there are 24 students in total, how many boys are there?

a) 12

b) 15

c) 18

d) 20

6. What is the area of a rectangle with length 12 cm and width 8 cm?

a) 20 sq cm

b) 48 sq cm

c) 80 sq cm

d) 96 sq cm

7. If  $3x=15$  and  $3x=9$ , what is the value of  $x$ ?

a) 3

b) 5

c) 6

d) 9

8. What is the sum of the interior angles of a triangle?

a) 90 degrees

b) 180 degrees

c) 270 degrees

d) 360 degrees



9. If  $a+b=15$  and  $a-b=7$ , what is the value of  $a$ ?

- a) 6
- b) 8
- c) 11
- d) 15

10. What is the square root of 196?

- a) 11
- b) 12
- c) 13
- d) 14

11. In a right-angled triangle, which theorem relates the lengths of the sides?

- a) Pythagorean theorem
- b) Thales theorem
- c) Triangle inequality theorem
- d) Thales theorem

12. What is the Pythagorean theorem?

- a)  $a^2 = b^2 + c^2$
- b)  $a^2 = b^2 - c^2$
- c)  $a^2 + b^2 = c^2$
- d)  $a^2 - b^2 = c^2$

13. Which theorem states that in a right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides?

- a) Pythagorean theorem
- b) Thales theorem
- c) Triangle inequality theorem

d) Corresponding angles theorem

14. In a triangle, if two angles are equal, then which theorem relates the lengths of the sides opposite those angles?

- a) Law of sines
- b) Law of cosines
- c) Isosceles triangle theorem
- d) Corresponding angles theorem

15. Which theorem states that the opposite sides of a parallelogram are equal in length?

- a) Parallelogram theorem
- b) Thales theorem
- c) Pythagorean theorem
- d) Triangle inequality theorem

16. If two angles of a triangle are  $45^\circ$  and  $60^\circ$ , what is the measure of the third angle according to the triangle sum theorem?

- a)  $45^\circ$
- b)  $60^\circ$
- c)  $75^\circ$
- d)  $90^\circ$

17. Which theorem states that the sum of the interior angles of a triangle is always  $180^\circ$ ?

- a) Triangle sum theorem
- b) Triangle inequality theorem
- c) Corresponding angles theorem
- d) Exterior angle theorem

18. In a quadrilateral, if one pair of opposite sides are equal and parallel, which theorem states that the quadrilateral is a parallelogram?

- a) Parallelogram theorem
- b) Thales theorem
- c) Triangle inequality theorem
- d) Corresponding angles theorem

19. If two sides of a triangle are equal, then which theorem states that the angles opposite those sides are equal?

- a) Law of sines
- b) Law of cosines
- c) Isosceles triangle theorem
- d) Corresponding angles theorem

20. Which theorem states that if a line is drawn parallel to one side of a triangle, it divides the other two sides proportionally?

- a) Thales theorem
- b) Triangle proportionality theorem
- c) Corresponding angles theorem
- d) Angle bisector theorem

21. What is the value of  $3\diamond + 73x + 7$  when  $\diamond = 4x = 4$ ?

- a) 10
- b) 11
- c) 13
- d) 19

22. What is the perimeter of a square with side length 8 cm?

- a) 16 cm
- b) 24 cm
- c) 32 cm
- d) 64 cm

23. Which of the following is the prime factorization of 36?

- a)  $23 \times 323 \times 3$
- b)  $22 \times 3222 \times 32$

- c)  $32 \times 432 \times 4$   
d)  $42 \times 342 \times 3$

24. Solve for  $x$  in the equation  $5x - 3 = 22$ .

- a) 3  
b) 5  
c) 7  
d) 9

25. The ratio of boys to girls in a class is 3:2. If there are 24 students in total, how many boys are there?

- a) 12  
b) 15  
c) 18  
d) 20

26. What is the area of a rectangle with length 12 cm and width 8 cm?

- a) 20 sq cm  
b) 48 sq cm  
c) 80 sq cm  
d) 96 sq cm

27. If  $3x = 159$ , what is the value of  $x$ ?

- a) 3  
b) 5  
c) 6  
d) 9

28. What is the sum of the interior angles of a triangle?

- a) 90 degrees  
b) 180 degrees  
c) 270 degrees  
d) 360 degrees

29. If  $a + b = 15$  and  $a - b = 7$ , what is the value of  $a$ ?

- a) 6
- b) 8
- c) 11
- d) 15

30. What is the square root of 121?

- a) 11
- b) 12
- c) 13
- d) 14

**Class VIII competency-based assessment in Mathematics:**

1. What is the value of  $4 \times (3+7) \div 4 \times (3+7)$ ?

- a) 14
- b) 40
- c) 44
- d) 30

2. What is the area of a square with side length 6 cm?

- a) 12 sq cm
- b) 24 sq cm
- c) 36 sq cm
- d) 72 sq cm

3. Which of the following is a prime number?

- a) 16
- b) 25
- c) 37
- d) 42

4. Solve for  $x$  in the equation  $5x - 3 = 22$ .

- a) 3
- b) 5
- c) 7
- d) 9

5. The perimeter of a rectangle is 30 cm, and its length is 8 cm.  
What is its width?

- a) 6 cm
- b) 7 cm
- c) 8 cm
- d) 9 cm

6. What is the product of  $9 \times 89 \times 8$ ?

- a) 72
- b) 64
- c) 81
- d) 72

7. If  $5 \diamond = 106 \times 5 = 610$ , what is the value of  $\diamond x$ ?

- a) 2
- b) 3
- c) 4
- d) 5

8. What is the sum of the angles in a triangle?

- a) 90 degrees
- b) 180 degrees
- c) 270 degrees
- d) 360 degrees

9. If  $\diamond + \diamond = 12a + b = 12$  and  $\diamond - \diamond = 4a - b = 4$ , what is the value of  $\diamond a$ ?

- a) 3
- b) 6
- c) 8
- d) 12

10. What is the square root of 144?

- a) 11
- b) 12
- c) 13

d) 14

11. What is the perimeter of a rectangle with length 12 cm and width 5 cm?

- a) 17 cm
- b) 24 cm
- c) 34 cm
- d) 40 cm

12. The length of a rectangle is 7 cm and its width is 4 cm. What is its area?

- a) 11 sq cm
- b) 20 sq cm
- c) 28 sq cm
- d) 36 sq cm

13. What is the perimeter of a square with side length 9 cm?

- a) 18 cm
- b) 27 cm
- c) 36 cm
- d) 45 cm

14. The length of a rectangle is three times its width. If its perimeter is 48 cm, what is its length?

- a) 8 cm
- b) 12 cm
- c) 16 cm
- d) 24 cm

15. If the perimeter of a square is 32 cm, what is the length of each side?

- a) 4 cm
- b) 6 cm
- c) 8 cm
- d) 10 cm

16. A rectangular field is 15 meters long and 10 meters wide. What is its perimeter?

- a) 20 meters
- b) 30 meters
- c) 40 meters
- d) 50 meters

17. The area of a square is 36 sq cm. What is the length of one side?

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

18. A rectangle has a perimeter of 36 cm. If its length is 10 cm, what is its width?

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

19. If the perimeter of a square is 60 cm, what is the area of the square?

- a) 150 sq cm
- b) 225 sq cm
- c) 360 sq cm
- d) 900 sq cm

20. A rectangular swimming pool measures 20 meters by 10 meters. What is the perimeter of the pool?

- a) 40 meters
- b) 60 meters
- c) 80 meters
- d) 100 meters

21. If the ratio of boys to girls in a class is 3:2 and there are 25 girls, how many boys are there?

- a) 10



b) 15

c) 20

d) 30

22.If 15 pens cost \$30, what is the cost of 8 pens?

a) \$12

b) \$16

c) \$20

d) \$24

23.If 4 mangoes cost \$8, what is the cost of 9 mangoes?

a) \$16

b) \$18

c) \$20

d) \$24

24.If a recipe calls for 2 cups of flour and 3 cups of sugar, and you want to make half of the recipe, how many cups of sugar should you use?

a)  $\frac{1}{2}$  cup

b)  $\frac{3}{4}$  cup

c)  $1 \frac{1}{2}$  cups

d)  $2 \frac{1}{2}$  cups

25.A map scale is 1 cm to 5 km. If two cities are 15 cm apart on the map, what is the actual distance between them?

a) 50 km

b) 60 km

c) 70 km

d) 75 km

26.If a car travels 300 miles in 5 hours, how many miles will it travel in 8 hours at the same speed?

- a) 480 miles
- b) 500 miles
- c) 540 miles
- d) 560 miles

27.If the ratio of apples to oranges in a basket is 4:3, and there are 28 oranges, how many apples are there?

- a) 16
- b) 20
- c) 24
- d) 32

28.A recipe calls for 2 cups of water for every 3 cups of flour. If you have 8 cups of flour, how many cups of water should you use?

- a)  $4 \frac{2}{3}$  cups
- b)  $5 \frac{1}{3}$  cups
- c)  $6 \frac{2}{3}$  cups
- d)  $7 \frac{1}{3}$  cups

29.If 15 students can finish a project in 10 days, how many students are needed to finish the same project in 6 days?

- a) 20
- b) 22
- c) 25
- d) 30

30.A recipe calls for  $1 \frac{1}{2}$  cups of sugar for every 2 cups of flour. If you have 3 cups of flour, how many cups of sugar

should you use?

- a) 1 cup
- b) 1 1/2 cups
- c) 2 cups
- d) 2 1/2 cups

**Class VII competency-based assessment in Mathematics:**

1. What is the value of  $5 \times (4+3)5 \times (4+3)$ ?

- a) 20
- b) 35
- c) 40
- d) 45

2. What is the perimeter of a square with side length 8 cm?

- a) 16 cm
- b) 24 cm
- c) 32 cm
- d) 64 cm

3. Which of the following numbers is a prime number?

- a) 12
- b) 19
- c) 24
- d) 27

4. Solve for  $x$  in the equation  $3x - 7 = 14$ .

- a) 3
- b) 7
- c) 9
- d) 21

5. The perimeter of a rectangle is 26 cm, and its length is 9 cm. What is its width?

- a) 4 cm
- b) 5 cm
- c) 6 cm
- d) 7 cm

6. What is the product of  $7 \times 6$ ?

- a) 36
- b) 42
- c) 48
- d) 56

7. If  $4x = 68$ , what is the value of  $x$ ?

- a) 2
- b) 3
- c) 4
- d) 6

8. What is the sum of the angles in a quadrilateral?

- a) 90 degrees
- b) 180 degrees
- c) 270 degrees
- d) 360 degrees

9. If  $a + b = 15$  and  $a - b = 5$ , what is the value of  $a$ ?

- a) 5
- b) 7
- c) 10
- d) 15

10. What is the square root of 100?

- a) 10
- b) 11
- c) 12
- d) 13

11. Which of the following shapes has rotational symmetry?

- a) Rectangle
- b) Square
- c) Scalene triangle
- d) Isosceles triangle

12. How many lines of symmetry does a regular hexagon have?

- a) 3
- b) 4
- c) 5
- d) 6

13. Which of the following letters has reflectional symmetry?

- a) H
- b) L
- c) N
- d) S

14. How many lines of symmetry does the letter "X" have?

- a) 0
- b) 1
- c) 2
- d) 4

15. Which of the following shapes has both reflectional and rotational symmetry?

- a) Rectangle
- b) Rhombus
- c) Parallelogram
- d) Trapezoid

16. A square has how many lines of symmetry?

- a) 0
- b) 1
- c) 2
- d) 4

17. Which of the following shapes has no lines of symmetry?

- a) Equilateral triangle
- b) Isosceles triangle
- c) Scalene triangle
- d) Right triangle

18. What is the order of rotational symmetry of a regular octagon?

- a) 4
- b) 6
- c) 7
- d) 8

19. Which of the following figures has rotational symmetry of order 1?

- a) Equilateral triangle
- b) Square
- c) Regular pentagon
- d) Regular hexagon

20. A parallelogram has how many lines of symmetry?

- a) 0
- b) 1
- c) 2
- d) 4

21. What is  $2323$ ?

- a) 4
- b) 6
- c) 8
- d) 16

22. What is  $52 \times 5352 \times 53$ ?

- a) 5555
- b) 5656
- c) 5757
- d) 5858

23. What is  $(24)^3(24)^3$ ?

- a) 212212
- b) 2727
- c) 264264
- d) 281281

24. What is  $10^{-2}10^{-2}$ ?

- a) 0.01
- b) 0.1

- c) 1
- d) 10

25. What is  $(32)^{-1}(32)^{-1}$ ?

- a) 132321
- b)  $3^{-2}3^{-2}$
- c) 1991
- d)  $9^{-1}9^{-1}$

26. What is  $2020$ ?

- a) 0
- b) 1
- c) 2
- d) Undefined

27. What is  $412421$ ?

- a) 1
- b) 2
- c) 44
- d) 22

28. What is  $2^{-3} \times 242^{-3} \times 24$ ?

- a) 22
- b) 1221
- c) 2727
- d) 217271

29. What is  $(102)_{12}(102)_{21}$ ?

- a) 1010
- b) 2020
- c) 100100
- d) 10001000

30. What is  $(72)^{-12}(72)^{-21}$ ?

- a)  $7^{-1}7^{-1}$
- b) 1771
- c)  $49^{-1}49^{-1}$



d) 149491

**Class VI competency-based assessment in Mathematics:**

1. What is the value of  $3 \times (4+2) \times 3 \times (4+2)$ ?

- a) 12
- b) 18
- c) 24
- d) 36

2. What is the perimeter of a square with side length 5 cm?

- a) 1 cm
- b) 15 cm
- c) 20 cm
- d) 25 cm

3. Which of the following numbers is a prime number?

- a) 12
- b) 17
- c) 20
- d) 25

4. Solve for  $x$  in the equation  $2x - 3 = 9$ .

- a) 3
- b) 6
- c) 7
- d) 12

5. The perimeter of a rectangle is 18 cm, and its length is 5 cm. What is its width?

- a) 2 cm
- b) 3 cm
- c) 4 cm
- d) 5 cm

6. What is the product of  $4 \times 74 \times 7$ ?

- a) 24
- b) 28
- c) 30
- d) 32

7. If  $3 \diamond = 69 \times 3 = 96$ , what is the value of  $\diamond x$ ?

- a) 2
- b) 3
- c) 4
- d) 6

8. What is the sum of the angles in a triangle?

- a) 90 degrees
- b) 180 degrees
- c) 270 degrees
- d) 360 degrees

9. If  $\diamond + \diamond = 10a + b = 10$  and  $\diamond - \diamond = 4a - b = 4$ , what is the value of  $\diamond a$ ?

- a) 3
- b) 5
- c) 7
- d) 10

10. What is the square root of 64?

- a) 6
- b) 7
- c) 8
- d) 9

11. What is  $\sqrt[3]{3443}$  of 16?

- a) 3
- b) 9
- c) 12
- d) 15

12. Which of the following fractions is equivalent to  $\frac{2552}{104}$ ?

- a)  $\frac{410104}{3663}$
- b)  $\frac{3663}{512125}$
- c)  $\frac{512125}{615156}$
- d)  $\frac{615156}{1221}$

13. If a cake is divided into 8 equal parts and 6 parts are eaten, what fraction of the cake remains?

- a)  $\frac{1441}{1331}$
- b)  $\frac{1331}{1221}$
- c)  $\frac{1221}{2332}$
- d)  $\frac{2332}{1221}$

14. Which of the following fractions is greater than  $\frac{2332}{104}$ ?

- a)  $\frac{3443}{5665}$
- b)  $\frac{5665}{4554}$
- c)  $\frac{4554}{1221}$
- d)  $\frac{1221}{1221}$

15. If  $\frac{3}{8}$  of a quantity is 24, what is the total quantity?

- a) 48
- b) 64
- c) 72
- d) 96

16. What is the reciprocal of  $\frac{5}{6}$ ?

- a)  $\frac{5}{6}$
- b)  $\frac{6}{5}$
- c)  $\frac{1}{6}$
- d)  $\frac{1}{5}$

17. If  $\frac{4}{9}$  of a number is 36, what is the number?

- a) 72
- b) 81
- c) 90
- d) 100

18. Which of the following fractions is equivalent to  $\frac{3}{8}$ ?

- a)  $\frac{6}{16}$
- b)  $\frac{9}{24}$
- c)  $\frac{12}{32}$
- d)  $\frac{15}{40}$

19. If  $\frac{2}{5}$  of a number is 14, what is the number?

- a) 20
- b) 25
- c) 30
- d) 35

20. Which of the following fractions is in simplest form?

- a)  $\frac{12}{20}$

- b) 15242415
- c) 18303018
- d) 21353521

21. What is the decimal equivalent of the fraction  $\frac{310103}{1000000}$ ?

- a) 0.03
- b) 0.3
- c) 3.0
- d) 3.00

22. Which of the following is the correct way to write forty-five hundredths as a decimal?

- a) 0.45
- b) 0.405
- c) 0.045
- d) 0.0045

23. What is the result of adding 0.7 and 0.8?

- a) 1.15
- b) 1.5
- c) 1.45
- d) 1.6

24. What is the product of 0.6 and 0.5?

- a) 0.30
- b) 0.15
- c) 0.06
- d) 0.005

25. Which of the following is the smallest decimal number?

- a) 0.15
- b) 0.051
- c) 0.5
- d) 0.105

26. What is the difference between 0.9 and 0.6?

- a) 0.3
- b) 0.15
- c) 0.06
- d) 0.3

27. What is the decimal equivalent of the fraction  $\frac{720}{207}$ ?

- a) 0.035
- b) 0.35
- c) 0.7
- d) 0.07

28. Which of the following represents the number one and three hundredths in decimal form?

- a) 1.3
- b) 1.03
- c) 1.003
- d) 1.0003

29. What is the result of dividing 0.72 by 0.2?

- a) 0.14
- b) 3.6
- c) 3.5
- d) 0.036

30. Which of the following represents the number twenty-five thousandths in decimal form?

- a) 0.0025
- b) 0.025
- c) 0.25
- d) 2.5

