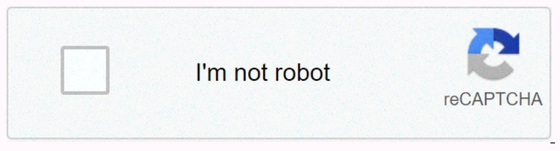

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Mensuration worksheet for class 6

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Perimeter of a rectangle - 2 × (length - width)Perimeter of a square - 4 × the length of its sideperimeter of an equilateral triangle - 3 × length of one sideFigures in which all sides and angles are equal are called regular closed figures. The amount of surface surrounded by a closed figure is called its zone. To calculate the size of a figure using a square paper, the following conventions are adopted: Ignore parts of the area that are less than half a square. If more than half a square is in an area. Count it as a squareNCERT Class 6 Mathematics Resolute WorksheetChapter 1 - Know our numbersChapter 2 - Whole NumbersChapter 3 - Playing with NumbersChapter 4 - Basic Geometrical IdeasChapter 5 - Understanding Elemental FormsChapter 6 - IntegersChapter 7 - FractionsChapter 8 - From cimalsChapter 9 - Data HandlingChapter 10 - MensurationChapter 11 - AlgebraChapter 12 - Ratio and ProportionChapter 13 - SymmetryChapter 14 - Practical GeometryCBSE Worksheets for class 6 Mathematics in PDFPerimeterLook at the following figures. You can make them with a thread or a string. If you start from point S in each case and move along the line segments, then you reach point S again. You have done a complete tour of the form in each case (a), b) and (c). The distance travelled is equal to the length of the thread used to draw the figure. This distance is known as the perimeter of the closed figure. This is the length of the thread needed to form the figures. The idea of perimeter is widely used in our daily lives. A farmer who wants to close his field. An engineer who plans to build a wall consisting of all sides of a house. A person preparing a track for sports. All these people use the idea of perimeter. Download printable worksheets for Class 6 Mathematics and Science; do check app or website. myCBSEguide provides examples of articles with solution, test documents for chapter-wise practice, NCERT solutions, NCERT Exemplar solutions, quick review notes for ready reference, cbse conjecture documents and cbse important question documents. Sample Paper all are available via the best app for CBSE students and myCBSEguide website. Create papers with your name and logo Try it now (free) Copyright © 2020 Entrancei. It's Entrancei. reserved rights. SEE MORE loading more solutions... Get this solution now! Download our free pdf or get solution app now! Additional Questions for Class 6 Mathematics Chapter 10 Measurement Measurement Class 6 Additional Questions Very Short Answer Type Question 1. The perimeter of a square is 64 cm. Find the length on each side. Solution: Square perimeter - 64 cm Question 2. The length and width of a rectangular table top is 36 cm and 24 cm respectively. Find his perimeter. Solution: Length of rectangular table - 36 cm and its width - 24 cm. ∴ Table Perimeter - 2 [length - width] - 2 [36 cm - 24 cm] - 2 x 60 cm - 120 cm. Question 3. Which of the following numbers has a larger perimeter? Solution: Fig. (i) Square Perimeter - 4 x Side - 4 x 4 cm - 16 cm Fig. (ii) Perimeter of the rectangle - 2 [length - width] - 2[8 cm - 3 cm] - 2 x 11 cm - 22 cm - 22 cm ∴ Rectangle has a perimeter larger than the square. Question 4. How far will you need to travel to cover each of the following numbers? Solution: Distance travelled to go around the fig. (i) - 12 cm - 3 cm - 12 cm - 3 cm - 30 cm Distance traveled to go around the fig. (ii) - 6 cm - 4 cm - 4 cm - 18 cm Question 5. Find the perimeter of a square with a side of 15 cm. Solution: Side of the square - 15 cm ∴ Perimeter of the square - 15 cm x 4 - 60 cm Question 6. Find the cost of closing a rectangular park 300 m long and 200 m wide at a rate of ₹4 per meter. Solution: Park length - width of 300 m - 200 m ∴ Park perimeter - 2 [length - width] - 2 [300 m - 200 m] - 2 x 500 m - 1,000 m. Closing cost of the rectangular park - 1000 x 4 - ₹4000 Question 7. Find the area of a square field with 150 m on each side. Solution: Side of the square field - 150 m ∴ Square Field Zone - Side x Side - 150 m x 150 m - 22,500 m2 Question 8. The length and width of a rectangular paper are 22 cm and 10 cm respectively. Find the paper area. Solution: Length of rectangular paper - width of 22 cm - 10 cm ∴ Rectangular paper area - length x width - 22 cm x 10 cm - 220 cm2. Vitals Class 6 Additional Questions Short Answer Type 9 Question. Find the length of a rectangle as its perimeter is 880 m and the width is 88 m. Solution: Perimeter of the rectangle - 2 [length - width] ∴ 2 [length - width] - 880 length - width - 880 ÷ 2 - 440 ∵ Width - 88 m ∴ Length - 440 m - 88 m - 352 m Therefore, the required length - 352 m. Question 10. How many trees can be planted at a distance of 6 meters each around a rectangular plot with a length of 120 m and width is 90 m? Solution: Length of rectangular parcel - 120 m Width - 90 m ∴ Perimeter of the rectangular parcel - 2 [length - width] - 2 [120 m - 90 m] 2 x 210 m - 420 m Now, distance between two trees - 6 m ∴ Number of trees around the rectangular plot - 420 m ÷ 6 m - 70 Question 11. A rectangular park is 30 metres long and 20 metres wide. A steel wire fence is It. Find the cost of setting up the fence at the rate of ₹₹15 per metre. Solution: Length of rectangular park - 30 m Width - 20 m ∴ Rectangular Park Perimeter - 2 (length - width) - 2 [30 - 20] - 2 x 50 m - 100 m ∴ Closing cost all around the park - ₹15 x 100 - ₹1500 Question 12. Find the area of figures A, B, C and D drawn on a square paper in the next figure by counting the squares. Solution: (A) Counting the squares, we have 8 squares ∴ 8 square units (B) Count the squares, we have 4 squares ∴ Zone - 4 square units (C) Count the squares, we have 5 squares ∴ Zone - 5 square units (D) Count the squares, we have 7 squares ∴ Zone - 7 square units Mensuration Class 6 Additional Questions Higher Order Thinking Skills (HOTS) Question 13. A rectangle and a square have the same perimeter of 100 cm. Find the side of the square. If the rectangle is 2 cm shorter than the square. Find the extent, length and area of the rectangle. Solution: Perimeter of the square - perimeter of 100 cm 100 - 25 cm. ∴ Width of the rectangle - 25 cm - 2 cm - 23 cm Now rectangle perimeter - 100 cm ∴ 2 [length - width] - 100 length - width - 100 ÷ 2 - 50 cm But width - 23 cm ∴ Length - 50 cm - 23 cm - 27 cm Now, Area of the rectangle - length x width - 27 cm x 23 cm - 621 cm2. Question 14. Closing a home compound costs ₹₹5452. If the rate is ₹94$ per metre, find the perimeter of the enclosure. If the width is 10 m, find its length. Solution: Closing cost of the compound - ₹5452 and closing rate - ₹94 per metre ∴ Compound perimeter - 5452 ÷ 94 - 58 meters Now compound width - 10 m. 2 [length - width] - 58 m ∴ length - width - 58 - 2 m - 29 m ∴ Length of the compound - 29 m - 10 m - 19 m. Additional questions for Class 6 Mathematics NCERT Solutions for Class 6 Mathematics The first thing that comes to mind when we think of the plane numbers are the borders and their regions. In this chapter, we learn about the concept of zone and perimeter of flat figures. These two concepts are of great importance in our daily lives which helps to determine their measurements. The problems of this Chapter are based on shapes such as closed and open curves, rectangle, square, equilateral triangle, etc. These concepts are explained in simple language based on students' ability to understand how to make it easier for them to prepare for the exam. RD Sharma Solutions for Class 6 Chapter 20 PDF Measurement are provided here. RD Sharma Solutions for Class 6 Maths Chapter 20: Measurement Download PDF Access answers to Maths RD Sharma Solutions for Class 6 Chapter 20: Measurement Exercise 20.1 page: 20.5 1. Which of the following are closed curves? Which of them are simple? Solution: Figures (ii), (iii), (iv), (vi) and (vii) closed curves and figures (ii), (iii), (iv) and (vi) are simple closed curves. 2. Define the perimeter of a closed figure. Solution: The length of the boundary of a closed figure is known as the perimeter. 3. 3. the perimeter of each of the following forms: Solution: We know that the perimeter is the sum of lengths on all sides of a closed figure. (i) Perimeter of the given figure - 4 - 2 - 1 - 5 - 12 cm (ii) Perimeter of the given figure - 23 - 35 - 40 - 35 - 133 cm (iii) Perimeter of the given figure - 15 15 - 15 - 15 - 60 cm (iv) Perimeter of the given figure - 3 - 3 - 3 - 3 - 3 - 15 cm Exercise 20.2 page: 20.10 1. Find the perimeters of rectangles with the length and width of which are given below: (i) 7 cm, 5 cm (ii) 5 cm, 4 cm (iii) 7.5 cm, 4.5 cm Solution: (i) We know that the perimeter of a rectangle - 2 (L - B) It is given that L - 7 cm and B - 5 cm So the perimeter of a rectangle - 2 (7 - 5) - 2 × 12 - 24 cm (ii) We know that the perimeter of a rectangle - 2 (L - B) It is given that L - 5 cm and B - 4 cm So the perimeter of a rectangle - 2 (5 - 4) - 2 × 9 - 18 cm (iii) We know that the perimeter of a rectangle - 2 (L - B) It is given that L - 7.5 cm and B - 4.5 cm So , the perimeter of a rectangle - 2 (7.5 - 4.5) - 2 × 12 - 24 cm 2. Find the perimeters of the squares whose sides are given below: (i) 10 cm (ii) 5 m (iii) 115.5 cm Solution: (i) We know that the perimeter of a square - 4 × Length on one side It is given that L - 10 cm So, the perimeter of a square - 4 × 10 - 40 cm (ii) We know that the perimeter of a square - 4 × Length on one side It is given that L - 5 m So, the perimeter of a square - 4 × 5 - 20 m (iii) We know that the perimeter of a square - 4 × Length on one side It is given that L - 115.5 cm So the perimeter of a square - 4 × 115.5 - 462 cm 3. Find the side of the square whose perimeter is: (i) 16 m (ii) 40 cm (iii) 22 cm Solution: (i) We know that the side of a square - perimeter / 4 It is given this perimeter - 16 m So, the side of the square - 16/4 - 4 m (ii) We know this side of a square - perimeter/ 4 It is given this perimeter - 40 cm So, the side of the square - 40/4 - 10 cm (iii) We know that the side of a square - perimeter / 4 It is given this perimeter - 22 cm So, the side of the square - 22/4 - 5.5 cm 4. Find the width of the rectangle whose perimeter is 360 cm and whose length is (i) 116 cm (ii) 140 cm (iii) 102 cm Solution: We know that the perimeter of a rectangle - 2 (L - B) So, the width of the rectangle - perimeter/2 - length (i) It is given that perimeter - 360 cm and length - 116 cm So, the width of the rectangle - 360/2 - 116 - 180 - 1 16 - 64 cm (ii) It is given that perimeter - 360 cm and length - 140 cm So, the width of the rectangle - 360/2 - 140 - 180 - 140 - 40 cm (iii) It is given that perimeter - 360 cm and length - 102 cm So, the width of the rectangle - 360/2 - 102 - 180 - 102 - 78 cm 5. A rectangular piece of lawn is 55 m wide and 98 m long. Find the length of the fence around it. Solution: The dimensions of the lawn are width - 55 m Length - 98 m We know that lawn perimeter - 2 (L - B) In Lawn Perimeter Values - 2 (98 -55) So we get lawn perimeter 2 × 153 - 306 m So the fence around the lawn is 306 m. 6. The side of a square field is 65 m. How long is the required fence all around? Solution: It is given that side of a square field - 65 m So, the perimeter of the square field - 4 × side of the square By substituting the values Square field perimeter - 4 × 65 - 260 m Therefore, the length of the required fence all around the square field is 260 m. 7. Both sides of a triangle are 15 cm and 20 cm. The perimeter of the triangle is 50 cm. What's the third side? Solution: It is given that the first side of the triangle - 15 cm Second side of the triangle - 20 cm In order to find the length of the third side We know that the perimeter of a triangle is the sum of the three sides of a triangle So the length of the third side - triangle perimeter - sum of length of the other two sides Substituting the values Length of the third side - 50 - (15 - 20) - 15 cm. Therefore, the length of the third side is 15 cm 8. A 20 m long wire must be folded into a rectangle. How many rectangles can be formed by bending the wire if the sides are positive wholes in the meters? Solution: Given: Length of wire 20 m is folded in rectangle form So, The perimeter - 20m It can be written as 2 (L -B) - 20 m On the additional calculation L -B - 10 m If the sides are positive wholes in meters the possible dimensions are (1m, 9m), (2m, 8m), (3m, 7m), (4m, 6m) and (5m, 5m) So , five rectangles can be formed using the given wire. 9. A square lot on each side equal to 100 m. If 3 layers of wire are to be used to fence it, how long is the wire needed? Solution: It is given that each side of a square field - 100 m We can find the thread needed to fence the square field by determining the perimeter - 4 × on each side of a square field By substituting the values Perimeter of the square field - 4 × 100 - 400 m So, The length of the wire that is needed to close three layers is 3 × 400 - 1200 m So , the length of the wire needed to close 3 layers is 1200 m. 10. Shikha runs around a 75 m side square. Priya runs around a rectangle 60 m long and 45 m wide. Who covers the smallest distance? Solution: It is given that Shikha runs around a square side -75 m So, the perimeter - 4 × 75 - 300 m Priya runs around a rectangle having length - 60 m Width - 45 m So, the distance traveled can be found from the perimeter - 2 (L - B) By substituting the values Perimeter - 2 (60 - 45) - 2 × 105 - 210 m Therefore Priya covers the smallest distance of 210 m. 11 years. The dimensions of a photograph are 30 cm × 20 cm. How long is a wooden frame needed to frame the image? Solution: It is given that the dimensions of a photograph - 30 cm × 20 cm So, the required length of the frame in can be determined from the perimeter of the photograph - 2 (L- B) By substituting the values - 2 (30 - 20) - 2 × 50 - 100 cm Therefore, the length of the wooden frame needed to frame the image is 100 cm. 12. The length of a rectangular field is 100 m. If the 300m, how wide is it? Solution: The dimensions of the rectangular field are Length - 100 m Perimeter - 300 m We know that perimeter - 2 (L - B) It can be written as Width - perimeter/2 - length By substituting the values Width - (300-200)/2 - 100/2 - 50 m Therefore, the width of the rectangular field is 50 m. 13. To secure the fence wires in a garden, 70 m long and 50 m wide, Arvind bought metal pipes for the poles. He fixed a pole every 5 meters from each other. Each station was 2 m long. What is the total length of the pipes he bought for the posts? Solution: The dimensions of the garden are length - 70 m Width - 50 m So, the perimeter - 2 (L - B) By substituting the values Perimeter - 2 (70 - 50) - 2 × 120 - 240 m Given: Arvind fixes a pole every 5 meters interval No. the required poles - 240/5 - 48 The length of each pole - 2 m So, the total length of the pipe required - 48 × 2 - 96 m Therefore, the total length of the pipes he purchased for the poles is 96 m. 14. Find the cost of closing a rectangular park 175 m long and 125 m wide at the rate of Rs 12 per meter. Solution: The dimensions of the rectangular park are Length - 175 m Width - 125 m So the perimeter - 2 (L - B) By substituting the values Perimeter - 2 (175 - 125) - 2 × 300 - 600 m It is given that the cost of the fence - Rs 12 per meter So, The total cost of the closing - 12 × 600 - Rs 7200 Therefore, the cost of closing a rectangular park is Rs 7200. 15. The perimeter of a regular pentagon is 100 cm. How long is each side? Solution: We know that a regular pentagon is a closed polygon with 5 sides of the same length. It is given that perimeter of a regular pentagon - 100 cm It can be written as Perimeter - 5 × side of the regular pentagon So we get side of the regular pentagon - Perimeter/5 By substituting the values Side of the regular pentagon - 100/5 - 20 cm Therefore, the regular Pentagon side measures 20 cm. 16. Find the perimeter of an ordinary hexagon with each side measuring 8 m. Solution: We know that an ordinary hexagon is a closed polygon that has six sides of the same length. It is given that Side of the regular hexagon - 8 m So we get Perimeter - 6 × side of the regular hexagon By substituting the values Perimeter - 6 × 8 - 48 m Therefore, the perimeter of a regular hexagon is 48 m. 17. A rectangular terrain measures 0.7 km by 0.5 km. Each side should be fenced with four rows of wires. How long is the wire required? Solution: It is given that the rectangular piece of earth measure - 0.7 km × 0.5 km We know that Perimeter - 2 (L - B) By substituting the values Perimeter - 2 (0.7 - 0.5) - 2 × 1.2 - 2.4 km The perimeter obtained above - a row of wire needed to fence the rectangular terrain So The length of the wire required to fence the land with 4 rows of wire - 4 × 2.4 - 9.6 km Therefore, the length of the necessary wire is 9.6 km. 18 years old. Avneet buys 9 square paving slabs, each on a 1/2 m side. He places them in the form of a square. (i) What is the scope of its arrangement? (ii) Sharia does not like its sound She makes him lay them like a cross. What is the perimeter of its arrangement? iii) Who has a larger perimeter? iv) Avneet wonders if there is a way to get an even larger perimeter. Can you find a way to do that? (Paving slabs must meet along full edges that they cannot be broken) Solution: (i) It is given that the length on each side of the slab - 1/2 m One side of the square is formed by three slabs in a square arrangement Side length - 3 × 1/2 - 3/2 m So, The perimeter of the square arrangement - 4 × 3/2 - 6 m (ii) From the figure, the cross arrangement has 8 sides that form the periphery of the arrangement and measure 1 m each. It also has 4 sides that measure 1/2 m each perimeter of the cross arrangement - 1 - 1/2 - 1 - 1 - 1 /2 - 1 - 1 - 1 -1/2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 We know that the perimeter of the cross arrangement - 10 m Perimeter of the square arrangement - 6 m Therefore, the perimeter of the cross arrangement is larger than the perimeter of the square arrangement. iv No, Avnee cannot organize slabs with perimeters greater than 10 m. Exercise 20.3 page: 20.14 1. The following figures are drawn on a square paper. Count the number of squares surrounded by each figure and find its surface area, taking the area of each square as 1 cm2. (Fig. 20.25). Solution: (i) The given shape has 16 full squares. It is given this area of a square - 1 cm2 So, the area of the given shape - 16 × 1 - 16 cm2 (ii) The given shape has 36 full squares. It is given this area of a square - 1 cm2 So, the area of the given shape - 36 × 1 - 36 cm2 (iii) The given shape has 15 full squares and 6 half. It is given this area of a square - 1 cm2 So, the area of the given shape - 15 - 6 × 12 - 18 cm2 (iv) The given shape has 20 full squares and 8 half. It is given this area of a square - 1 cm2 So the surface of the given shape - 20 - 8 × 12 - 24 cm2 (v) The given shape has 13 complete, 8 more than half and 7 less than half of the squares. It is given this area of a square - 1 cm2 So, the area of the given shape - 13 - 8 × 1 - 21 cm2 (vi) The given shape has 8 complete, 6 more than half and 4 less than half of the squares. It is given this area of a square - 1 cm2 So, the area of the given shape - 8 - 6 × 1 - 14 cm2 2. On a square paper, draw (i) a rectangle, (ii) a triangle (iii) any irregular figure closed. Find the approximate area of each by counting the number of complete squares, more than half and exactly half. Solution: (i) A rectangle The given shape has 18 full squares Suppose the surface of a square - 1 cm2 So, the area of the rectangle - 18 × 1 - 18 cm2 (ii) A triangle The given shape has 4 complete, 6 more half and 6 less half squares. Suppose the area of a square - 1 cm2 So, the area of the square - 4 - 6 × 1 - 10 cm2 (iii) Any irregular figure The shape has 10 full, 1 exactly half, 7 more half and 6 less than half the squares. Suppose the area of a square - 1 cm2 So, the area of the shape - 10 - 1 × 12 - 7 × 1 - 17.5 cm2 3. Draw any circle graphic paper. Count the squares and use them to estimate the area of the circular area. Solution: The circles given has 21 full, 15 more half and 8 less than half the squares. Suppose the area of a square - 1 cm2 By neglecting less than half of the squares, we get area of the circle 21 - 15 - 36 cm2 4. Use plotting paper and centimeter graphic paper to compare the areas of the following pairs of numbers: Solution: Using to trace the paper traces both the numbers on a graph Figure (i) has 4 full, 9 more than half and 9 less half of the half-squares. Suppose the area of a square 1 cm2 By neglecting less than half of the squares, we get area of the shape 4 - 9 - 13 cm2 Figure (ii) has 8 full, 11 more than half and 10 less than half of the squares. Suppose that the area of a square - 1 cm2 By neglecting less than half of the squares, we get area of the shape - 8 - 11 - 19 cm2 By comparing the areas of the two shapes, we know that the figure (ii) has an area larger than that of the figure (i). Exercise 20.4 page: 20.21 1. Find the area of a rectangle, of which (i) Length - 6 cm, width - 3 cm (ii) Length - 8 cm, width - 3 cm (iii) Length - 4.5 cm, width - 2 cm. Solution: (i) We know that the area of a rectangle - L × B It is given that length - 6 cm, width - 3 cm By substituting the values Zone of a rectangle - 6 × 3 - 18 cm2 (ii) We know that the area of a rectangle - L × B It is given that the length - 8 cm, Width - 3 cm By substituting the values Zone of a rectangle - 8 × 3 - 24 cm2 (iii) We know that the area of a rectangle - L × B It is given that length - 4.5 cm, width - 2 cm By substituting the values Zone of a rectangle - 4.5 × 2 - 9 cm2 2. Find the area of a square on the east side: (i) 5 cm (ii) 4.1 cm (iii) 5.5 cm (iv) 2.6 cm Solution: (i) We know that the area of a square - side × side It is given this side of a square - 15 cm So, the square area of 5 × 5 - 25 cm2 (ii) We know that the area of a square - side × side It is given this side of a square - 4.1 cm So, the area of the square - 4.1 × 4.1 - 16.81 cm2 (iii) We know that the surface of a square on the side × side It is given this side of a square - 5.5 cm So the area of the square - 5.5 × 5.5 - 30 .25 cm2 (iv) We know that the area of a square - side × side It is given this side of a square - 2.6 cm So , the area of the square - 2.6 × 2.6 - 6.76 cm2 3. The surface of a rectangle is 49 cm2 and its width is 2.8 cm. Find the length of the rectangle. Solution: It is given this area of a rectangle - 49 cm2 Width of a rectangle - 2.8 cm We know that the area of a rectangle - L × B It can be written as L - Zone / B - 49/2.8 - 17.5 cm Therefore, the length of the rectangle is 17.5 cm. 4. The side of a square is 70 cm. Find its area and perimeter. Solution: It is given this side of a square - 70 cm know that the area of a square - side × side By substituting the values Zone of a square - 70 × 70 - 4900 cm2 We know that perimeter of a square - 4 × side By substituting the values Perimeter of a square - 4 × 70 - 280 cm Therefore, the square area is is is cm2 and the perimeter of the square is 280 cm. 5. The surface of a rectangle is 225 cm2 and its side is 25 cm, find its other side. Solution: It is given that the area of a rectangle - 225 cm2 Length on one side - 25 cm We know that the area of a rectangle - Produces the length of two sides On the other side - area / side Substituting the values On the other side - 225/25 - 9 cm Therefore, the other side of the rectangle is 9 cm. 6. What will happen to the rectangle area if its (i) length and width are tripled (ii) The length is doubled and the width is the same (iii) the length is doubled and the width is reduced by half. Solution: (i) Length and width are tripled Consider it as the initial length and b as the initial width So, the original surface - × b If the length and width are tripled, it becomes three times more than the original New length value - 3l New width - 3b New area of the rectangle - 3l × 3b - 9 l Therefore, the surface of the rectangle becomes 9 times more than its original area. (ii) The length is doubled and the width is the same Consider l as the initial length and b as the initial width So, the original area - the × b If the length is doubled and the width is the same, we get new length - 2l New width - b New area of the rectangle - 2l × b - 2 l Therefore, the surface of the rectangle becomes 2 times more than the area of origin. (iii) The length is doubled and the width is reduced by half Consider it as the initial length and b as the initial width So the original surface - × b If the length is doubled and the width is reduced by half, we get new length - 2l New width - b/2 New area of the rectangle - 2l × b/2 - lb Therefore, the surface of the rectangle does not change. 7. What will happen to the size of a square if its side is: (i) tripled (ii) increased by half. Solution: (i) Tripled Consider s as the original side of the square We know that the original area - s × s2 If the side of the square is tripled, we get new side 3s So the new area of the square - 3s × 3s - 9s2 Therefore, the area becomes 9 times more than that of the original area. (ii) Increased by half of it Consider s as the original side of the square We know that the original area - s × s2 If the side of the square is increased by half of it, we get new side to the new side of the area, the area of the square is 3s/2 × 3s/2 - 9s2/4 Therefore, the area becomes 9/4 times more than that of the original area. 8. Find the perimeter of a rectangle with an area of 500 cm2 and a width of 20 cm. Solution: It is given that the area of the rectangle - 500 cm2 Width of the rectangle - 20 cm We know that the area - L × B It can be written as L - Zone / B By substituting the values L - 500/20 - 25 cm We know that perimeter - 2 (L - B) In Perimeter values - 2 (25 - 20) - 2 × 45 - 90 cm Hence, the perimeter of the rectangle is 90 cm. 9. A rectangle has the same area as an 80 cm side square. If the width of the rectangle is 20 cm, find its length. Solution: It is given that side of a square - 80 cm So, the area of the square - side × side By substituting the Square area - 80 × 80 - 6400 cm2 We know that the area of the rectangle - square area - 6400 cm2 Width - 20 cm Rectangle area - L × B It can be written as L - Zone/B - 6400/20 - 320 cm Therefore, the length of the rectangle is 320 cm. 10. The surface of a rectangle 17 cm wide is 340 cm2. Find the perimeter of the rectangle. Solution: The dimensions of the rectangle are Width - 17 cm Area - 340 cm2 We know that Rectangle Zone - L × B It can be written as L -Zone /B - 340/17 - 20 cm So the perimeter - 2 (L - B) By substituting the values Perimeter - 2 (20 - 17) - 2 × 37 - 74 cm So, The perimeter of the rectangle is 74 cm. 11. A marble tile measures 15 cm × 20 cm. How many tiles will be needed to cover a wall 4 m × 6 m? Solution: Measuring the marble tile - 15 cm × 20 cm Wall size - 4 m × 6 m - 400 cm × 600 cm So, we get an area of tiles - 15 cm × 20 cm - 300 cm2 Wall area - 400 cm × 600 cm - 240000 cm2 No. tiles needed to cover the wall - Wall Zone/ Area of a tile Substituting Values No. tiles needed to cover the wall - 240,000/300 - 800 tiles Therefore, 800 tiles are needed to cover a wall size 4 m × 6 m. 12. A marble tile measures 10 cm × 12 cm. How many tiles will be needed to cover a wall 3 m × 4 m? Also, find the total cost of tiles at the rate of Rs 2 per tile. Solution: Measuring the marble tile - 10 cm × 12 cm Wall size - 3 m × 4m - 300cm × 400cm So, the area of the marble tile - 10 cm × 12 cm - 120 cm2 Wall area - 300 cm × 400 cm - 120000 cm2 No. tiles needed to cover the wall - Wall Zone/ Area of a tile Substituting Values No. tiles needed to cover the wall ' 120,000/120 ' 1000 tiles It is given that the cost of a tile 'Rs 2 So the cost of 1000 tiles '1000 × 2 'Rs 2000 Therefore, 1000 number of tiles are needed to cover the wall and the cost is Rs 2000. 13. One side of a square plot is 250 m, finding the cost of leveling it at the rate of Rs 2 per square meter. Solution: It is given that side of a tile of a square plot - 250 m So, the area on the × side - 250 × 250 - 62500 m2 Levelling cost - Rs 2 per square meter So the levelling cost 62500 sqm - 62500 × 2 - Rs 125000 Therefore, the cost of leveling is Rs 125000. 14. The following figures were divided into rectangles. Find their areas. (Measurements are given in centimetres) Solution: (i) The figure given has two rectangles II and IV and two squares I and III. Thus, the area of square I - side × side - 3 × 3 - 9 cm2 In the same way rectangle area II - L × B - 2 × 1 - 2 cm2 Square Zone III - side × side - 3 × 3 - 9 cm2 Similar area of rectangle IV - L × B - 2 × 4 - 8 cm2 So, 3 × 3 - 9 cm2 Similar area of rectangle IV - L × B - 2 × 4 - 8 cm2 So, so, 3 - 9 cm2 Similar area of rectangle IV The total area of the figure - Square Area I - Rectangle Zone II - Square III Zone - Rectangle IV By substituting the total zone values of the figure - 9 - 2 - 9 - 8 - 28 cm2 (ii) The figure given has three rectangles I, II and III. Thus, the rectangle area I - L × B - 3 × 1 - 3 cm2 Rectangle Zone II - L × B - 3 × 1 - 3 cm2 Zone Zone Rectangle III - L × B - 3 × 1 - 3 cm2 So the total area of the figure - Rectangle Zone I - Rectangle Zone II - Rectangle Iii Zone By substituting the total zone values of the figure - 3 - 3 - 3 - 9 cm2 15. Divide the following shapes into rectangles and find each one's area. (Measurements are given in centimetres) Solution: (i) The figure given has two rectangles I and II. Thus, the rectangle area I - L × B - 10 × 2 - 20 cm2 In the same way rectangle zone II - L × B - 10 × 3/2 - 15 cm2 So, The total area of the figure - Rectangle Zone I - Rectangle Zone II By substituting the total zone values of the figure - 20 - 15 - 35 cm2 (ii) The figure given has two squares I and III and a rectangle II. Thus, the area of Square I - Area of Box III - side × side - 7 × 7 - 49 cm2 The area of rectangle II - 21 × 7 - 147 cm2 So, The total area of the figure - Square Area I - Rectangle Area II - Square Zone III By substituting the total figure area values of the figure - 49 - 49 - 147 - 245 cm2 (iii) The figure given has two rectangles I and II. Thus, the rectangle area I - L × B - 5 × 1 - 5 cm2 In the same way, rectangle area II - L × B - 4 × 1 - 4 cm2 So the total area of the figure - Rectangle Zone I - Rectangle Zone II By substituting the total zone values of the figure - 5 - 4 - 9 cm2 16. How many tiles with dimensions of 5 cm and 12 cm will be needed to fit a region whose length and width are respectively: (i) 100 cm and 144 cm (ii) 70 cm and 36 cm Solution: (i) Tile dimensions - 5 cm × 12 cm Dimensions of the region - 100 cm × 144 cm Thus, the area of the tile - 5 cm × 12 cm - 60 cm2 Area of the same area - 100 cm × 144 cm - 14,400 cm2 No. tiles that are needed to cover the region - Region Zone/ Area of a tile By substituting values No. tiles that are needed to cover the area - 14400/60 - 240 tiles (ii) tile dimensions - 5 cm × dimensions of the region of 12 cm - 70 cm × 1,36 cm So, the area of the tile - 5 cm × 12 cm - 60 cm2 Area of the same region - 70 cm × 36 cm - 2520 cm2 No. tiles that are needed to cover the region - Region Zone/ Area of a tile By substituting values No. tiles that are needed to cover the region - 2520/60 - 42 tiles Objective Type Questions page: 20.23 Mark the correct alternative in each of the following elements: 1. The sides of a rectangle are in the ratio 5: 4. If its perimeter is 72 cm, then its length is (a) 40 cm (b) 20 cm (c) 30 cm (d) 60 cm Solution: Option (b) is the right answer. Think of the sides of the rectangle as 5x and 4x. We know that, rectangle perimeter - 2 (Length - Width) By substituting the values 72 - 2 (5x - 4x) On the additional calculation 72 - 2 × 9x So we get 72 - 18x Per division x - 72/18 - 4 So the length of the rectangle - 5x - 5 × 4 - 20 2. The cost of closing a rectangular field 34 m long and 18 m wide at Rs 2.25 per metre is (a) Rs 243 b) Rs 234(c) Rs 240(d) Rs 334 Solution: Option (b) is the right answer. We need to find the perimeter of the rectangle to The field. The dimensions of the rectangle are Length - 34m Width - 18m We know that Perimeter - 2 (Length - Width) By substituting the values Perimeter of the rectangle - 2 (34 - 18) - 2 × 52 - 104 m So, the cost of closing the field at the rate of Rs. 2.25 per metre - 104 × 2.25 - Rs. 234 3. If the cost of closing a rectangular field at Rs. 7.50 per metre is Rs. 600, and the length of the field is 24 m, then the width of the field is (a) 8 m(b) 18 m(c) 24 m (d) 16 m Solution: Option (d) is the right answer. It is given this cost of closing the rectangular field - Rs. 600 So, Field Fence Rate - Rs. 7.50 per m We know that the perimeter of the field - Cost of closing / Closing rate By substituting the field perimeter values - 600/7.50 - 80 m Field length - 24 m So we get the width of the field - Perimeter /2- Length - 80/2- 24 - 16 m 4. The cost of setting up a fence around a square field at Rs 2.50 per meter is Rs 200. The length on either side of the field is (a) 80 m(b) 40 m(c) 20 m(d) None of these solutions: Option (c) is the right answer. It is given that the closing cost of the square field - Rs. 200 So, Field Closing Rate - Rs. 2.50 We know that, square field perimeter - Closing cost/Closing rate By substituting the square field perimeter values - 200/2.50 - 80 m Square perimeter - 4 × Side of the square It can be written as side of the square - Perimeter/4 - 80/4 - 20 m 5. The length of a rectangle is three times its width. If the diagonal length is 8√10 m, then the perimeter of the rectangle is (a) 15√10 m (b) 16√10 m(c) 24√10 m (d) 64 m Solution: The option (d) is the right answer. Think of ABCD as a rectangle. Suppose the width of the rectangle BC x m We know that the length is three times the width of the rectangle. Thus, the length of the ab rectangle - 3x m AC is the diagonal of the rectangle Consider ABC as a straight tilted triangle. AC2 - AB2 - BC2 By substituting the values 640 - 9x2 - x2 We get 640 - 10x2 On the additional calculation x2 - 640/10 - 64 x - √64 - 8 m So, the size of the rectangle x - 8 m Rectangle Length 3x - 3 × 8 - 24 m Perimeter - 2 (Length - Width) By substituting the perimeter values - 2 (24 - 8) - 2 × 32 - 64 m 6. If a diagonal of a rectangle is three times smaller, then its length and width are in ratio (a) 3: 1(b) √3: 1(c) √2:1(d) 2√2: 1 Solution: Option (d) is the right answer. Suppose the length of the smaller side of the BC rectangle - x Length on the larger side AB - y It is given that the length of the diagonal is three times that of the smaller side. Diagonal of the rectangle 3x - AC Using the Pythagorean theorem (AC) 2 - (AB) 2 - (BC) 2 By substituting the values (3x) 2 - (x) 2 - (y) 2 On another calculation 9x2 - x2 - y2 We get 8x2 - y2 Taking square roots on both sides, 2√2 x y Therefore, the ratio on the larger side to the smallest is 2√2: 1. 7. The ratio of areas of two squares, one having its diagonal diagonal that the other, is (a) 1:2(b) 2: 3(c) 3: 1(d) 4: 1 Solution: Option (d) is the right answer. Think of ABCD and PQRS as the two squares. We know that, the diagonal of square pqrs is twice the diagonal of ABCD square. PR - 2 AC Zone of the square - Diagonal2/2 AREA of PQRS - PR2/2 In the same way, ABCD area - AC2/2 Of the question, we know that: If AC - x units, we get PR - 2x units PQRS Zone/ABCD Zone - (PR2×2)/ (2×AC2) By substituting the PQRS/ABCD Zone value zone× Therefore, the ratio of the PQRS and ABCD square areas is 4:1×. 8. If the ratio of areas of two squares is 225:256, then the ratio of their perimeters is (a) 225:256(b) 256:225(c) 15:16(d) 16:15 Solution: Option (c) is the right answer. Think of ABCD and PQRS as the two squares. That the lengths on either side of the ABCD and PQRS are x and y. We know that sq area. ABCD/Area of sq. PQRS - x2/y2 So we get x2/y2- 225/256 Taking square roots on both sides, x/y - 15/16 Taking the ratio of their perimeters, we get sq perimeter. ABCD/Sq Primeter ×. ABCD)/ (4 × sq side. PQRS) - 4x/4y Removing common terms within the numerator and sq denominator perimeter. ABCD/Perimeter of sq. PQRS - x/ y So sq perimeter. ABCD/Perimeter of sq. PQRS - 15/16 Therefore, the ratio of their perimeters - 15: 16 9. If the sides of a square are halved, then its area (a) remains the same (b) becomes half (c) becomes a quarter (d) becomes double Solution: Option (c) is the right answer. Think of x as the side of the place. We know that the area of a square - Side × Side - x × x x2 If the sides are halved, we get a new side - x/2 So the new area - (x/2)2 x2/4 From that, we know that the area has become a quarter of its previous value. 10. A rectangular carpet has an area of 120 m2 and a perimeter of 46 meters. The length of its diagonal is (a) 15 m (b) 16 m(c) 17 m (d) 20 m Solution: Option (c) is the right answer. It is given this area of the rectangle - 120 m2 Perimeter of the rectangle - 46 m Consider l and b as length and width. Area of the rectangle - l × b - 120 m2 Perimeter of the rectangle - 2 (l - b) - 46 So we get (l - b) - 46/2 - 23 m Length of the rectangle diagonal - l2 - b2 It can be written as (l2 - b2) - (l b) 2 - 2 (l × b) By replacing them values (l2 - b2) - (23)2 - 2 (120) - 529 - 240 - 289 Adding square roots on both sides Length of the rectangle's diagonal - √l2 - b2 - √289 - 17 m Therefore, the length of the rectangle's diagonal is 17 m. 11 years old. If the ratio between the length and perimeter of a rectangular parcel is 1:3, then the ratio between the length and width of the parcel is (a) 1:2(b) 2: 1(c) 3: 2(d) 2:3 Solution: Option (b) is the right answer. Given this rectangle length / Rectangle perimeter - 1/3 So we get l / (2l - 2b) - 1/3 By cross multiplication, we get: 3l - 2l - 2b On the additional calculation l '2b We get l /b ' 2/1 Therefore, the ratio of length and width width 2: 1. 12. If the diagonal length of a square is 20 cm, then its perimeter is (a) 10√2cm (b) 40 cm (c) 40√2cm (d) 200 cm Solution: Option (c) is the right answer. It is given that the length of the diagonal - 20 cm So, the length on the side of a square - Diagonal Length /√2 - 20/√2 - (2 × 10)/√2 We get length on the side of a square (√2 × √2 × 10)/√2 - 10√2 cm So, square perimeter - 4 × side - 4 ×10√2 - 40√2 cm

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