

Maharashtra Board Solutions Class 8-Maths

(Practice Set 15.2): Chapter 15- Area



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Maharashtra Board Solutions Class 8-Maths

(Practice Set 15.2): Chapter 15- Area

Class 8: Maths Chapter 15 solutions. Complete Class 8 Maths Chapter 15 Notes.

Maharashtra Board Solutions Class 8-Maths (Practice Set 15.2): Chapter 15- Area

Maharashtra Board 8th Maths Chapter 15, Class 8 Maths Chapter 15 solutions

Question 1.

Lengths of the diagonals of a rhombus are 15 cm and 24 cm, find its area.

Solution:

Lengths of the diagonals of a rhombus are 15 cm and 24 cm.

Area of a rhombus

$$= 12 \times \text{product of lengths of diagonals}$$

$$= 12 \times 15 \times 24$$

$$= 15 \times 12$$

$$= 180 \text{ sq.cm}$$

$\therefore$ The area of the rhombus is 180 sq. cm.

Question 2.

Lengths of the diagonals of a rhombus are 16.5 cm and 14.2 cm, find its area.

Solution:

Lengths of the diagonals of a rhombus are 16.5 cm and 14.2 cm.

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Area of a rhombus

= $12 \times$ product of lengths of diagonals

= $12 \times 16.5 \times 14.2$

= 16.5×7.1

= 117.15 sq cm

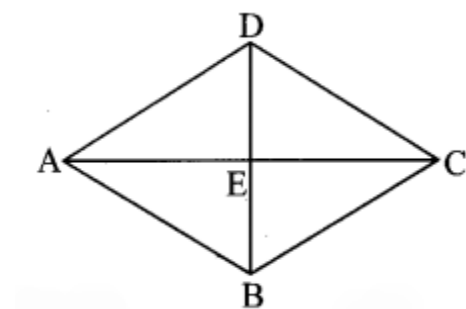
$\therefore$ The area of the rhombus is 117.15 sq. cm.

Question 3.

If perimeter of a rhombus is 100 cm and length of one diagonal is 48 cm, what is the area of the quadrilateral?

Solution:

Let $\square ABCD$ be the rhombus. Diagonals AC and BD intersect at point E.



$l(AC) = 48$ cm ... (i)

$l(AE) = \frac{1}{2}l(AC)$... [Diagonals of a rhombus bisect each other]

= 12×48 ... [From (i)]

= 24 cm ... (ii)

Perimeter of rhombus = 100 cm ... [Given]

Perimeter of rhombus = $4 \times$ side

$\therefore 100 = 4 \times l(AD)$

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$$\therefore l(AD) = 1004 = 25 \text{ cm} \dots(\text{iii})$$

In $\triangle ADE$,

$$m\angle AED = 90^\circ \dots[\text{Diagonals of a rhombus are perpendicular to each other}]$$

$$\therefore [l(AD)]^2 = [l(AE)]^2 + [l(DE)]^2 \dots [\text{Pythagoras theorem}]$$

$$\therefore (25)^2 = (24)^2 + l(DE)^2 \dots [\text{From (ii) and (iii)}]$$

$$\therefore 625 = 576 + l(DE)^2$$

$$\therefore l(DE)^2 = 625 - 576$$

$$\therefore l(DE)^2 = 49$$

$$\therefore l(DE) = \sqrt{49}$$

$\dots$ [Taking square root of both sides]

$$l(DE) = 7 \text{ cm} \dots(\text{iv})$$

$$l(DE) = 12l(BD) \dots[\text{Diagonals of a rhombus bisect each other}]$$

$$\therefore 7 = 12l(BD) \dots[\text{From (iv)}]$$

$$\therefore l(BD) = 7 \times 2$$

$$= 14 \text{ cm} \dots(\text{v})$$

Area of a rhombus

$$= 12 \times \text{product of lengths of diagonals}$$

$$= 12 \times l(AC) \times l(BD)$$

$$= 12 \times 48 \times 14 \dots [\text{From (i) and (v)}]$$

$$= 48 \times 7$$

$$= 336 \text{ sq.cm}$$

$\therefore$ The area of the quadrilateral is 336 sq.cm.

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Question 4.

If length of a diagonal of a rhombus is 30 cm and its area is 240 sq.cm, find its perimeter.

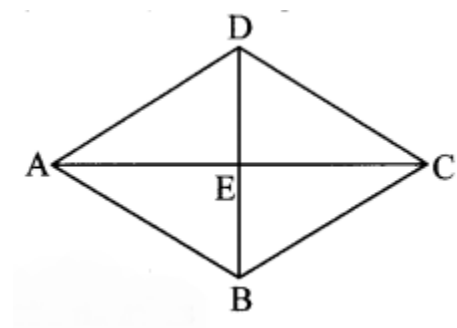
Solution:

Let $\square ABCD$ be the rhombus.

Diagonals AC and BD intersect at point E.

$$l(AC) = 30 \text{ cm} \dots(i)$$

$$\text{and } A(\square ABCD) = 240 \text{ sq. cm} \dots(ii)$$



Area of the rhombus = $12 \times$ product of lengths of diagonal

$$\therefore 240 = 12 \times l(AC) \times l(BD) \dots[\text{From (ii)}]$$

$$\therefore 240 = 12 \times 30 \times l(BD) \dots[\text{From (i)}]$$

$$\therefore l(BD) = 240 \div 360$$

$$\therefore l(BD) = 8 \times 2 = 16 \text{ cm} \dots(iii)$$

Diagonals of a rhombus bisect each other.

$$\therefore l(AE) = \frac{1}{2}l(AC)$$

$$= \frac{1}{2} \times 30 \dots [\text{From (i)}]$$

$$= 15 \text{ cm} \dots(iv)$$

$$\text{and } l(DE) = \frac{1}{2}l(BD)$$

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$$= 12 \times 16$$

$$= 8 \text{ cm}$$

In $\triangle ADE$,

$$m\angle AED = 90^\circ$$

...[Diagonals of a rhombus are perpendicular to each other]

$$\therefore [l(AD)]^2 = [l(AE)]^2 + [l(DE)]^2$$

...[Pythagoras theorem]

$$\therefore l(AD)^2 = (15)^2 + (8)^2 \dots [\text{From (iv) and (v)}]$$

$$= 225 + 64$$

$$\therefore l(AD)^2 = 289$$

$$\therefore l(AD) = \sqrt{289}$$

...[Taking square root of both sides]

$$\therefore l(AD) = 17 \text{ cm}$$

Perimeter of rhombus = $4 \times \text{side}$

$$= 4 \times l(AD)$$

$$= 4 \times 17$$

$$= 68 \text{ cm}$$

$\therefore$ The perimeter of the rhombus is 68 cm.



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Class 8 Maths

- Chapter 1- Rational and Irrational Numbers (Practice Set 1.1)
- Chapter 1- Rational and Irrational Numbers (Practice Set 1.2)
- Chapter 1- Rational and Irrational Numbers (Practice Set 1.3)
- Chapter 1- Rational and Irrational Numbers (Practice Set 1.4)
- Chapter 2- Parallel Lines and Transversals (Practice Set 2.1)
- Chapter 2- Parallel Lines and Transversals (Practice Set 2.2)
- Chapter 2- Parallel Lines and Transversals (Practice Set 2.3)
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- Chapter 4- Altitudes and Medians of a Triangle (Practice Set 4.1)
- Chapter 5- Expansion Formulae (Practice Set 5.1)
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- Chapter 7- Variation (Practice Set 7.2)
- Chapter 7- Variation (Practice Set 7.3)
- Chapter 8- Quadrilateral: Constructions and Types (Practice Set 8.1)
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- Chapter 9- Discount and Commission (Practice Set 9.1)
- Chapter 9- Discount and Commission (Practice Set 9.2)
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- Chapter 13- Congruence of Triangles (Practice Set 13.1)
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- Chapter 14- Compound Interest (Practice Set 14.1)
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- Chapter 15- Area (Practice Set 15.1)
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- Chapter 15- Area (Practice Set 15.3)
- Chapter 15- Area (Practice Set 15.4)
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- Chapter 16- Surface Area and Volume (Practice Set 16.1)

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- Chapter 16- Surface Area and Volume (Practice Set 16.2)
- Chapter 16- Surface Area and Volume (Practice Set 16.3)
- Chapter 17- Factorisation of Algebraic Expressions (Practice Set 17.1)
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About About Maharashtra State Board (MSBSHSE)

The Maharashtra State Board of Secondary and Higher Secondary Education or MSBSHSE (Marathi: महाराष्ट्र राज्य माध्यमिक आणि उच्च माध्यमिक शिक्षण मंडळ), is an **autonomous and statutory body established in 1965**. The board was amended in the year 1977 under the provisions of the Maharashtra Act No. 41 of 1965.

The Maharashtra State Board of Secondary & Higher Secondary Education (MSBSHSE), Pune is an independent body of the Maharashtra Government. There are more than 1.4 million students that appear in the examination every year. The Maha State Board conducts the board examination twice a year. This board conducts the examination for SSC and HSC.

The Maharashtra government established the Maharashtra State Bureau of Textbook Production and Curriculum Research, also commonly referred to as Ebalbharati, in 1967 to take up the responsibility of providing quality textbooks to students from all classes studying under the Maharashtra State Board. MSBHSE prepares and updates the curriculum to provide holistic development for students. It is designed to tackle the difficulty in understanding the concepts with simple language with simple illustrations. Every year around 10 lakh students are enrolled in schools that are affiliated with the Maharashtra State Board.

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FAQs

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As of now, the MSCERT and Balbharti are responsible for the syllabus and textbooks of Classes 1 to 8, while Classes 9 and 10 are under the Maharashtra State Board of Secondary and Higher Secondary Education (MSBSHSE).

How many state boards are there in Maharashtra?

The Maharashtra State Board of Secondary & Higher Secondary Education, conducts the HSC and SSC Examinations in the state of Maharashtra through its nine Divisional Boards located at Pune, Mumbai, Aurangabad, Nasik, Kolhapur, Amravati, Latur, Nagpur and Ratnagiri.

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