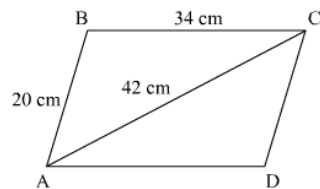




### Heron's Formula Ex 12.2 Q11

**Answer :**

We are given the measure of adjacent sides of a parallelogram AB and BC that is the sides having same point of origin and the diagonal AC which divides parallelogram ABCD into two congruent triangles ABC and ADC.



Area of triangle ABC is equal to Area of triangle ADC as they are congruent triangles.

Area of parallelogram ABCD, say  $A$  is given by

$$A = 2 \times \text{Area of triangle ABC}$$

The area of a triangle having sides  $a$ ,  $b$ ,  $c$  and  $s$  as semi-perimeter is given by,

$$A = \sqrt{s(s-a)(s-b)(s-c)}, \text{ where}$$

$s = \frac{a+b+c}{2}$  Therefore the area of a triangle, say  $A_1$  having sides 20 cm, 34 cm and 42 cm is given by

$$a = 20 \text{ cm}; b = 34 \text{ cm}; c = 42 \text{ cm}$$

$$s = \frac{a+b+c}{2}$$

$$s = \frac{20+34+42}{2}$$

$$s = \frac{96}{2}$$

$$s = 48 \text{ cm}$$

$$A_1 = \sqrt{48(48-20)(48-34)(48-42)}$$

$$A_1 = \sqrt{48(28)(14)(6)}$$

$$A_1 = \sqrt{112896}$$

$$A_1 = 336 \text{ cm}^2$$

Area of parallelogram ABCD, say  $A$  is given by

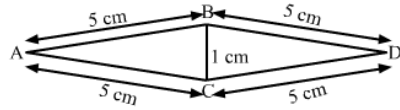
$$A = 2 \times A_1$$

$$A = 2 \times 336$$

$$\boxed{A = 672 \text{ cm}^2}$$

### Heron's Formula Ex 12.2 Q12

Answer :



The blades of the magnetic compass are forming a rhombus having all equal sides measuring 5 cm each. A diagonal measuring 1 cm is given which is forming the triangular shape of the blades of the magnetic compass and dividing the rhombus into two congruent triangles, say triangle ABC and triangle DBC having equal dimensions.

The area of a triangle having sides  $a$ ,  $b$ ,  $c$  and  $s$  as semi-perimeter is given by,

$$A = \sqrt{s(s-a)(s-b)(s-c)}, \text{ where}$$

$$s = \frac{a+b+c}{2}$$

Therefore the area of a triangle ABC, say  $A_1$  having sides 5 cm, 5 cm and 1 cm is given by:

$$a = 5 \text{ cm}; b = 5 \text{ cm}; c = 1 \text{ cm}$$

$$s = \frac{a+b+c}{2}$$

$$s = \frac{5+5+1}{2}$$

$$s = \frac{11}{2}$$

$$s = 5.5 \text{ cm}$$

$$A_1 = \sqrt{5.5(5.5-5)(5.5-5)(5.5-1)}$$

$$A_1 = \sqrt{5.5(0.5)(0.5)(4.5)}$$

$$A_1 = \sqrt{6.1875}$$

$$A_1 = 2.49 \text{ cm}^2$$

Area of blades of magnetic compass, say  $A$  is given by

$$A = 2 \times \text{Area of one of triangle ABC}$$

$$A = 2 \times A_1$$

$$A = 2 \times 2.49$$

$$\boxed{A = 4.98 \text{ cm}^2}$$

\*\*\*\*\* END \*\*\*\*\*