

Workout

1. Choose the correct option.

a) Find the height of a trapezium whose area is 420 sq. cm and the sum of the lengths of its parallel sides is 30 cm.

- i. 13 cm ii. 15 cm
iii. 30 cm iv. 28 cm

b) The area of a rhombus whose diagonals are 10 cm and 20 cm is equal to:

- i. 130 sq. cm ii. 100 sq. cm
iii. 126 sq. cm iv. 14 sq. cm

c) The area of a square field is 6,400 sq. cm. Find out the length of its side in metres.

- i. 180 m ii. 0.8 m
iii. 0.18 m iv. 18 m

d) The volume of a cube of edge 6 cm is:

- i. 36 cm^3 ii. 216 cm^3
iii. 144 cm^3 iv. 212 cm^3

e) The lateral surface area of a cuboid is given by: (l = length, b = breadth, h = height)

- i. $2(lb + bh + bl)$ ii. $2(hl + hb)$
iii. lbh iv. $2(lb + hl)$

f) The volume of a right circular cylinder is given by:

- i. $\pi r^2 h$ ii. $\pi r h$
iii. $2\pi r h$ iv. $2\pi r h^2$

g) The volume of a cuboid of length 18 cm, breadth 9 cm and height 5 cm is:

- i. 900 cm^3 ii. 850 cm^3
iii. 820 cm^3 iv. 810 cm^3

h) The number of cubes of edge 3 cm that can fit inside a cube of edge 9 cm is:

- i. 26 ii. 27 iii. 28 iv. 29

2. The lengths of the two diagonals of a rhombus are in the ratio 4 : 5. If the area of the rhombus is 810 sq. m, find the length of each diagonal.

3. Find the area of the polygon in Fig. 14.29.

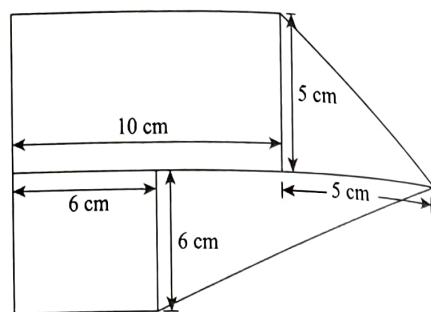


Fig. 14.29

4. In Fig. 14.30, calculate:

- a) the length of AB
b) area of trapezium ABCD
c) area of $\triangle BCD$

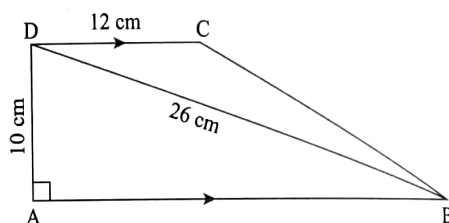


Fig. 14.30

5. The ratio of the length of parallel sides of a trapezium is 2 : 3. The distance between them is 16 cm. If the area of the trapezium is 320 sq. cm, find the lengths of the parallel sides.

6. A manufacturing company has a logo as shown in Fig. 14.31. It has blue colour in the centre and red colour around it. Which coloured portion has the greater area?

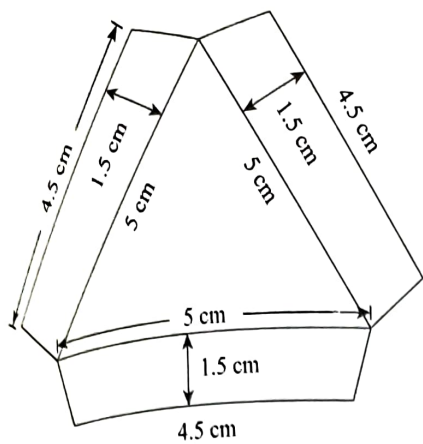


Fig. 14.31

The trapezium given in Fig. 14.32 has been transformed to a rectangle by rearranging the two triangles from the sides as shown. Find the:

- area of the original trapezium.
- area of the rectangle formed.
- length of the rectangle formed.

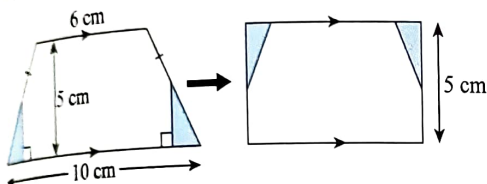


Fig. 14.32

The rhombus given in Fig. 14.33 has been transformed to a rectangle by rearranging the shaded parts of the rhombus as shown. Find the:

- length of the rectangle.
- breadth of the rectangle.
- area of the rectangle.
- area of the rhombus.

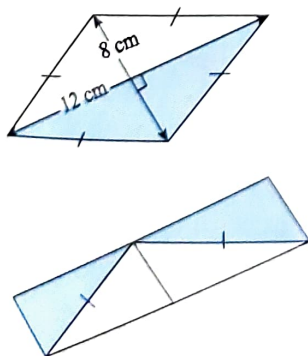


Fig. 14.33

9. In Fig. 14.34, the kite has been split into two triangles. Find the height of both the triangles. The two triangles are then rearranged to form a rectangle as shown. What are the dimensions of the rectangle so formed? Also, find the area of the kite.

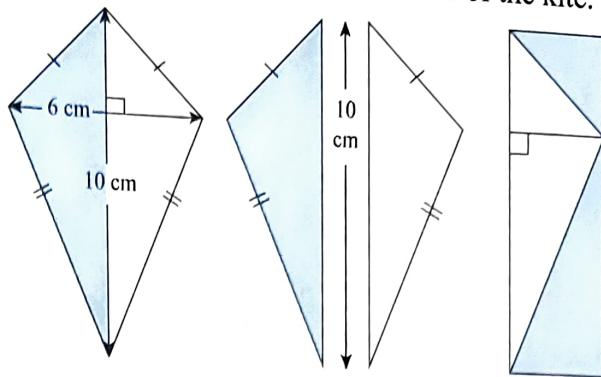


Fig. 14.34

- The volume of a cube is 5832 cu. cm. Find the length of its edge.
- A brick has a cubical shape with an edge of length 45 cm. How many such bricks can fit in a room having length 4.5 m, breadth 2.7 m and height 1.8 m?
- A reservoir in the shape of a right circular cylinder is to contain 79,200 L of water. If the radius of the cylinder is 3 m, find its height.
- How much soil needs to be dug out to make a well of height 7 m and diameter 2 m?
- Find the area covered by a roller of diameter 2.1 m and length 4 m in one revolution.
- A rectangular piece of paper of length 44 cm and breadth 20 cm is to be rolled along its length, to form a right circular cylinder. Find the volume of the cylinder formed.
- The circumference of a right circular cylinder is 77 cm. Find the total surface area if its height is 1.2 m.

Competency Based Questions

Case-Study Based Questions

1. A community wants to extend their swimming pool to accommodate more visitors. The current pool is in cuboidal shape with length 25 metres and breadth 10 metres. The plan is to extend the length of the pool by another 10 metres.

Based on the above information, answer the following questions:

- Calculate the new area of the floor of the swimming pool after the extension.
 - How many tiles of size 50 cm by 50 cm will be required to cover the floor of the new pool?
 - What would be the increase in volume, in litres, if the depth of the pool remains 2 m after the extension? (1 cubic metre = 1000 litres)
 - What is the lateral surface area of the swimming pool?
2. Due to shortage of water in a village, the villagers decided to dig a cylindrical well. They dug out a well whose circumference is 13.2 m and depth is 10 m. (Take $\pi = \frac{22}{7}$.)

Based on the above information, answer the following questions:

- What is the radius of the well?
- Find the volume of the well.
- If the inner wall of the well has to be plastered, find the area that needs to be plastered.
- Find the cost of plastering the inner wall of the well if the cost of plastering 1 sq. m is ₹12.

Assertion-Reason Based Questions

Each question consists of two statements, namely, Assertion (A) and Reason (R). To select the correct answer, use the following code:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
- Assertion (A) is true and Reason (R) is false.
- Assertion (A) is false and Reason (R) is true.

1. **Assertion (A):** The ratio of the volumes of two cylinders with the same radius and heights h_1 and h_2 is $h_1 : h_2$.

Reason (R):
$$\frac{\text{Volume of cylinder 1}}{\text{Volume of cylinder 2}} = \frac{\pi r^2 h_1}{\pi r^2 h_2} = \frac{h_1}{h_2} = h_1 : h_2$$

2. **Assertion (A):** Curved surface area of a cylinder = Circumference of the circular base $\times$ Height

Reason (R): For any uniform 3-D shape, the lateral surface area can be calculated by multiplying the area of the base with the height.