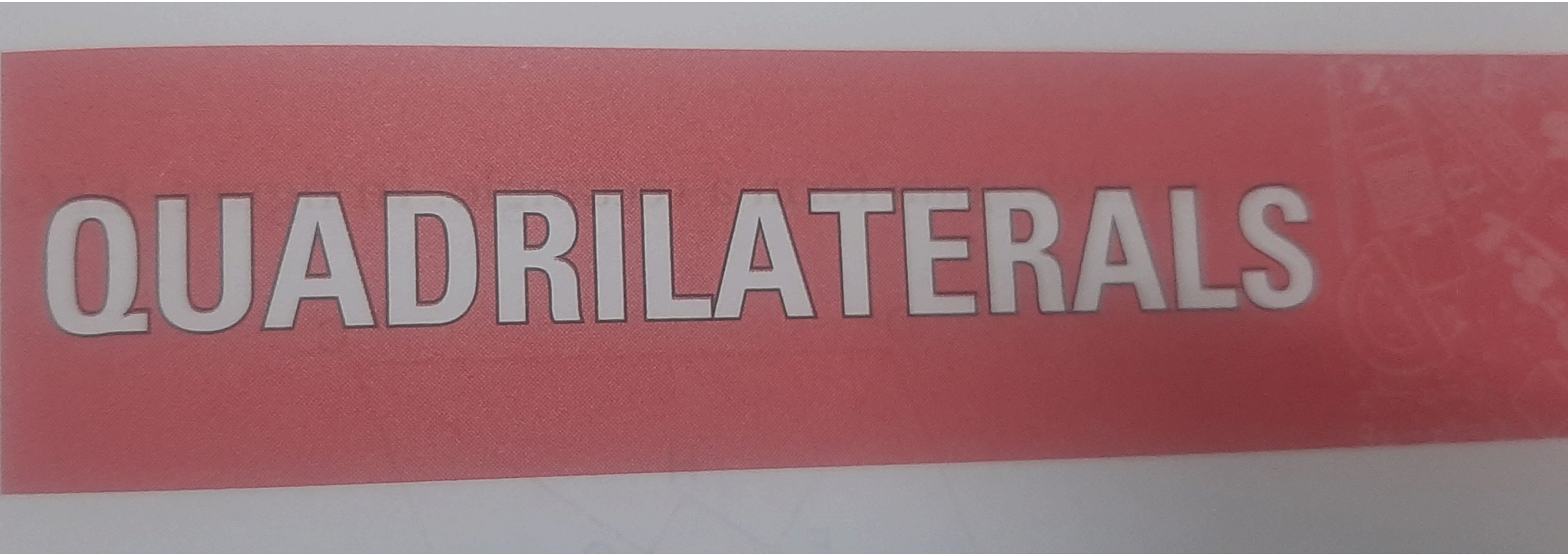
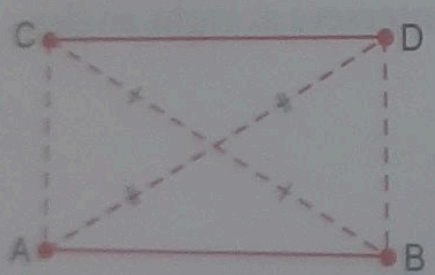
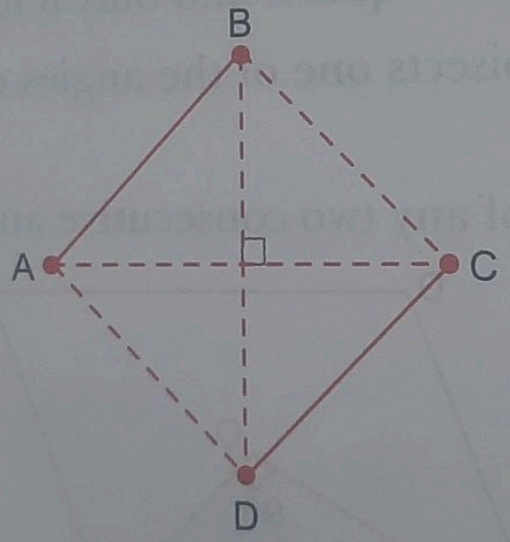

QUADRILATERALS

CASE-BASED QUESTIONS

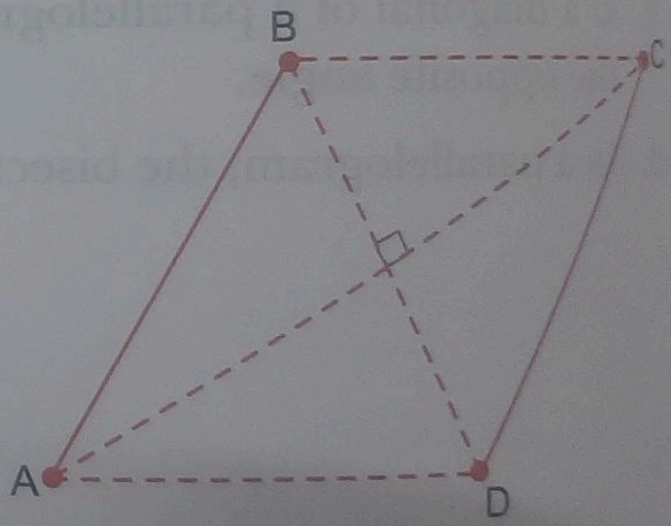
1. A child had two sticks of equal length. He named them AB and CD. Then he placed these tw sticks in three different manners. Then he joined the four vertices.



(i)



(ii)



(iii)

Based on above information answer the following questions.

(*i*) What type of quadrilateral is formed in figure (*i*)?

(*ii*) What is the sum of consecutive angles of a parallelogram?

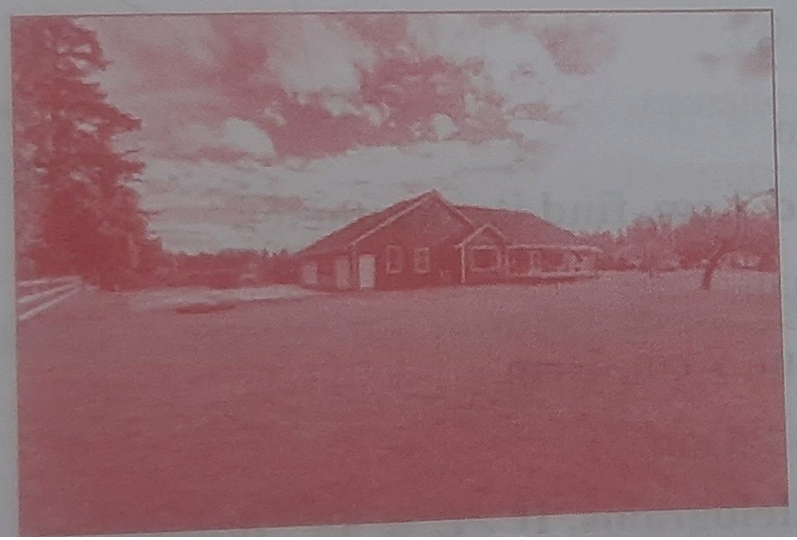
(*iii*) If $\angle BAD = 70°$ in figure (*iii*) then what is the measure of $\angle CDA$?

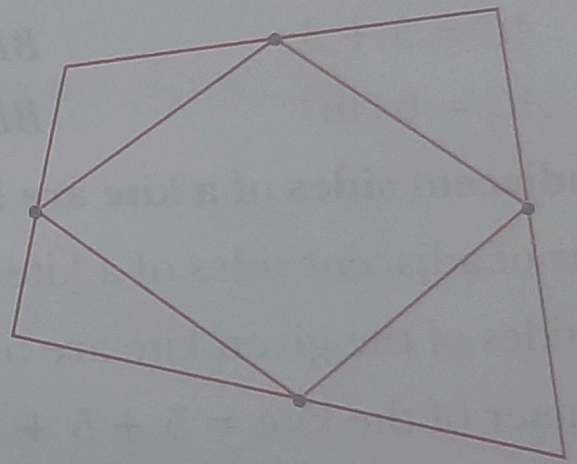
(*iv*) Name the quadrilateral formed by joining the mid points of the sides of any quadrilateral *ABCD*.

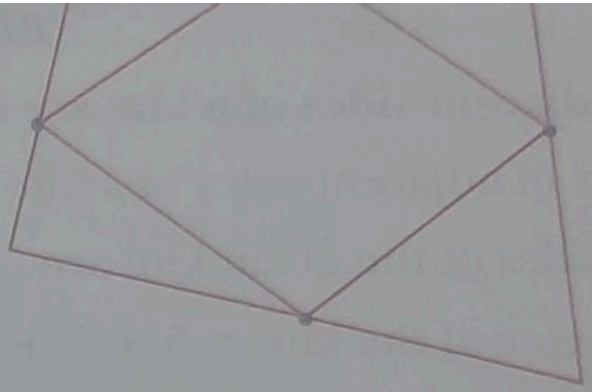
(*v*) Three angles of a quadrilateral are equal and fourth angle measures 60°. Find the measure of each of the equal angles.

$$\Rightarrow \quad x^\circ = \frac{300^\circ}{3} = 100^\circ$$

2. Manish had a plot of land in the shape of a quadrilateral. He constructed his house in the middle by joining the mid points of the four sides of the land and used the four portions at the four ends for different purposes.







Based on above information answer the following questions.

(*i*) **What is the shape of land on which Manish constructed his house?**

(*ii*) **What are the lengths of adjacent sides of a parallelogram if their ratio is 1 : 2 and its perimeter is 180 m?**

(*iii*) **What type of quadrilateral is it if its all angles are equal?**

(*iv*) **In a parallelogram $PQRS$, if $\angle PSQ = 30°$ and $\angle QRS = 110°$ then find $\angle SQP$.**

(*v*) **What is the measure of angle formed by bisector of any two adjacent angles of a Parallelogram?**

CIRCLES

CASE-BASED QUESTIONS

1. A Ferris wheel is an amusement ride consisting of a rotating upright wheel attached to the rim in such a way that as the wheel turns, they are kept upright, usually by gravity.

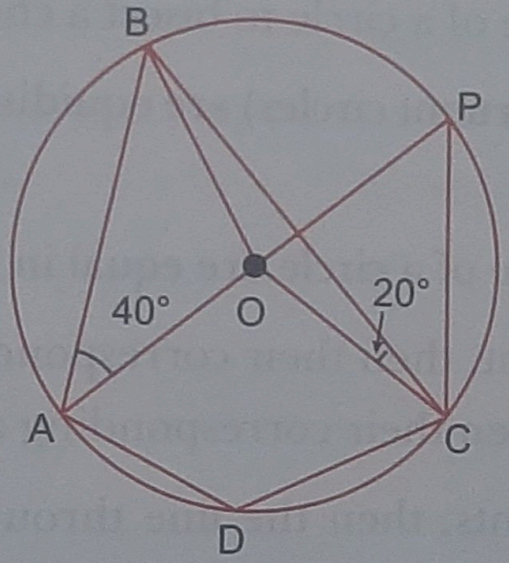
Based on above information answer the following questions.

(*i*) If a circle is divided into 20 equal parts then what is the angle subtended by each arc at the centre?

Based on above information answer the following questions.

(*i*) **If a circle is divided into 20 equal parts then what is the angle subtended by each arc at the centre?**

Look at the figure given below.



(*ii*) **What is the measure of $\angle ABC$?**

(*iii*) **What is the measure of $\angle AOC$?**

(*iv*) **What is the measure of $\angle ADC$?**

(*v*) **What is the measure of $\angle APC$?**

$\frac{360°}{\quad} = 18°$

2. Rangoli hold a significant role in everyday life of a Hindu household. It has different names based on the state and culture. It represents happiness, positivity and liveliness of a household. Kajal made two rangoli in front of her house. She started one with a circle of diameter 50 cm and made triangles as shown in the figure (II). In another circle, she drew one isosceles triangle as shown in figure (III).

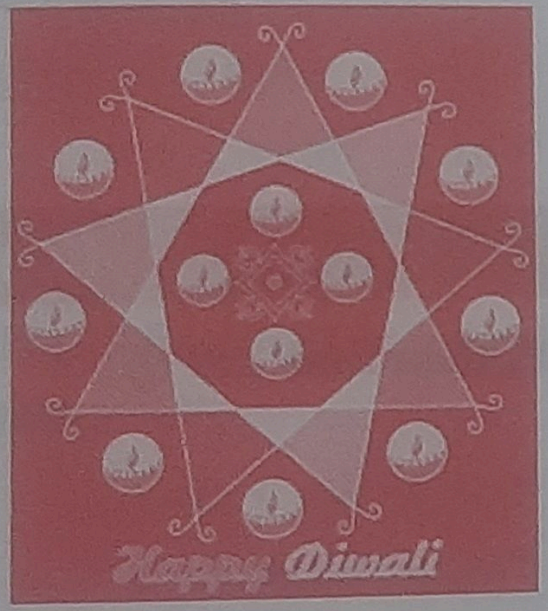


Fig. I

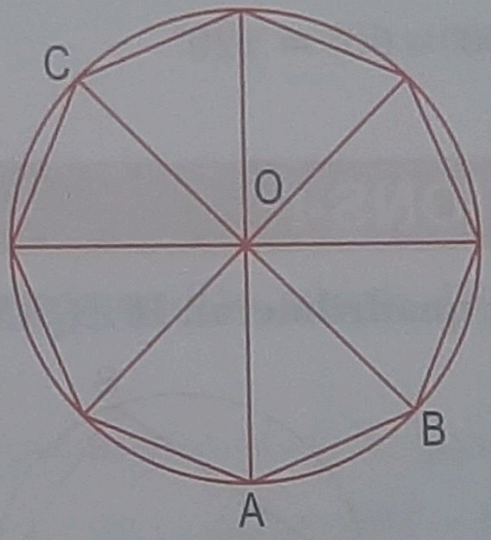


Fig. II

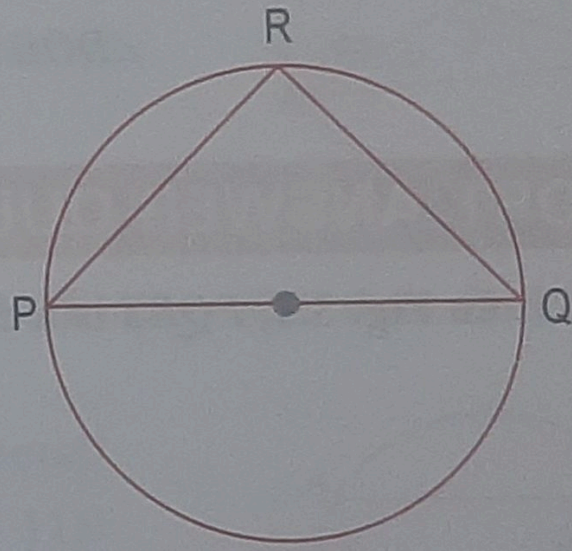


Fig. III

Fig. I

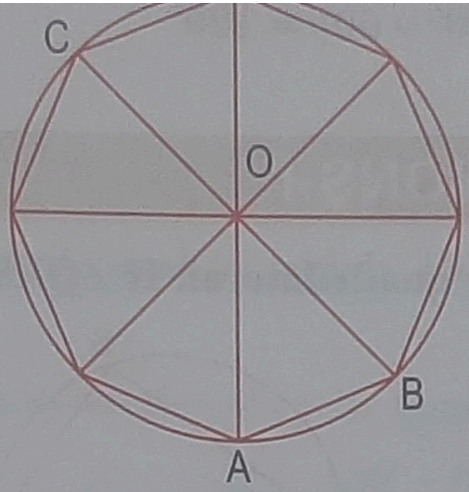


Fig. II

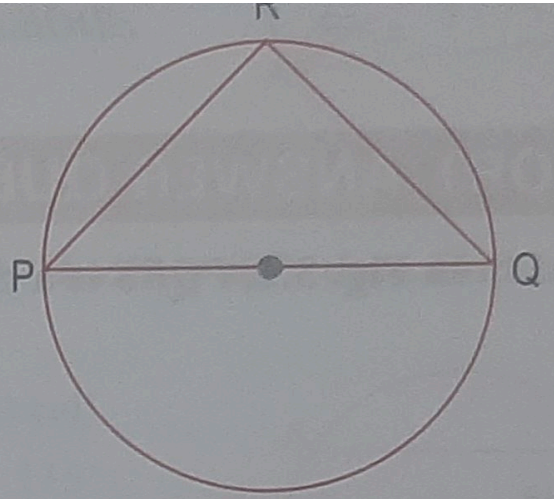


Fig. III

Based on above information answer the following questions.

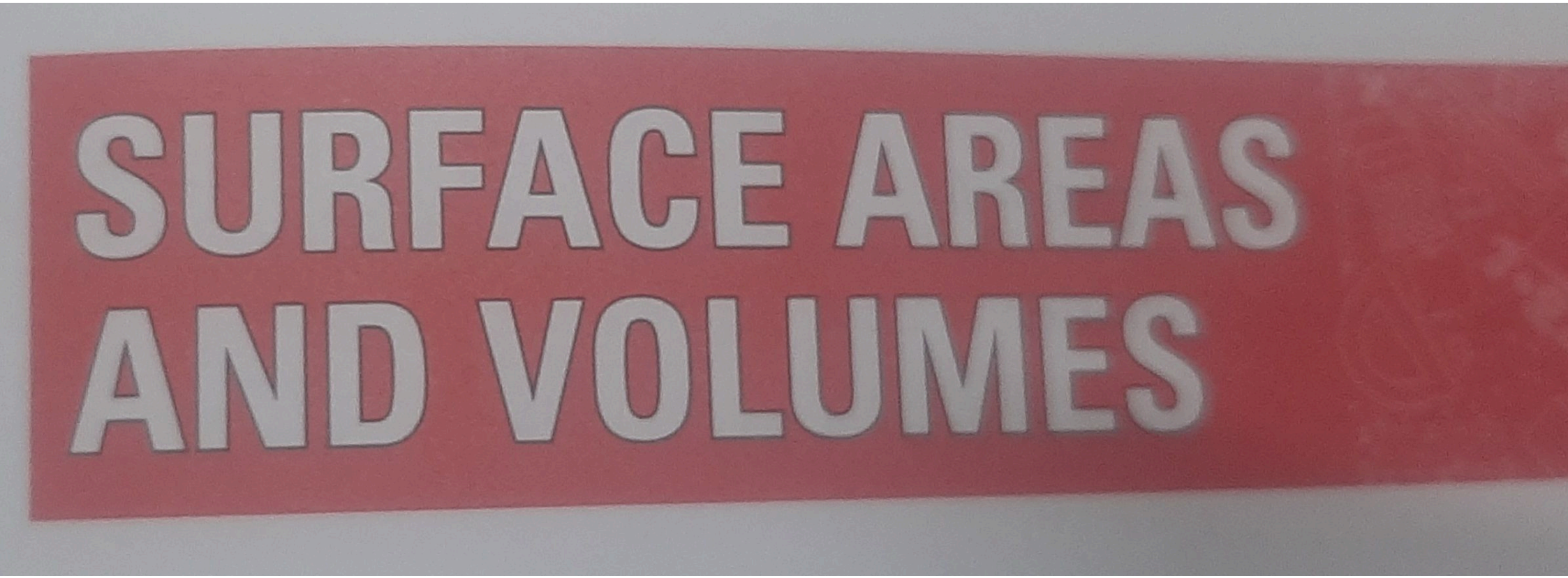
(*i*) **If Kajal divides the circle into 8 equal parts. What will be the angle subtended by each arc at the centre?**

(*ii*) **In fig II, if length of the chord *AB* of the circle is 40 cm. What is its distance from the centre?**

(*iii*) **In fig III, if *PQ* is the diameter of the circle, then what is the measure of $\angle PRQ$?**

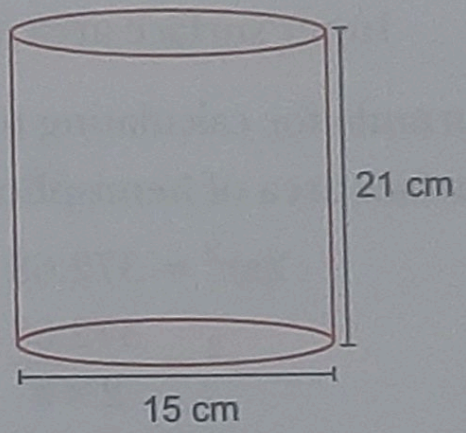
(*iv*) **In fig III, if *PQR* is an isosceles triangle then what is the measure of $\angle RPQ$?**

(*v*) **If an equilateral triangle *DEF* is inscribed in a circle with centre *O*, then what is the measure of $\angle DOE$?**


SURFACE AREAS
AND VOLUMES

CASE-BASED QUESTIONS

1. Sweety bought an oil can from the market, cylindrical in shape with height 21 cm and diameter of the base 15 cm. She poured the oil in a small empty can that she already had.



Based on above information answer the following questions.

(*i*) **Which formula should be used to calculate the amount of oil in the can?**

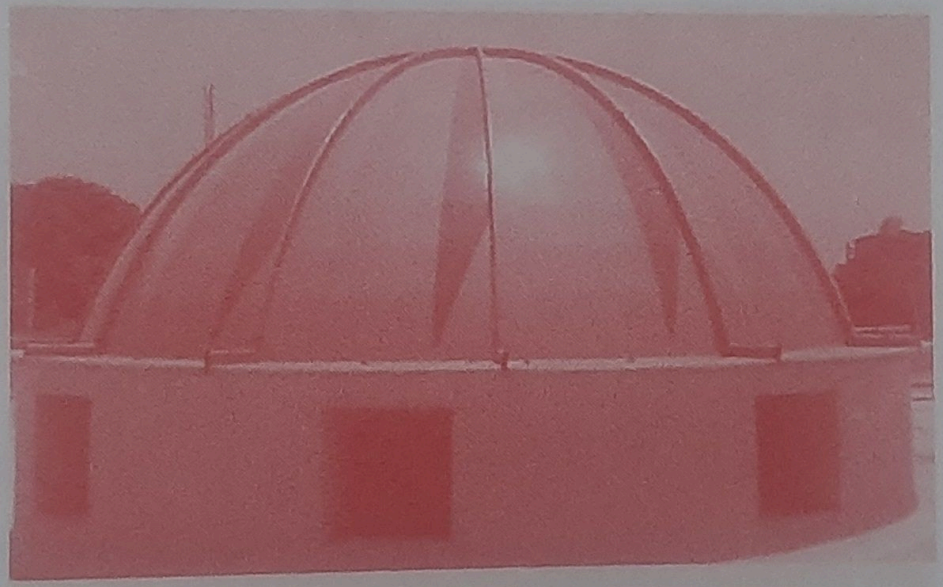
(*ii*) **Calculate the capacity of the can which Sweety bought from the market.**

(*iii*) **If one-fifth of the oil in the bigger can filled the smaller can completely, what is the volume of smaller can?**

(*iv*) **Calculate the curved surface area of the bigger can.**

(*v*) **Find the total surface area of a sphere of radius $3a$ unit.**

2. The dome of Rajesh's house is in the form of a hemisphere. He got it whitewashed at the rate of ₹15 per square cm and paid ₹5,590.20 in all for painting the dome.



Based on above information answer the following questions.

(*i*) **What is the inner surface area of hemispherical dome?**

(*ii*) **What is the formula for calculating total surface area of hemisphere?**

(*iii*) **What is the radius of hemispherical dome?**

(*iv*) **By what formula can we calculate the volume inside the dome?**

(*v*) **If a cube and a sphere have same height, what will be the ratio of their volumes?**

$= 21 : 11$

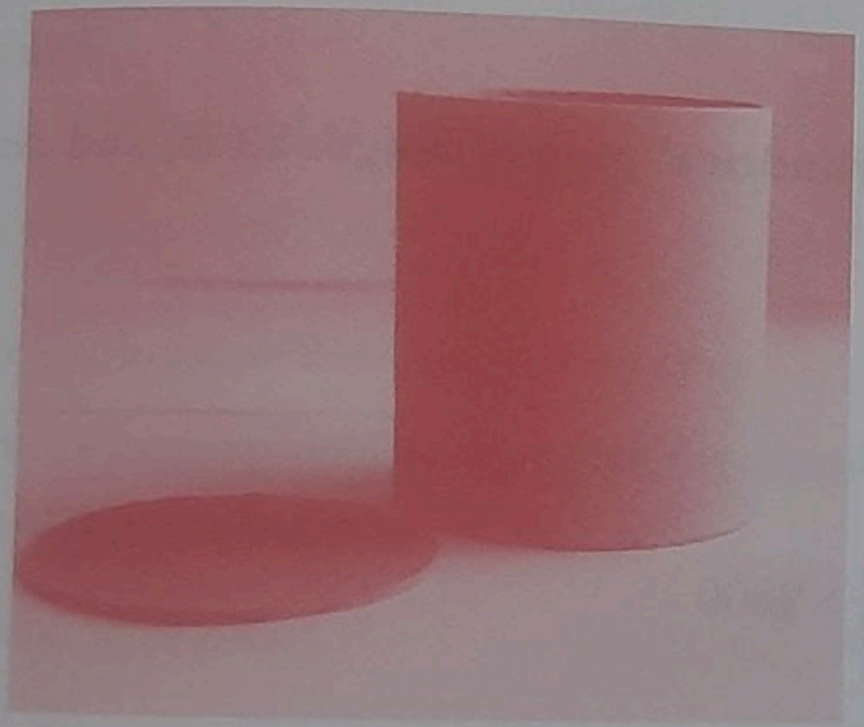
3. Feeding birds is always a pleasing task. To give water to free birds, Anuj planned to make a bird water feeder to be kept in his bolcony. He made a rectangular open box for this purpose having dimensions 40 cm × 30 cm × 20 cm.

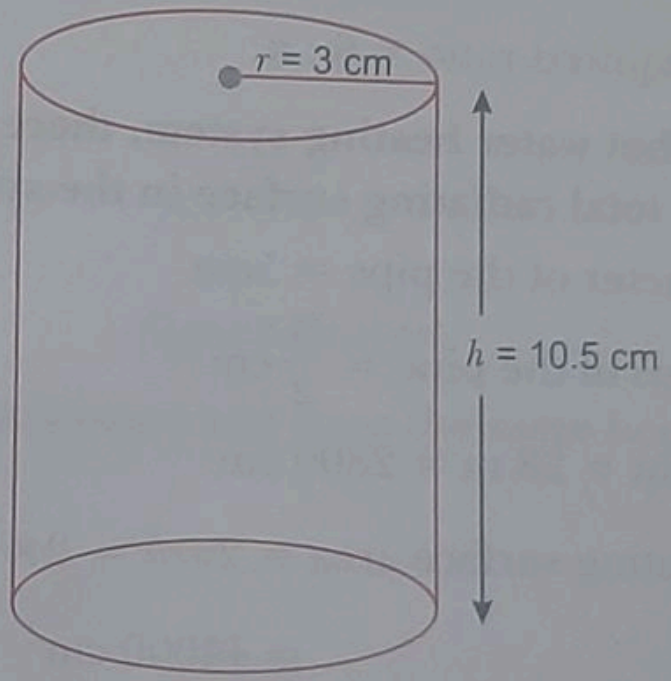
Based on above information answer the following questions.

(i) What is the volume of water that the container can hold?

(ii) Calculate the surface area of container to be painted.

4. In a maths activity, students of class IX were given an activity to make a cylinder shaped pen-holder with base of radius 3 cm and height 10.5 cm. The school has to supply cardboard to students for this project.





Based on above information answer the following questions.

(i) **What is the area of cardboard required for one project?**

(ii) **If there are 35 students in the class how much cardboard is required in total?**

(iii) **What is the formula to calculate total surface area of a cylinder?**

(iv) **What will be the curved surface area of the pen holder?**

(v) **What will be the total surface area of a cylinder of radius 3 cm and height 10.5 cm?**