# Shapes and Circle Theorems – Section Test (Answers)

1)

There are two faces with dimensions 3 cm and 5 cm, which each have area 15 cm².
There are two faces with dimensions 3 cm and 8 cm, which each have area 24 cm².
There are two faces with
dimensions 5 cm and 8 cm, which each have area 40 cm².

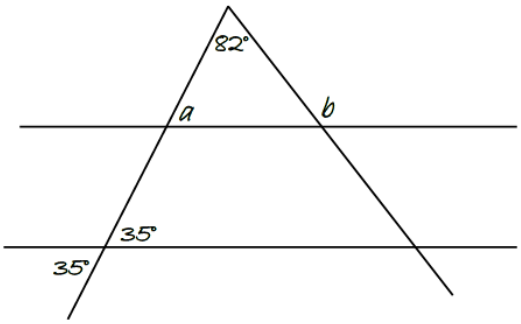
$$\text{Total surface area} = 2(15 + 24 + 40)$$
$$= 2 \times 79$$
$$= 158 \text{ cm}^2$$

2)

Using Pythagoras' theorem: $x^2 + 7^2 = 12^2$

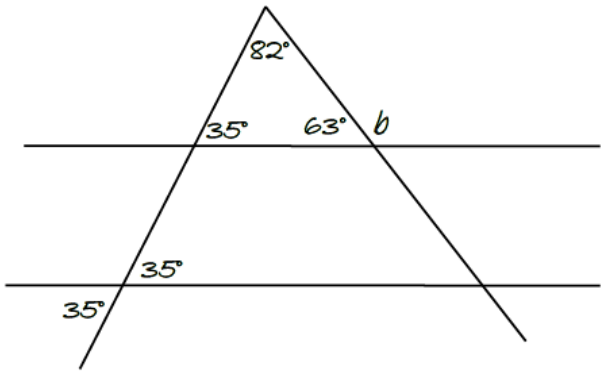
$$x^2 + 49 = 144$$
$$x^2 = 95$$
$$x = 9.75 \text{ cm (3 s.f.)}$$

3)




The angle vertically opposite the 35° angle is also 35°. Angle a is the corresponding angle to this, so $a = 35°$.

4)




Using angles in a triangle, the third angle in the triangle is 63°.
Using angles on a straight line, $b = 117°$.

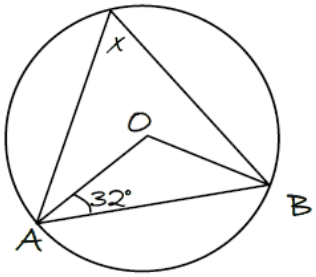
5)

An octagon (8 sides) can be divided into 6 triangles.

Total of internal angles $= 6 \times 180^\circ = 1080^\circ$

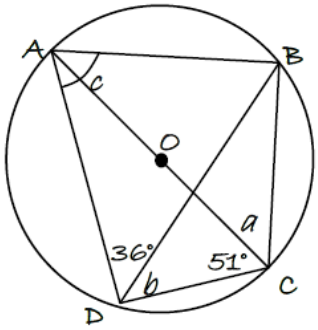
For a regular octagon, internal angle $= \frac{1080^\circ}{8} = 135^\circ$

6)




Since OA and OB are both radii, triangle OAB is isosceles, so angle OBA = 32° and therefore angle AOB = 116° (angles in a triangle).
Since the angle subtended at the circumference is half the angle at the centre, x = 58°.

7)




Angle a and the 36° angle are both subtended by chord AB, so they are equal.
So a = 36°.

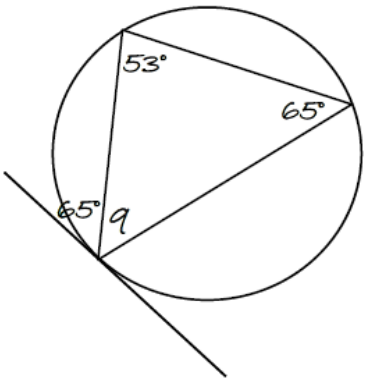
8)

Since AC is a diameter, the angle at D is 90°. So 36° + b = 90°
So b = 54°.

9)

The angle at C is 51° + a = 51° + 36° = 87°.
Since ABCD is a cyclic quadrilateral, the sum of the angles at A and C is 180°. So
87° + c = 180°
so c = 93°.

10)




Using the alternate segment theorem, the third angle in the triangle is 65°.
Angles in a triangle add up to 180°, so 53° + 65° + q = 180°
so q = 62°.