

# 2D Shapes

## Perimeters & Areas

### Question Paper 4

|            |  |
|------------|--|
| Level      | IGCSE                                      |
| Subject    | Maths (0580)                               |
| Exam Board | Cambridge International Examinations (CIE) |
| Paper Type | Extended                                   |
| Topic      | Mensuration (Perimeters, Areas & Volumes)  |
| Sub-Topic  | 2D Shapes: Perimeters & Areas              |
| Booklet    | Question Paper 4                           |

**Time Allowed:** 59 minutes

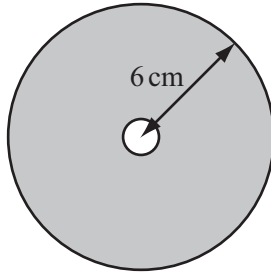
**Score:** /49

**Percentage:** /100

**Grade Boundaries:**

|      |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|------|
| A*   | A   | B   | C   | D   | E   | U    |
| >85% | 75% | 60% | 45% | 35% | 25% | <25% |

1



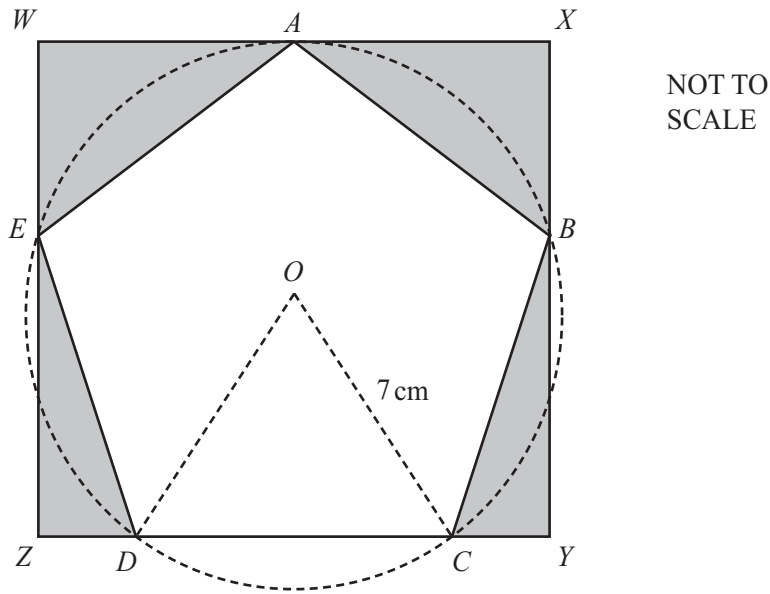
NOT TO  
SCALE

The diagram shows a circular disc with radius 6 cm.  
In the centre of the disc there is a circular hole with radius 0.5 cm.

Calculate the area of the shaded section.

Answer ..... cm<sup>2</sup> [3]

2



The vertices  $A, B, C, D$  and  $E$  of a regular pentagon lie on the circumference of a circle, centre  $O$ , radius  $7\text{ cm}$ .

They also lie on the sides of a rectangle  $WXYZ$ .

(a) Show that

(i) angle  $DOC = 72^\circ$ ,

*Answer(a)(i)*

[1]

(ii) angle  $DCB = 108^\circ$ ,

*Answer(a)(ii)*

[2]

(iii) angle  $CBY = 18^\circ$ .

*Answer(a)(iii)*

[1]

- (b) Show that the length  $CD$  of one side of the pentagon is 8.23 cm correct to three significant figures.

*Answer(b)*

- (c) Calculate

[3]

- (i) the area of the triangle  $DOC$ ,

*Answer(c)(i)* .....  $\text{cm}^2$  [2]

- (ii) the area of the pentagon  $ABCDE$ ,

*Answer(c)(ii)* .....  $\text{cm}^2$  [1]

- (iii) the area of the sector  $ODC$ ,

*Answer(c)(iii)* .....  $\text{cm}^2$  [2]

- (iv) the length  $XY$ .

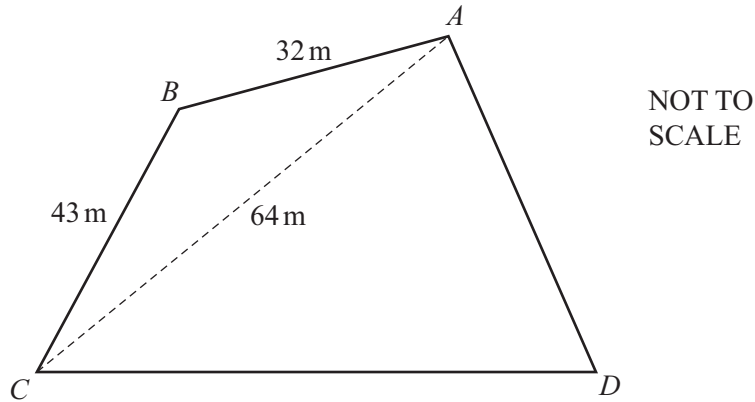
*Answer(c)(iv)* ..... cm [2]

- (d) Calculate the ratio  
area of the pentagon  $ABCDE$  : area of the rectangle  $WXYZ$ .

Give your answer in the form 1 :  $n$ .

*Answer(d)* 1 : ..... [5]

3



The diagram represents a field in the shape of a quadrilateral  $ABCD$ .  
 $AB = 32$  m,  $BC = 43$  m and  $AC = 64$  m.

- (a) (i) Show clearly that angle  $CAB = 37.0^\circ$  correct to one decimal place.

*Answer(a)(i)*

[4]

- (ii) Calculate the area of the triangle  $ABC$ .

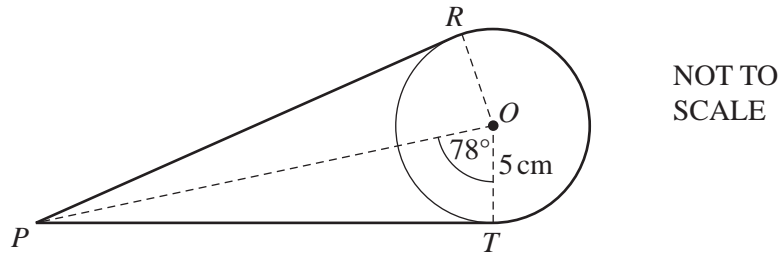
*Answer(a)(ii)* .....  $\text{m}^2$  [2]

- (b)  $CD = 70$  m and angle  $DAC = 55^\circ$ .

Calculate the perimeter of the whole field  $ABCD$ .

*Answer(b)* ..... m [6]

4



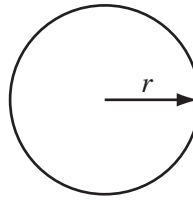
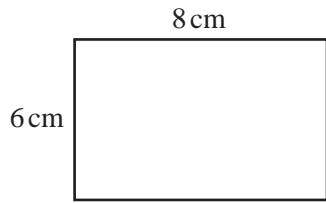
$R$  and  $T$  are points on a circle, centre  $O$ , with radius  $5\text{ cm}$ .  
 $PR$  and  $PT$  are tangents to the circle and angle  $POT = 78^\circ$ .

A thin rope goes from  $P$  to  $R$ , around the major arc  $RT$  and then from  $T$  to  $P$ .

Calculate the length of the rope.

Answer ..... cm [6]

5



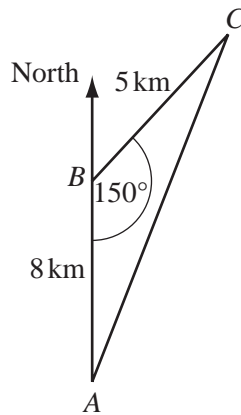
NOT TO SCALE

The perimeter of the rectangle is the same length as the circumference of the circle.

Calculate the radius,  $r$ , of the circle.

Answer  $r =$  ..... cm [3]

6



NOT TO SCALE

A helicopter flies 8 km due north from  $A$  to  $B$ . It then flies 5 km from  $B$  to  $C$  and returns to  $A$ .  
Angle  $ABC = 150^\circ$ .

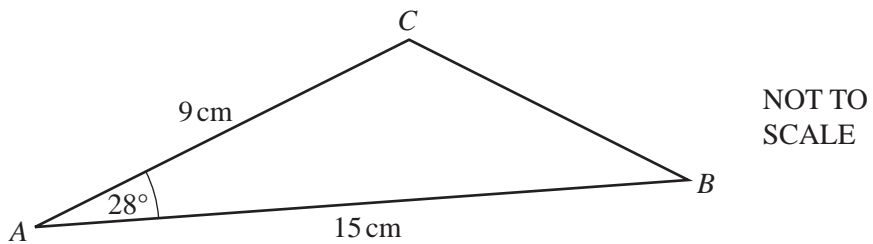
(a) Calculate the area of triangle  $ABC$ .

Answer(a) .....  $\text{km}^2$  [2]

(b) Find the bearing of  $B$  from  $C$ .

Answer(b) ..... [2]

7



Calculate the area of triangle  $ABC$ .

Answer .....  $\text{cm}^2$  [2]