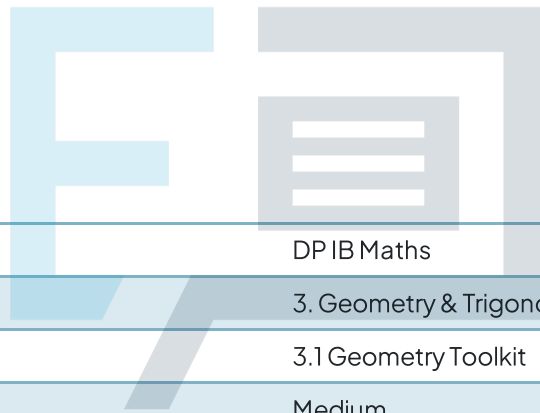




3.1 Geometry Toolkit

Question Paper



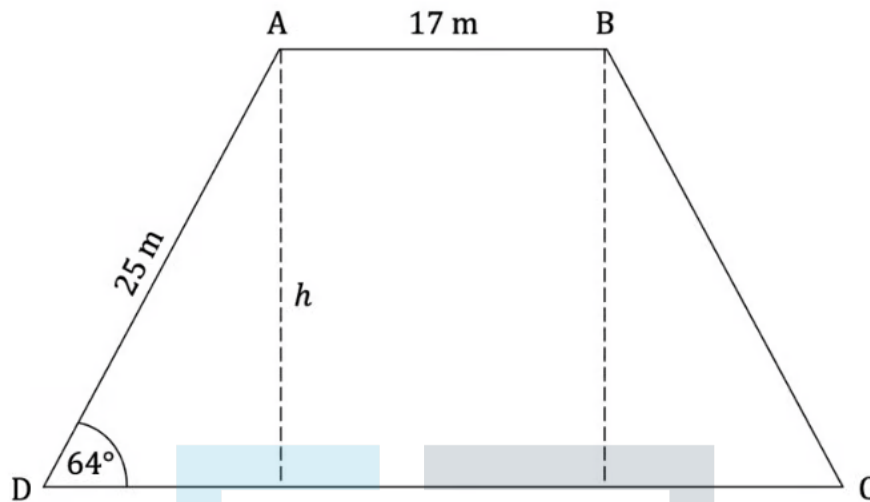
Course	DP IB Maths
Section	3. Geometry & Trigonometry
Topic	3.1 Geometry Toolkit
Difficulty	Medium

Exam Papers Practice

To be used by all students preparing for DP IB Maths AI SL
Students of other boards may also find this useful

Question 1a

ABCD is an isosceles trapezoid where $AB = 17\text{ m}$ and $AD = BC = 25\text{ m}$, as shown in the diagram below.



Find the height, h , of the trapezoid.

[2 marks]

Question 1b

Find the area of the trapezoid.

[4 marks]

Question 2a

The diagram below shows a cuboid measuring $45 \text{ cm} \times 72 \text{ cm} \times 112 \text{ cm}$.

- (i)
Calculate the distance from A to F.

- (ii)
Calculate the distance from B to H.

- (iii)
Calculate the distance from A to C.

[3 marks]



Question 2b

Calculate the distance from B to G.

[2 marks]

Exam Papers Practice

Question 3a

Point A has coordinates $(4, -6)$ and point B has coordinates $(8,6)$.

Calculate the distance of the line segment AB.

[2 marks]

Question 3b

Find the equation of the line connecting points A and B.

Give your answer in the form $y = mx + c$.

[2 marks]

Question 3c

(i)

Find the midpoint of [AB].

(ii)

Find the equation of the perpendicular bisector to the line segment AB.

Give your answer in the form $y = mx + c$.

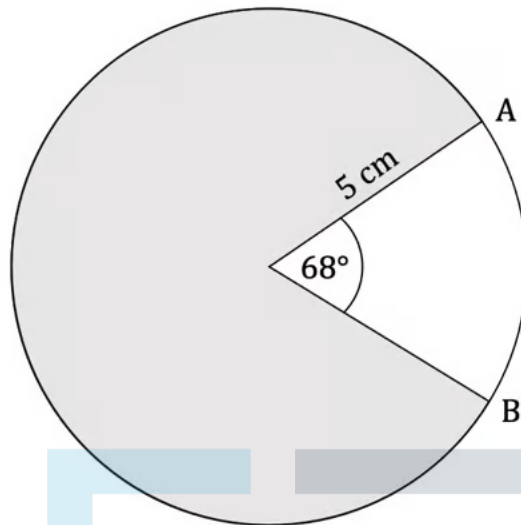
[4 marks]



Exam Papers Practice

Question 4a

The diagram below shows a circle with a 68° sector cut from it. The radius of the circle is 5 cm.



Find the length of

- (i) the minor arc AB
- (ii) the major arc AB.

[3 marks]

Exam Papers Practice

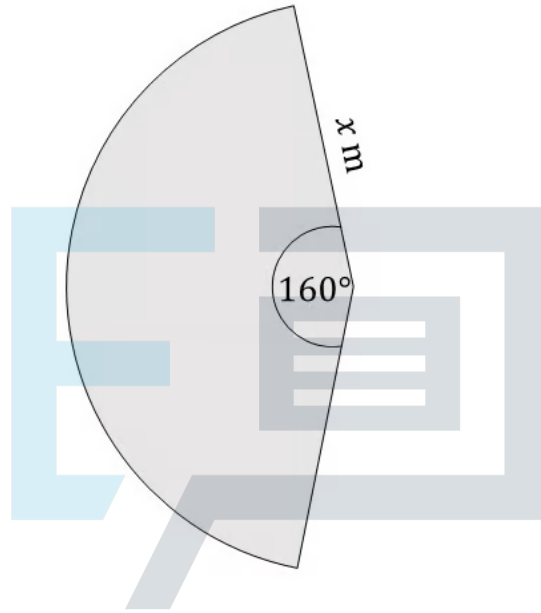
Question 4b

Find the area of the shaded region.

[3 marks]

Question 5a

A lawn sprinkler sprays water over a lawn covering an arc of 160° with a maximum spray distance of x m as shown in the diagram below. The lawn sprinkler waters 20 m^2 of the lawn.



Calculate the value of x .

Exam Papers Practice [4 marks]

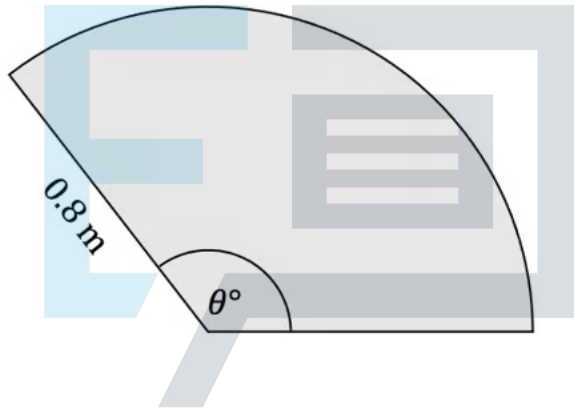
Question 5b

Calculate the length of the outer arc.

[3 marks]

Question 6a

A windscreen wiper blade is 0.8 m long. When in motion the blade moves through an arc of θ° and wipes an area of $\frac{4}{15}\pi\text{m}^2$.



Calculate the value of θ .

Exam Papers Practice [4 marks]

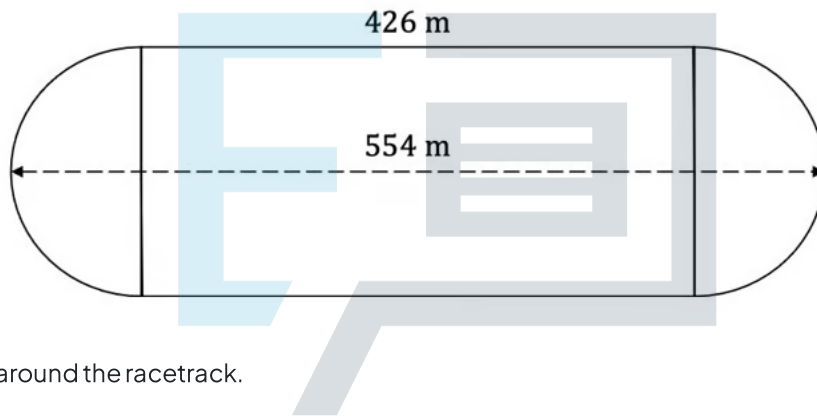
Question 6b

Calculate the length travelled by the outer edge of the blade.

[3 marks]

Question 7a

The diagram below shows a dirt racetrack where the straights are 426 m long and the longest distance from one end of the track to the other is 554m.



Find the total distance around the racetrack.

[3 marks]

Exam Papers Practice

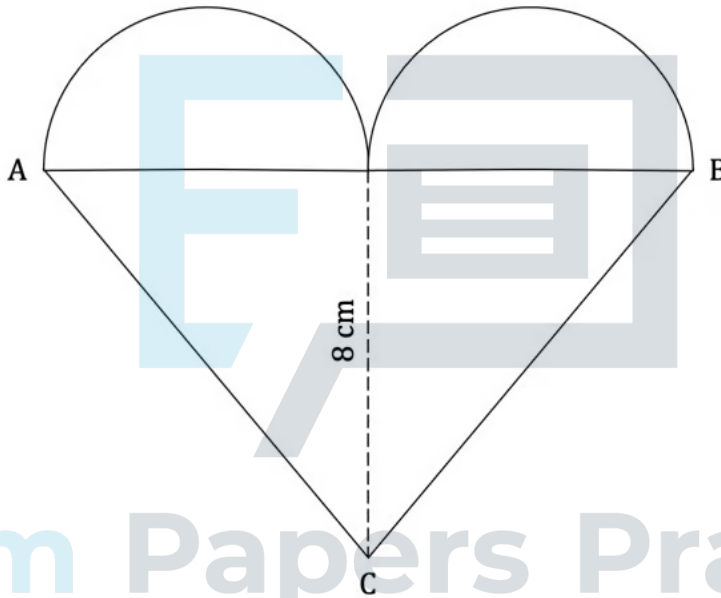
Question 7b

Find the total area enclosed by the racetrack.

[4 marks]

Question 8a

The diagram below shows a cookie cutter in the shape of a heart constructed from a triangle and two identical semi circles. The height of the triangle is 8 and its base AB is 13.34 cm.



Find the length of the line AC .

[2 marks]

Question 8b

Calculate the total area of the heart.

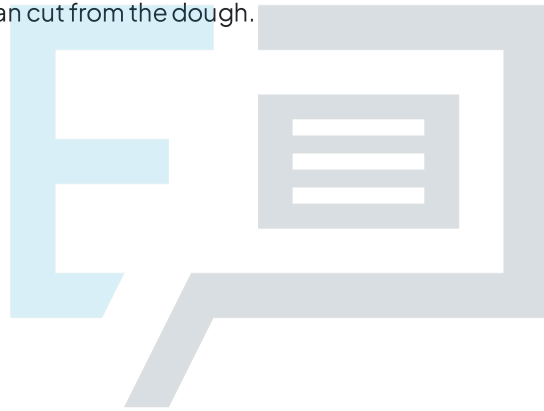
[4 marks]

Question 8c

Bob makes some cookie dough and rolls it out on his kitchen bench. The cookie dough covers 1314 cm^2 .

Find the number of **full** cookies Bob can cut from the dough.

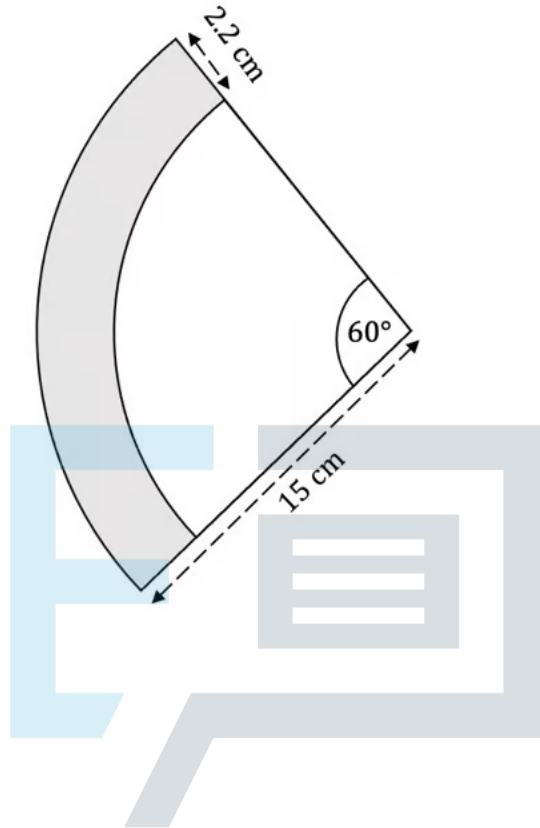
[2 marks]



Exam Papers Practice

Question 9a

The diagram below shows a slice of pizza that forms a sector of a circle with an arc of 60° and radius of 15 cm. The width of the crust is 2.2 cm.



Find the perimeter of the slice of pizza.

[3 marks]

Exam Papers Practice

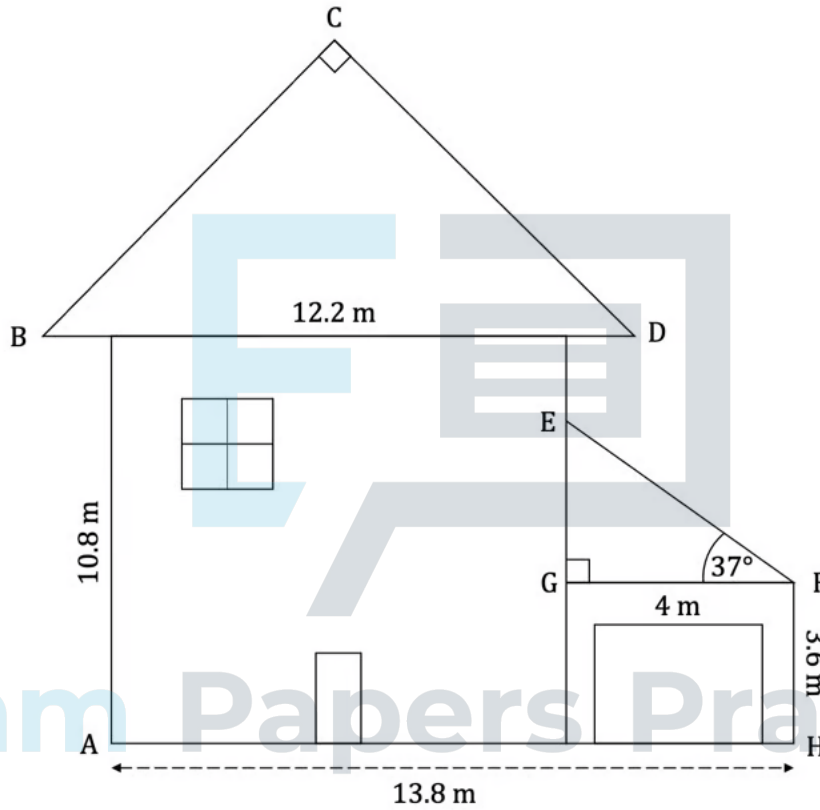
Question 9b

Find the area of the crust.

[3 marks]

Question 10a

The diagram below shows an architect's drawing of the front view of a house. The house is in the shape of a rectangle with a height of 10.8 m and has a roof in the shape of a right-angled isosceles triangle, BCD . $BD = 12.2$ m, angle $\widehat{BCD} = 90^\circ$. Next to the house is a garage in the shape of a rectangle measuring 4 m \times 3.6 m with a roof in the shape of a right-angled triangle with a base, GF , of 4 m and angle $\widehat{EFG} = 37^\circ$.



Find the length of

(i)
EG

(ii)
BC.

[2 marks]

Question 10b

Find the total area of the front view of the house.

[6 marks]



Exam Papers Practice