

Lesson Worksheet 7.1A(I)

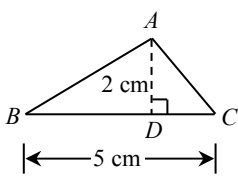
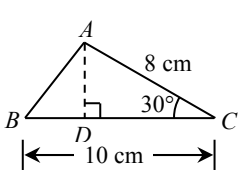
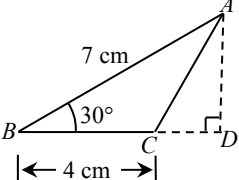
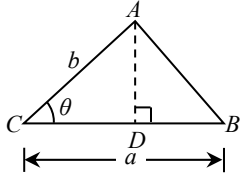
Objective: To find the area of a triangle by using $\frac{1}{2}ab \sin C$.

In this worksheet, give the answers correct to 3 significant figures if necessary.

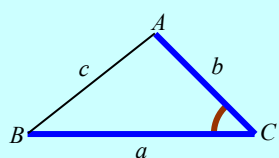
Area of triangle = $\frac{1}{2}bh$



1. Complete the following table.

	(a)	(b)	(c)	(d)
				
Base (BC)				
Height (AD)				
Area of $\triangle ABC$				

Area of $\triangle ABC = \frac{1}{2}ab \sin C$
 $= \frac{1}{2}bc \sin A$
 $= \frac{1}{2}ca \sin B$



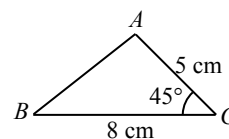
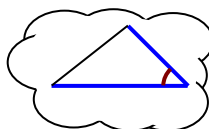
($\angle A$, $\angle B$ and $\angle C$ are denoted by A , B and C respectively. The lengths of the opposite sides of $\angle A$, $\angle B$ and $\angle C$ are denoted by a , b and c respectively.)

Find the area of each of the following triangles. (2 – 4)

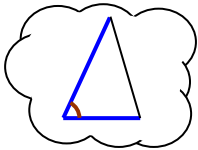
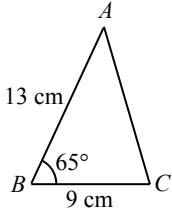
2. Area of $\triangle ABC = \frac{1}{2}(BC)(\quad) \sin \quad$

$= \frac{1}{2}(\quad)(\quad) \sin \quad \text{cm}^2$

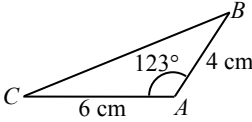
$= \underline{\quad \text{cm}^2}$, cor. to 3 sig. fig.



3.



4.



→Exercise 7.1: 1 – 3

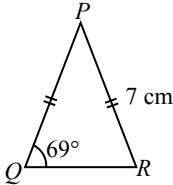
5. In the figure, $PQ = PR = 7$ cm and $\angle Q = 69^\circ$.

(a) Find $\angle P$.

$$\begin{aligned} \because PQ &= PR \\ \therefore \angle R &= \angle ___ = ______ \\ \angle P + \angle Q + \angle R &= ______ \\ \angle P + ______ &= ______ \\ \angle P &= \end{aligned}$$

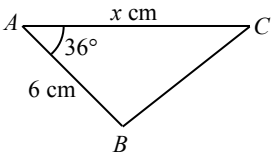
(b) Find the area of $\triangle PQR$.

→Exercise 7.1: 16



Try More

6. In the figure, $A = 36^\circ$, $AB = 6$ cm and $AC = x$ cm. If the area of $\triangle ABC$ is 20 cm^2 , find the value of x .



Lesson Worksheet 7.1A(II)

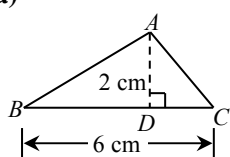
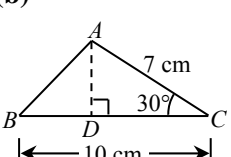
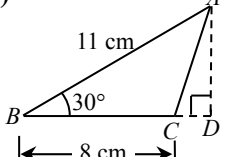
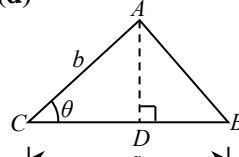
Objective: To find the area of a triangle by using $\frac{1}{2}ab\sin C$.

In this worksheet, give the answers correct to 3 significant figures if necessary.

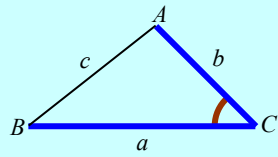
Area of triangle = $\frac{1}{2}bh$



1. Complete the following table.

	(a)	(b)	(c)	(d)
				
Base (BC)				
Height (AD)				
Area of $\triangle ABC$				

Area of $\triangle ABC = \frac{1}{2}ab\sin C$
 $= \frac{1}{2}bc\sin A$
 $= \frac{1}{2}ca\sin B$



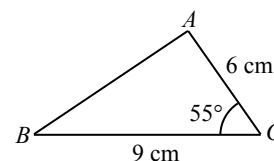
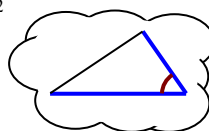
($\angle A$, $\angle B$ and $\angle C$ are denoted by A , B and C respectively. The lengths of the opposite sides of $\angle A$, $\angle B$ and $\angle C$ are denoted by a , b and c respectively.)

Find the area of each of the following triangles. (2 - 4)

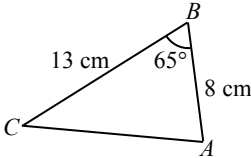
2. Area of $\triangle ABC = \frac{1}{2}(BC)(\quad)\sin \quad$

$= \frac{1}{2}(\quad)(\quad)\sin \quad \text{cm}^2$

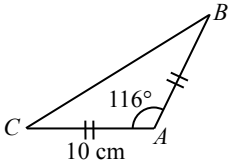
$= \underline{\hspace{2cm}} \text{cm}^2, \text{ cor. to 3 sig. fig.}$



3.



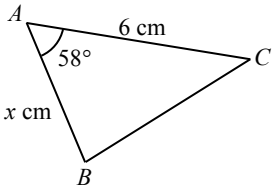
4.



→Exercise 7.1: 1 – 3

In each of the following, find the value of x . (5 – 6)

5. Area of $\triangle ABC = 11 \text{ cm}^2$

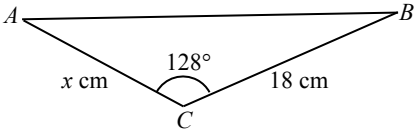


Area of $\triangle ABC = \frac{1}{2}(AC)(\quad) \sin \quad$

$11 = \frac{1}{2}(\quad)(\quad) \sin \quad$

=

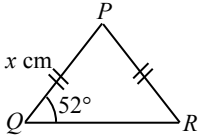
6. Area of $\triangle ABC = 120 \text{ cm}^2$ →Exercise 7.1: 4, 5



Try More

7. In the figure, $Q = 52^\circ$ and $PQ = PR = x \text{ cm}$. The area of $\triangle PQR$ is 12 cm^2 .

- (a) Find P .
- (b) Find the value of x .



Lesson Worksheet 7.1B(I)

Objective: To find the area of a triangle by Heron's formula.

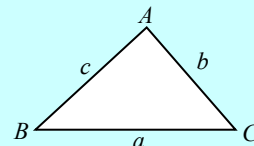
In this worksheet, give the answers correct to 3 significant figures if necessary.

Heron's Formula

For a triangle with sides a , b and c ,

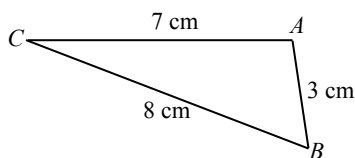
$$\text{the area} = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{a+b+c}{2}$. ◀ s is half the perimeter of the triangle.



Find the area of each of the following triangles. (1 – 3)

1.



$$s = \frac{(\quad) + (\quad) + (\quad)}{2} \text{ cm}$$

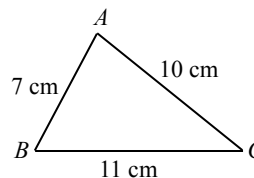
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Area of $\triangle ABC$

$$= \sqrt{(\quad)(\quad)(\quad)(\quad)} \text{ cm}^2$$

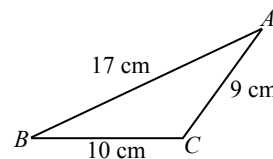
$$= \underline{\underline{\quad \text{cm}^2}}, \text{ cor. to 3 sig. fig.}$$

2.



3.

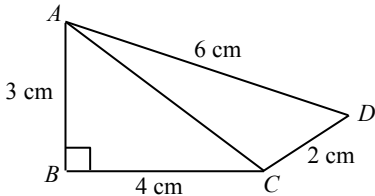
→ Exercise 7.1: 10 – 12



In each of the following, find the area of quadrilateral $ABCD$. (4 – 5)

→Exercise 7.1: 27, 28

4.



Find the areas of $\triangle ABC$ and $\triangle ACD$ first.

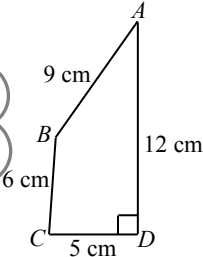
In $\triangle ABC$,

$$AC^2 = AB^2 + BC^2 \quad (\text{Pyth. theorem})$$

$$AC =$$

5.

Step 1: Divide the quadrilateral into 2 triangles.
Step 2: Find the area of each triangle found in **Step 1.**

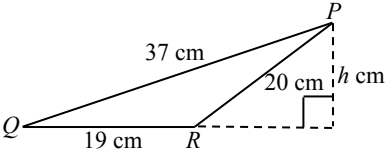


Try More

6. In the figure, $PQ = 37$ cm, $QR = 19$ cm and $PR = 20$ cm.

(a) Find the area of $\triangle PQR$.

(b) Find the value of h .



Lesson Worksheet 7.1B(II)

Objective: To find the area of a triangle by Heron's formula.

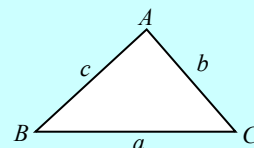
In this worksheet, give the answers correct to 3 significant figures if necessary.

Heron's Formula

For a triangle with sides a , b and c ,

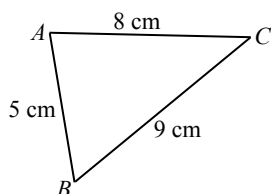
$$\text{the area} = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{a+b+c}{2}$. ◀ s is half the perimeter of the triangle.



Find the area of each of the following triangles. (1 – 2)

1.



$$s = \frac{(\quad) + (\quad) + (\quad)}{2} \text{ cm}$$

=

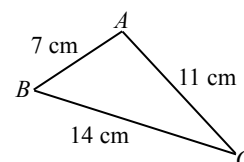
Area of $\triangle ABC$

$$= \sqrt{(\quad)(\quad)(\quad)(\quad)} \text{ cm}^2$$

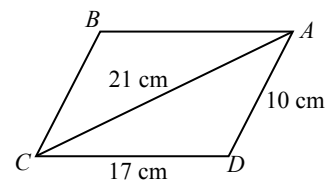
$$= \underline{\underline{\quad \text{cm}^2}}, \text{ cor. to 3 sig. fig.}$$

2.

→ Exercise 7.1: 10 – 12



3. In the figure, $ABCD$ is a parallelogram with $AC = 21$ cm, $AD = 10$ cm and $CD = 17$ cm. Find the area of $ABCD$.

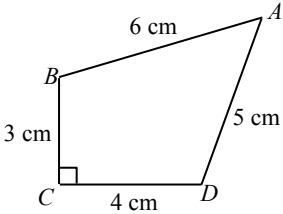


In each of the following, find the area of quadrilateral $ABCD$. (4 – 5)

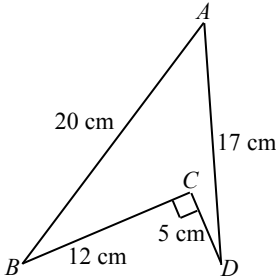
→ Exercise 7.1: 27, 28

4.

Divide the quadrilateral into 2 triangles first.



5.



(a) Add a line to form 2 triangles.
(b) Find the area of $ABCD$ by considering the difference between the areas of two triangles.

Try More

6. In the figure, $AC = 7\text{ cm}$, $BC = 15\text{ cm}$ and the perimeter of $\triangle ABC$ is 42 cm . Find the area of $\triangle ABC$.

