Name: _____ ( ) Class: _____ Date: _____

Lesson Worksheet 9.2A(III)

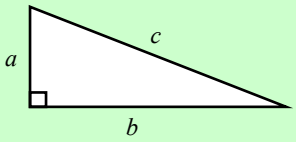
Objective: To solve problems using Pythagoras' theorem.

For a right-angled triangle with sides *a, b* and *c*,

where *c* is the length of the side opposite to the right angle,

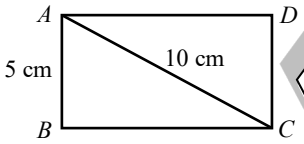
then $a^2 + b^2 = c^2$

[Reference: *Pyth. theorem*]



In this worksheet, give the answers correct to 3 significant figures if necessary. The diagrams in the questions are not necessarily drawn to scale.

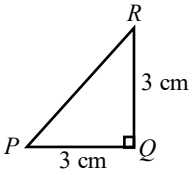
1. In the figure, *ABCD* is a rectangle. *AB* = 5 cm and *AC* = 10 cm. Find the perimeter of *ABCD*.



Demonstration

$\triangle PQR$ is a right-angled isosceles triangle. $PQ = QR = 3$ cm.

Find its perimeter.



Solution

$PR^2 = PQ^2 + QR^2$ (*Pyth. theorem*)

$= (3 \text{ cm})^2 + (3 \text{ cm})^2$

$PR =$ $\sqrt{18}$ cm

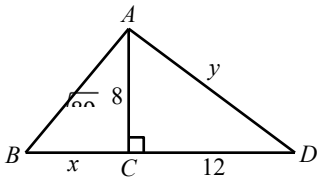
Perimeter of $\triangle PQR$

$= (3 + 3 +$ $\sqrt{18}$ $)$ cm

$=$ 10.2 cm, *cor. to 3 sig. fig.*

→Exercise 9.2: 7 – 9

2. In the figure, *BCD* is a straight line. Find the values of *x* and *y*.

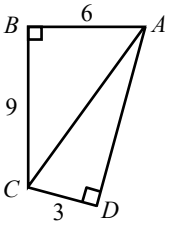


Demonstration

In the figure, $AB \perp BC$ and $AD \perp DC$.

Find **(a)** *AC*,

(b) *AD*.



Solution

(a) In $\triangle ABC$,

$AC^2 = AB^2 + BC^2$ (*Pyth. theorem*)

$= 6^2 + 9^2$

$AC =$ $\sqrt{117}$ $=$ 10.8, *cor. to 3 sig. fig.*

(b) In $\triangle ACD$,

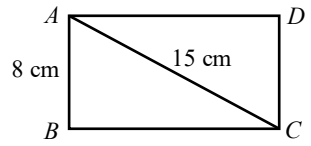
$AD^2 + DC^2 = AC^2$ (*Pyth. theorem*)

$AD^2 + 3^2 = ($ $\sqrt{117}$ $)^2$

$AD^2 = 117 - 9$

$AD =$ 10.4, *cor. to 3 sig. fig.*

3. In the figure, $ABCD$ is a rectangle. $AB = 8$ cm and $AC = 15$ cm. Find the area of $ABCD$.



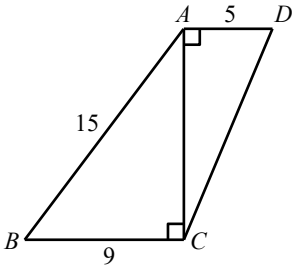
How many right-angled triangle(s) are there in the figure?

→Exercise 9.2: 7 – 9

4. In the figure, $\triangle ABC$ and $\triangle ACD$ are right-angled triangles with $AC \perp BC$ and $AD \perp AC$. $AB = 15$, $BC = 9$ and $AD = 5$. Find

(a) AC,

(b) CD.



→Exercise 9.2: 10 – 11

Try More

5. In the figure, $\triangle ABD$ is a right-angled triangle with $AB \perp BD$ and $AB = 13$. C is a point on BD such that $AC = CD = 24$.

Find **(a)** BC,

(b) AD.