Exercise 5D

Q1

Answer :

Suppose the length of the hypotenuse is *a* cm.

Then, by Pythagoras theorem:

$a^2 = 9^2 + 12^2$
$\Rightarrow a^2 = 81 + 144$
$\Rightarrow a^2 = 225$
$\Rightarrow a = \sqrt{225}$
$\Rightarrow a = 15$

Hence, the length of the hypotenuse is 15 cm.

Q2

Answer :

Suppose the length of the other side is *a* cm.

Then, by Pythagoras theorem:

$26^2 = 10^2 + a^2$
$\Rightarrow a^2 = 676 - 100$
$\Rightarrow a^2 = 576$
$\Rightarrow a = \sqrt{576}$
$\Rightarrow a = 24$

Hence, the length of the other side is 24 cm.

Q3

Answer :

Suppose the length of the other side is *a* cm.

Then, by Pythagoras theorem:

$$4.5^2 + a^2 = 7.5^2$$
$$\Rightarrow a^2 = 56.25 - 20.25$$
$$\Rightarrow a^2 = 36$$
$$\Rightarrow a = \sqrt{36}$$
$$\Rightarrow a = 6$$

Hence, the length of the other side of the triangle is 6 cm.

Q4

Answer :

Suppose the length of the two legs of the right triangle are *a* cm and *a* cm.
Then, by Pythagoras theorem:

$$a^2 + a^2 = 50$$
$$\Rightarrow 2a^2 = 50$$
$$\Rightarrow a^2 = 25$$
$$\Rightarrow a = \sqrt{25}$$
$$\Rightarrow a = 5$$

Hence, the length of each leg is 5 cm.

Q5

Answer :

The largest side of the triangle is 39 cm.

$$15^2 + 36^2$$
$$= 225 + 1296 = 1521$$

Also, $39^2 = 1521$
$\therefore 15^2 + 36^2 = 39^2$

Sum of the square of the two sides is equal to the square of the third side.

Hence, the triangle is right angled.

Q6

Answer :

Suppose the length of the hypotenuse is *c* cm.
Then, by Pythagoras theorem:

$$a^2 + b^2 = c^2$$
$$\Rightarrow c^2 = 6^2 + 4.5^2$$
$$\Rightarrow c^2 = 36 + 20.25$$
$$\Rightarrow c^2 = 56.25$$
$$\Rightarrow c = \sqrt{56.25}$$
$$\Rightarrow c = 7.5$$

Hence, the length of its hypotenuse is 7.5 cm.

Q7

Answer :

(i) Largest side, c = 25 cm

We have:

$a^2 + b^2$ = 225 + 400 = 625

Also, c^2 = 625

$\therefore a^2 + b^2 = c^2$

Hence, the given triangle is right angled using the Pythagoras theorem.

(ii) Largest side, c = 16 cm

We have:

$a^2 + b^2$ = 81 + 144 = 225

Also, c^2 = 256

Here, $a^2 + b^2 \neq c^2$

Therefore, the given triangle is not right angled.

Q8

Answer :

We have:

$\angle B = 35°$ and $\angle C = 55°$

$\therefore \angle B$ = 180 - 35 -55 = 90° (since sum of the angles of any triangle is 180°)

********** END **********