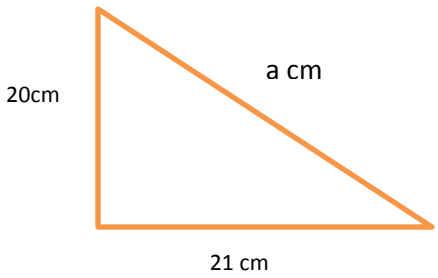
# AL MOATTASSEM INTERNATIONAL SCHOOL - JUBAIL
# Level 7 Mathematics ch 10 -Pythagoras Theorem

## Second Term - Revision 2 - Questions

**Solve the following:**

**Q1) Find the value of the unknown in each of the following right-angled triangles.**

i)

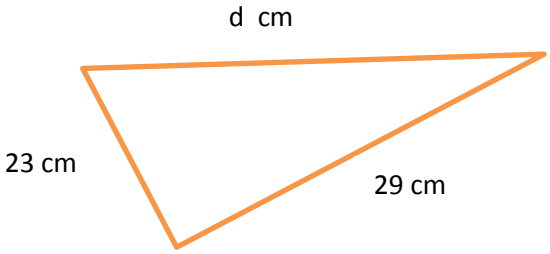



**Solution:**

Using Pythagoras' Theorem,

$$a^2 = 20^2 + 21^2$$
$$= 400 + 441$$
$$= 841$$
$$\therefore a = \sqrt{841} \quad (\text{since } a > 0)$$
$$= 29 \text{ cm}$$

ii)




**Solution:**

Using Pythagoras' Theorem,

$$d^2 = 23^2 + 29^2$$
$$= 529 + 841$$
$$= 1370$$
$$\therefore d = \sqrt{1370} \quad (\text{since } d > 0)$$
$$= 37.0 \text{ cm}$$

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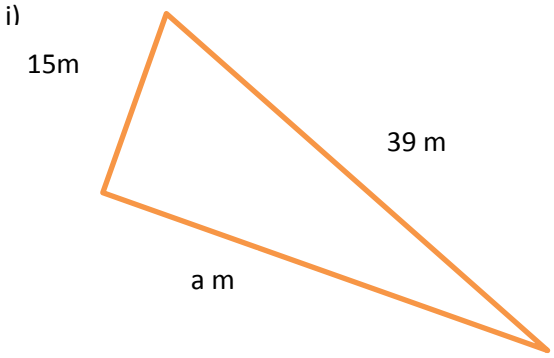
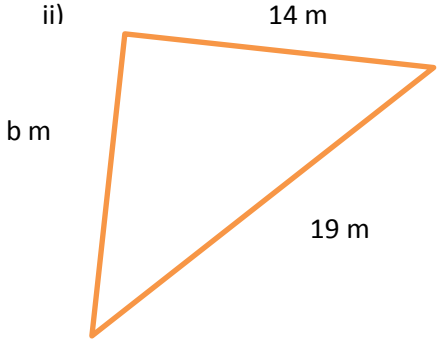
Q2) Find the value of the unknowns in each of the following right-angled triangles.

i)




ii)




Solution:

Using Pythagoras' Theorem,

$39^2 = a^2 + 15^2$

$a^2 = 39^2 - 15^2$

$= 1521 - 225$

$= 1296$

$\therefore a = \sqrt{1296}$ (since $a > 0$)

$= 36$ cm

Using Pythagoras' Theorem,

$19^2 = b^2 + 14^2$

$b^2 = 19^2 - 14^2$

$= 361 - 196$

$= 165$

$\therefore b = \sqrt{165}$ (since $b > 0$)

$= 12.8$ cm

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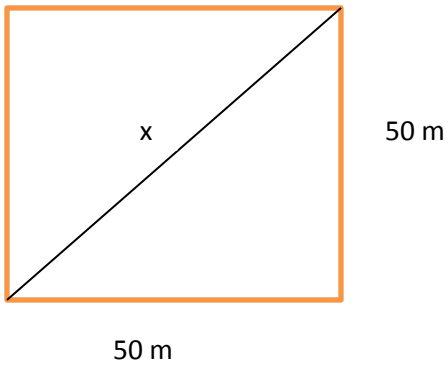
Q3) In △ ABC AB=8cm, BC = 15cm and ∠B = 90°. Find the length of AC.

In $\triangle ABC$, $\angle B = 90°$.
Using Pythagoras' Theorem,

$$AC^2 = AB^2 + BC^2$$
$$= 8^2 + 15^2$$
$$= 64 + 225$$
$$= 289$$
$$\therefore AC = \sqrt{289} \quad (\text{since } AC > 0)$$
$$= 17 \text{ cm}$$

Q4) Each side of a square field is 50m long. A barricade is to be placed along the diagonal of the field. Find the length of the barricade.




Let the length of the barricade be $x$ m.
Using Pythagoras' Theorem,

$$x^2 = 50^2 + 50^2$$
$$= 2500 + 2500$$
$$= 5000$$
$$\therefore x = \sqrt{5000} \quad (\text{since } x > 0)$$
$$= 70.7 \text{ (to 3 s.f.)}$$

The length of the barricade is 70.7 m.

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Q5) Determine if each of the following triangles is a right- angled triangle. For each right-angled triangle, state the right angle.

a) △ ABC, given that AB = 12cm, BC = 10 cm and AC = 8cm

b) △ PQR, given that PQ= 34m, QR = 16m and PR = 30m

Solution:

**(a)** $AB$ is the longest side of $\triangle ABC$.

$$AB^2 = 12^2$$
$$= 144$$
$$BC^2 + AC^2 = 10^2 + 8^2$$
$$= 100 + 64$$
$$= 164$$

Since $AB^2 \neq BC^2 + AC^2$, $\triangle ABC$ is not a right-angled triangle.

**(b)** $PQ$ is the longest side of $\triangle PQR$.

$$PQ^2 = 34^2$$
$$= 1156$$
$$QR^2 + PR^2 = 16^2 + 30^2$$
$$= 256 + 900$$
$$= 1156$$

Since $PQ^2 = QR^2 + PR^2$, $\triangle PQR$ is a right-angled triangle where $\angle R = 90°$.

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Q6) In △ PQR, PQ=19cm, QR=24cm and PR=30cm. Show that △ PQR is not a right-angled triangle.

Solution:

$PR$ is the longest side is $\triangle PQR$.

$$PR^2 = 30^2$$
$$= 900$$
$$PQ^2 + QR^2 = 19^2 + 24^2$$
$$= 361 + 576$$
$$= 937$$

Since $PR^2 \neq PQ^2 + QR^2$, $\triangle PQR$ is not a right-angled triangle.