

A triangle is a three sided polygon with three angles. There exist many types of triangles.

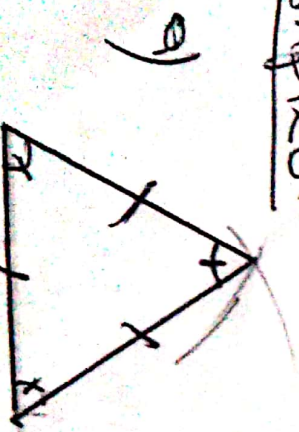
i) Equilateral triangle: All its sides are equal and all its angles are equal. (60°)

ii) Isosceles triangle: It has two sides of the same length and two angles of the same measure.

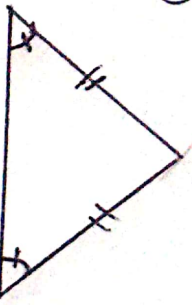
iii) Right angled triangle: It has one angle of 90° (a right angle).

iv) Scalene triangle: All its sides and angles are different.

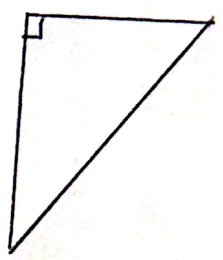
Examples:



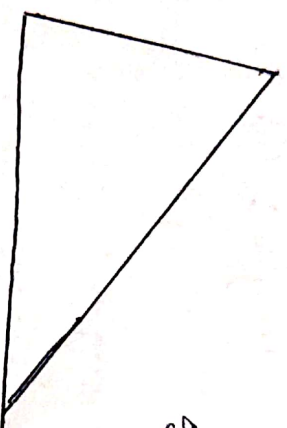
a) equilateral triangle.
The notation " / " means all the sides are equal.



b) Isosceles triangle with cotation on two sides and two angles.



c) Right angled triangle with a 90° angle.



d) Scalene triangle.

NB: * A triangle with one obtuse angle is called an obtuse angled triangle.

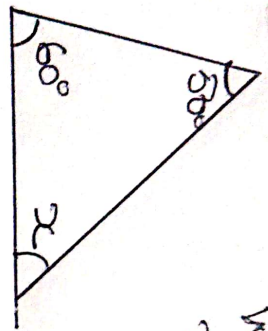
* A triangle with one acute angle is called an acute angled triangle.

* The sum of the three angles of a triangle is 180° .

It is therefore possible to find an angle knowing the other measures.

Examples:

a)



We know that

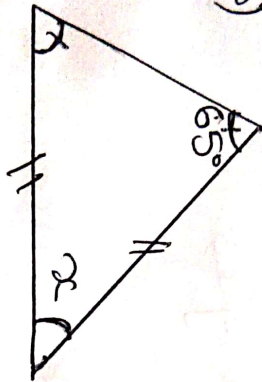
$$x + 50^\circ + 60^\circ = 180^\circ$$

$$x + 110^\circ = 180^\circ$$

$$x = 180 - 110^\circ$$

$$\underline{\underline{x = 70^\circ}}$$

b)



We know that it is an isosceles triangle then:

$$x + 65^\circ + 65^\circ = 180^\circ$$

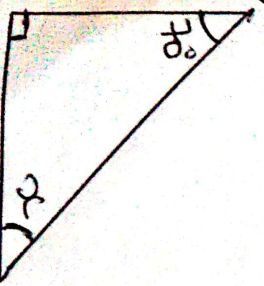
$$x + 130^\circ = 180^\circ$$

$$x = 180^\circ - 130^\circ = 50^\circ$$

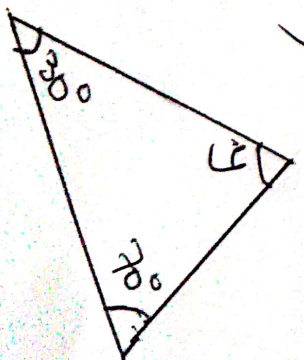
$$\underline{\underline{x = 50^\circ}}$$

Exercise Find the measure of the missing angle.

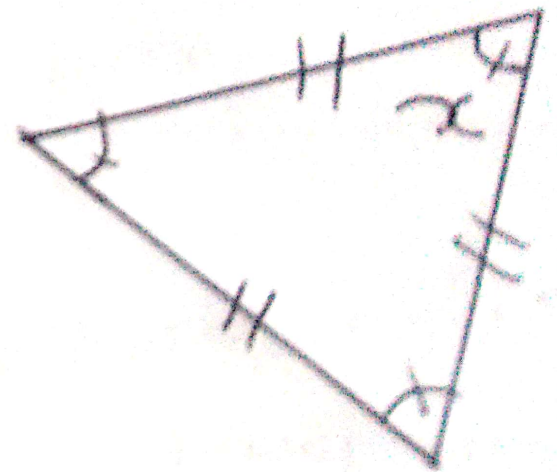
a)



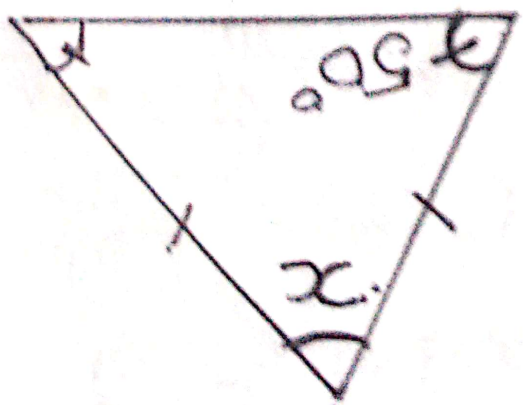
b)



Assignment



(a)



Sub-topic = Lesson : Pythagoras' theorem

NB: students are able to identify a right angled triangle and the hypotenuse.

Life situation :

triangle and the hypotenuse.

A farmer decides to support one of his plantain tree with a stick of 5m. If the foot of the tree and the stick are at a distance of 3m apart, what will be the distance from the ground to the point where the plant will be supported? (the height of the

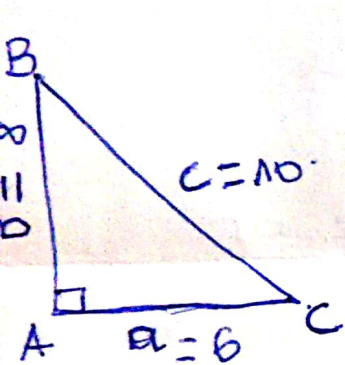
Activity: Consider the shape below and fill the table

AB = b =

AC = a =

BC = c =

BC = c =



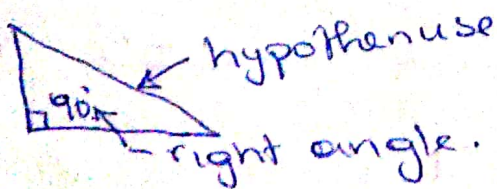
a	b	c	a^2	b^2	$a^2 + b^2$	c^2

What do you remark (or compare $a^2 + b^2$ and c^2).

Definition

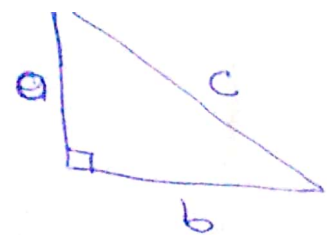
* Trigonometry is a greek word which means << solving for triangles >>.

* A right angled triangle is any triangle with one of its angle 90° (called a right angle).



Pythagoras' theorem:

<< For any right angled triangle, the square of the hypotenuse is equal to the sum of square of the two other sides >>.

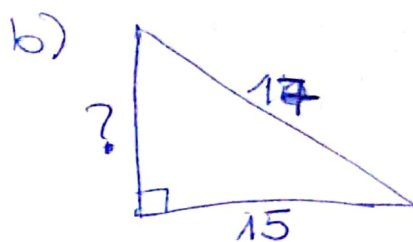
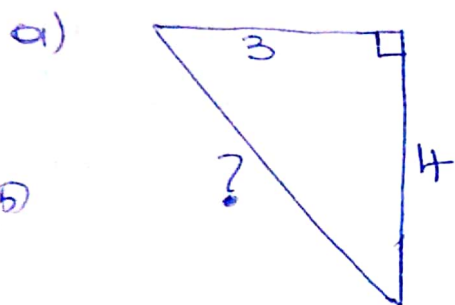


$c^2 = a^2 + b^2$ and from this, we have
 the following. * $c = \sqrt{a^2 + b^2}$
 * $a^2 = c^2 - b^2$ and * $b^2 = c^2 - a^2$
 $a = \sqrt{c^2 - b^2}$ $b = \sqrt{c^2 - a^2}$

Conversely, if the square of one side of a triangle equal the sum of squares of the two other sides, then the triangle is a right angled triangle.

Exercise

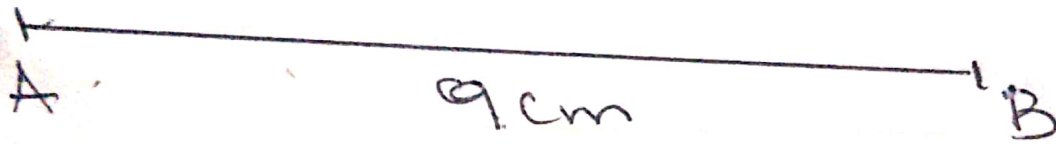
1) Find the missing side.



2) say if it is a right angled triangle or not.

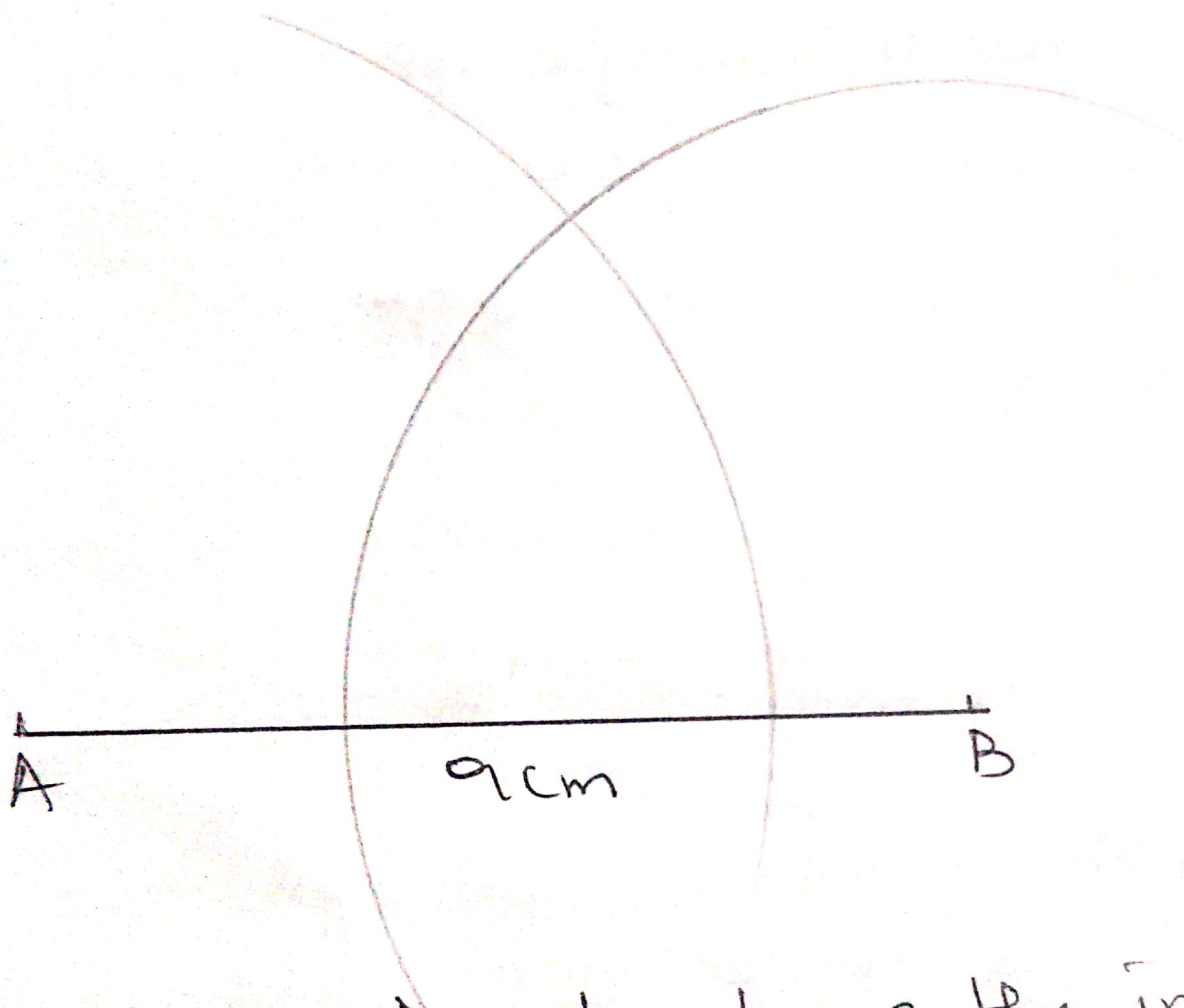
Let us draw a triangle ABC such that $AB = 9\text{ cm}$ $BC = 6\text{ cm}$ and $AC = 7\text{ cm}$

Step 1: Draw a line segment $[AB] = 9\text{ cm}$



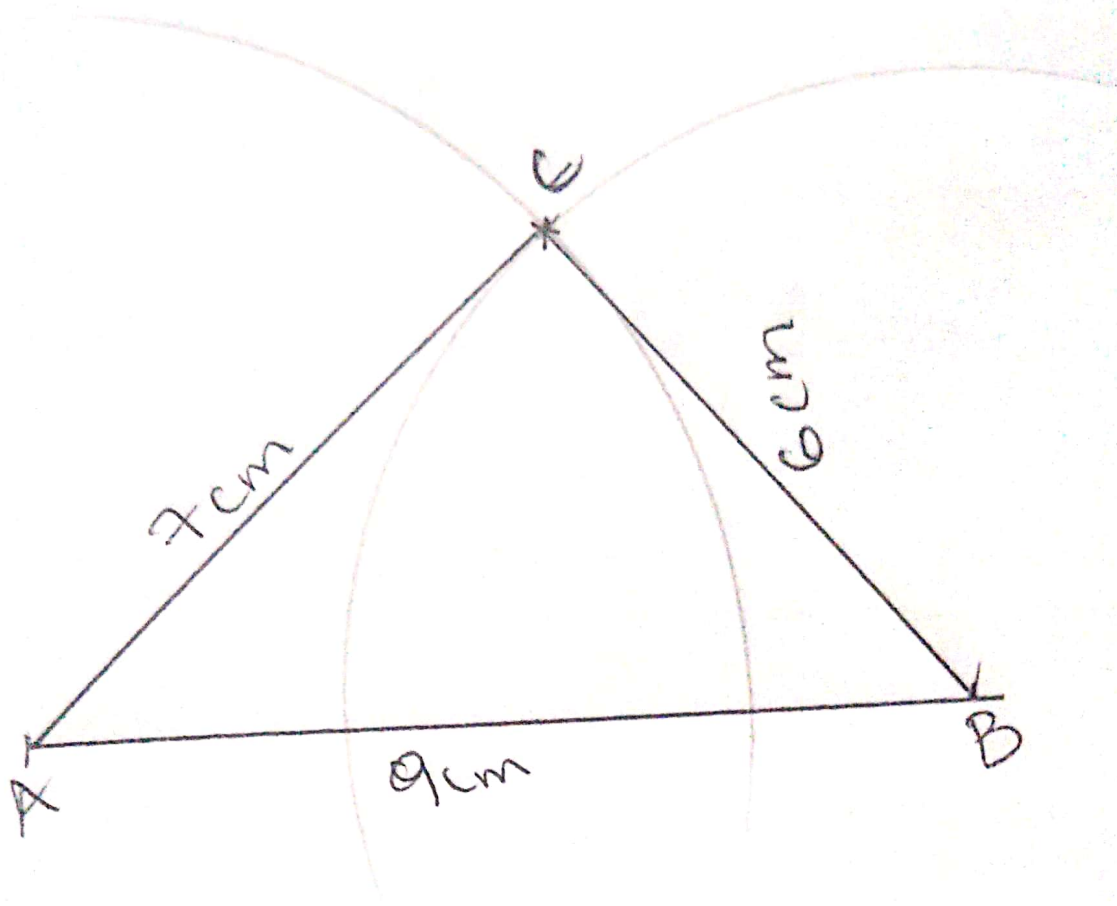
Step 2: measure 7 cm with your compass and center it on point A then draw an arc of circle of radius 7 cm

Step 3: measure 6 cm with your compass and make another arc of circle centred on B.



Step 4 Denote by C the intersection of the two arcs and draw line segment [CB] and [AC] and write the length beside each line segment.

You then have your triangle.



Exercise Draw the triangle ABC given the following measures.

i) $AB = 6\text{ cm}$ $AC = 7\text{ cm}$ $BC = 5\text{ cm}$

ii) $AB = 12\text{ cm}$ $BC = 9\text{ cm}$ $AC = 6\text{ cm}$

Assignment: