

# Geometry of 2D shapes

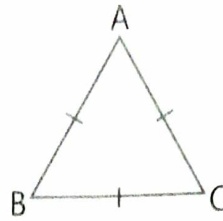
## Exercise 1

### Classifying triangles

#### Types of triangles:

##### Equilateral triangles:

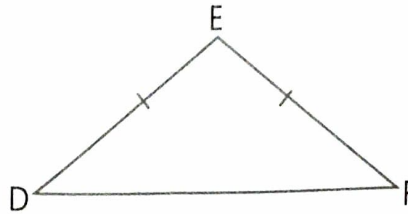
- All angles are equal
- All sides are the same length.
- All interior angles equal  $60^\circ$



(equal  $\triangle$  equi $\triangle$ ABC)

##### Isosceles triangle:

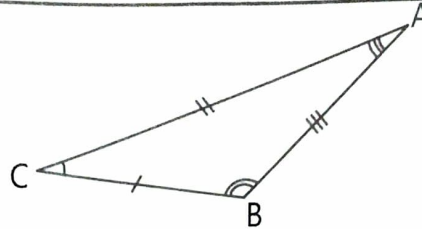
- At least two angle are equal
- Sides opposite the equal angles are the same length



(equal  $\triangle$  isos  $\triangle$ )  
(sides opp =  $\triangle$  isos  $\triangle$ )

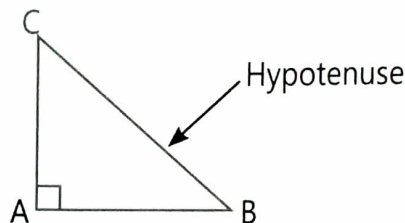
##### Scalene triangle:

- All angles have different sizes
- All sides have different lengths



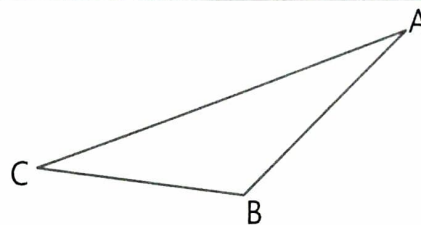
##### Right-angled triangle:

- One angle that is a right angle ( $90^\circ$ )
- The side opposite the right angle is called the hypotenuse



#### Properties of triangles:

The sum of the interior angles of a triangle equal  $180^\circ$

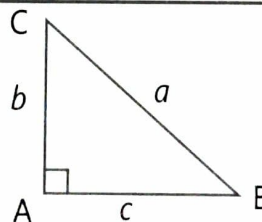


$$\hat{A} + \hat{B} + \hat{C} = 180^\circ$$

( $\triangle$  sum  $\triangle$ )

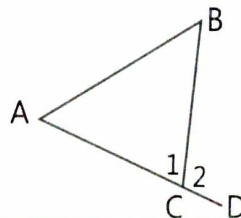
##### Theorem of Pythagoras

The square of the hypotenuse is equal to the sum of the square of the other two sides.



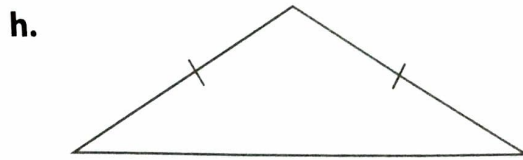
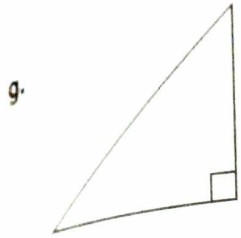
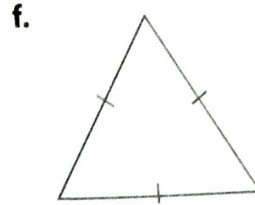
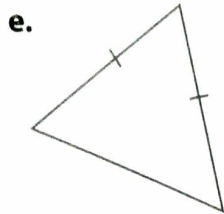
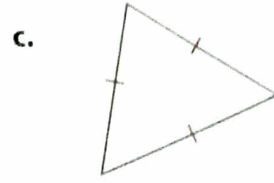
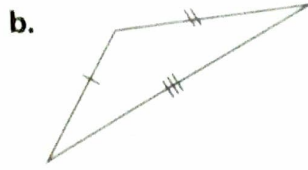
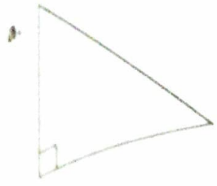
$$(a^2 = b^2 + c^2)$$

The exterior angle of a triangle equals the sum of the interior opposite angles.

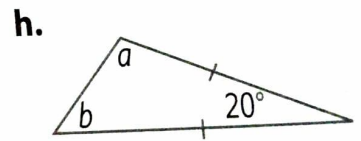
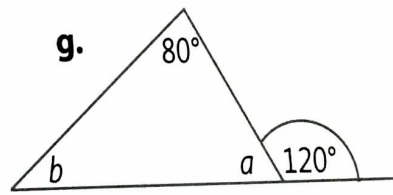
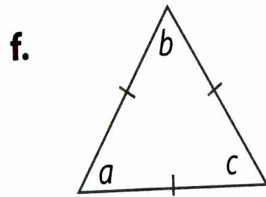
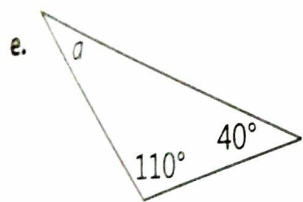
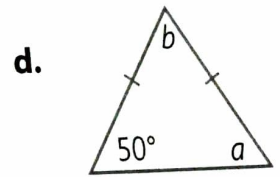
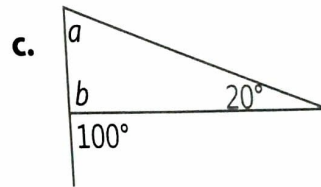
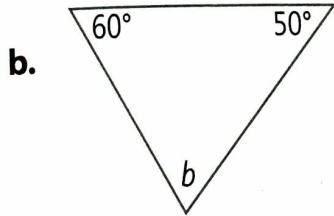
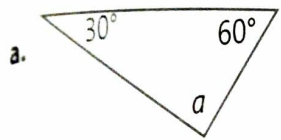


$$\hat{C}_2 = \hat{A} + \hat{B} \text{ (ext } \triangle \text{)}$$

Complete these exercises.  
1. Classify these triangles.



2. Calculate the missing angle in each of the following triangles. Give reasons.



3. Calculate the missing side in each of the following triangles. Give reasons. Use a calculator if necessary.

