http://www.mathsisfun.com/triangle.html

5B April 22 Homework: pages 57-67 in Singapore Math Book

Triangles

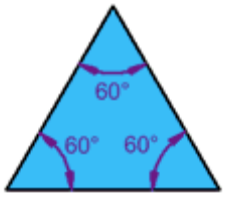
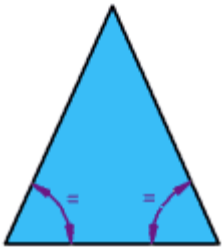
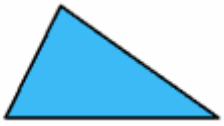
A triangle has three sides and three angles

The three angles always add to 180°

Equilateral, Isosceles and Scalene

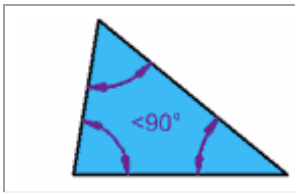
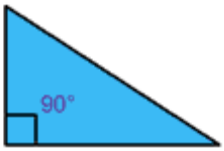
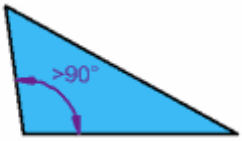
There are three special names given to triangles that tell how many sides (or angles) are equal.

There can be **3**, **2** or **no** equal sides/angles:

	**Equilateral Triangle** **Three** equal sides **Three** equal angles, always 60°
	**Isosceles Triangle** **Two** equal sides **Two** equal angles
	**Scalene Triangle** **No** equal sides **No** equal angles

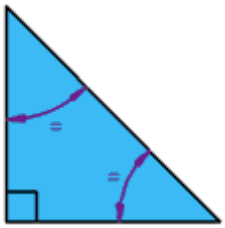
What Type of Angle?

Triangles can also have names that tell you what **type of angle** is inside*:*

	**Acute Triangle** All angles are less than 90°
	**Right Triangle** Has a right angle (90°)
	**Obtuse Triangle** Has an angle more than 90°

Combining the Names

Sometimes a triangle will have two names, for example:

	**Right Isosceles Triangle** Has a right angle (90°), and also two equal angles Can you guess what the equal angles are?

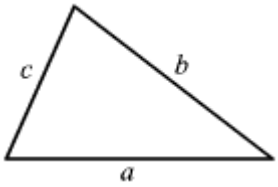
Question: Can you draw a right equilateral right triangle? Or an obtuse isosceles triangle? Or an obtuse equilateral triangle?

THEOREMS (IN TEXT):

1. THE 3 ANGLES OF A TRIANGLE ADD UP TO 180 DEGREES.
2. WHEN 1 ANGLE OF A TRIANGLE IS A RIGHT ANGLE, THE OTHER 2 ANGLES ADD UP TO 90 DEGREES.
3. THE EXTERIOR ANGLE OF A TRIANGLE IS EQUAL TO THE SUM OF THE INTERIOR OPPOSITE ANGLES.

4. Triangle Inequality Theorem

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.



In the figure, the following inequalities hold.

$a + b > c$

$a + c > b$

$b + c > a$

Example:

Check whether it is possible to have a triangle with the given side lengths.

7, 9, 13

Add any two sides and see if it is greater than the other side.

The sum of 7 and 9 is 16 and 16 is greater than 13.

The sum of 9 and 13 is 21 and 21 is greater than 7.

The sum of 7 and 13 is 20 and 20 is greater than 9.

This set of side lengths not satisfies Triangle Inequality Theorem.

These lengths do form a triangle.

Example:

Check whether the given side lengths form a triangle.

4, 8, 15

Check whether the sides satisfy the Triangle Inequality Theorem.

Add any two sides and see if it is greater than the other side.

The sum of 4 and 8 is 12 and 12 is less than 15.

This set of side lengths does not satisfy Triangle Inequality Theorem.

These lengths do not form a triangle.