

Strand:

Space

Substrand:

Reason Geometrically

On a piece of paper write a convincing explanation of how you solved the problem. Remember to show clearly all the mathematics used. The answer alone is not enough!

Triangles

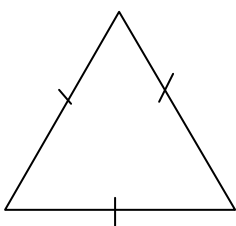
Background

Triangles are three sided **polygons**. They are classified by the length of their sides and the size of their angles. All triangles have two names.

- **Scalene**
- **Equilateral**
- **Isosceles**
- **Right angled**
- **Acute angled**
- **Obtuse angled**

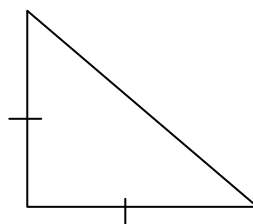
- **Scalene** triangles have all sides being a different length.
- **Equilateral** triangles have all side lengths the same size and all angles the same size.
- **Isosceles** triangles have two sides the same length and two angles the same size.
- A **right-angled** triangle has one angle being 90° in size.
- An **acute angled** triangle has all angles being less than 90° in size.
- An **obtuse angled** triangle has one angle larger than 90° .

Examples.

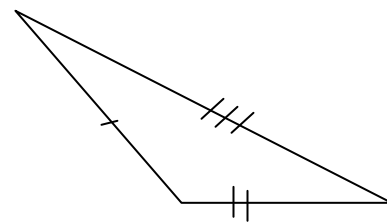


This is an equilateral triangle. It is also an acute angled triangle.

Note that the same number of marks on the sides of the triangles indicate that they are the same length



This is an isosceles triangle. It is also a right triangle.



This is a scalene triangle. It is also an obtuse angled triangle.

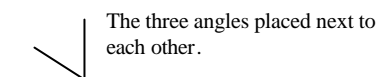
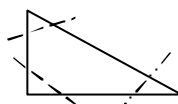
Use the information to answer the following questions.

1. Draw examples of the following triangles.
 - An obtuse angled isosceles triangle.
 - An acute angled equilateral triangle.
 - An obtuse angled scalene triangle.
 - A right angled isosceles triangle.
 - An acute angled scalene triangle.

2. Why aren't the following triangles possible?
 - A right-angled equilateral triangle.
 - An obtuse angled equilateral triangle.

3. On a scrap piece of paper draw three triangles with a ruler.
For each triangle do the following.

- Cut the corners off. (Dotted lines)
- Arrange the corners so that they are next to each other.
- Use a protractor or your powers of estimation to find the size of the sum of the angles.



4. Did you get the same answer for all three triangles? What was that answer?
5. In conclusion we could say that the sum of the angles for any triangle is what?

Reflection:

- Write down some of the difficulties that you had to overcome to solve this problem.
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