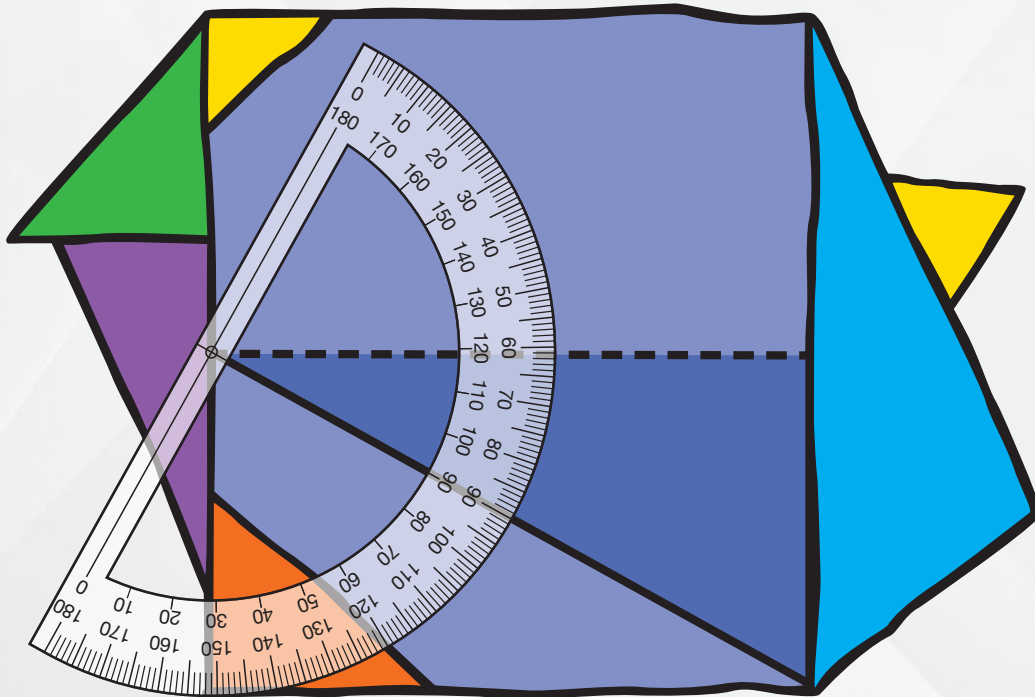




# WHAT TRIANGLE?

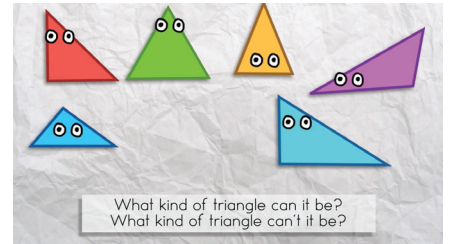
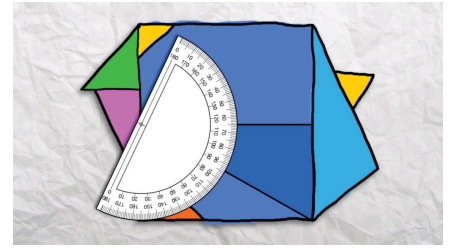


# What Triangle?

## What's the point of this task?

An important property of triangles is that the sum of the angles is  $180^\circ$ . This task uses this idea but adds an interesting twist – that students understand that the relationship between the angle sizes can affect the type of triangle possible. In addition, it allows opportunity for students to use their knowledge that there are different types of triangle – acute, obtuse, right, equilateral, isosceles, and scalene.

For example, students might notice that if one angle is double another, it is not possible to have an equilateral triangle, where all angles are equal. It is possible, though, to have an isosceles triangle and even an obtuse isosceles triangle.



## Questions to facilitate the learning

Other questions that might be asked include:

- Is it possible to have a right triangle? Could the right angle be the one that has to be doubled?
- Is it possible to have a scalene triangle? What does that tell you about the angles?
- Is it possible to have an isosceles triangle? Could it be right? Acute? Obtuse?

## Curriculum connections

This activity relates to concept that the angles of a triangle add to  $180^\circ$  and to the definitions of the different types of triangles and their properties.

## Scaffolding the learning

- Could the triangle be equilateral? Why or why not?
- Could the half-size angle be really small? How small? What kind of triangle would that create?
- Could the half-size angle be  $60^\circ$ ? Why or why not?
- Suppose the big angle in the triangle is  $100^\circ$ ? What do you know about the other angles?

## Extending the learning

Students might consider what kinds of triangles are possible if one angle is three times or four times another. Another problem might be whether it is possible to have one angle double another and the third angle triple one of the other two angles (this is possible, e.g.  $30^\circ$ ,  $60^\circ$  and  $90^\circ$  or  $20^\circ$ ,  $40^\circ$ ,  $120^\circ$ ).

# What Triangle?

You measure the angles in a triangle.

One angle is twice as big as another.

What kind of triangle can it be?

What kind of triangle can't it be?

Name \_\_\_\_\_