

MOKYTOJO UŽRAŠAI

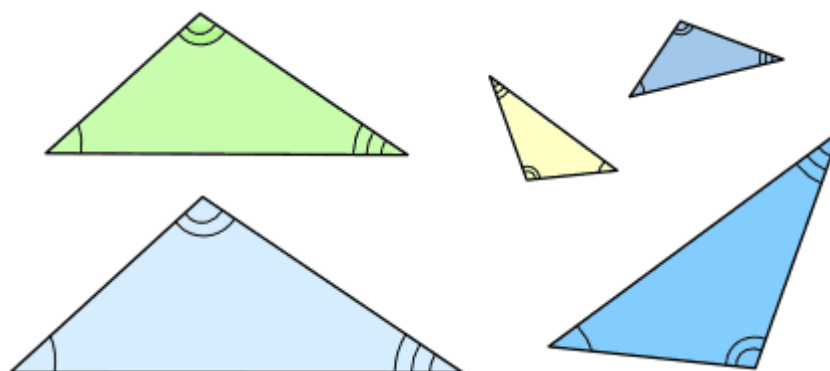
# Similar Triangles

## Panašūs trikampiai

### Panašiujų trikampių apibrėžimas

Triangles are similar if they have the same shape, but *not necessarily the same size*

These triangles are all similar:



(Equal angles have been marked with the same number of arcs)

Size – dydis

Difference – skirtumas

Equal – lygus

Arc – lankas

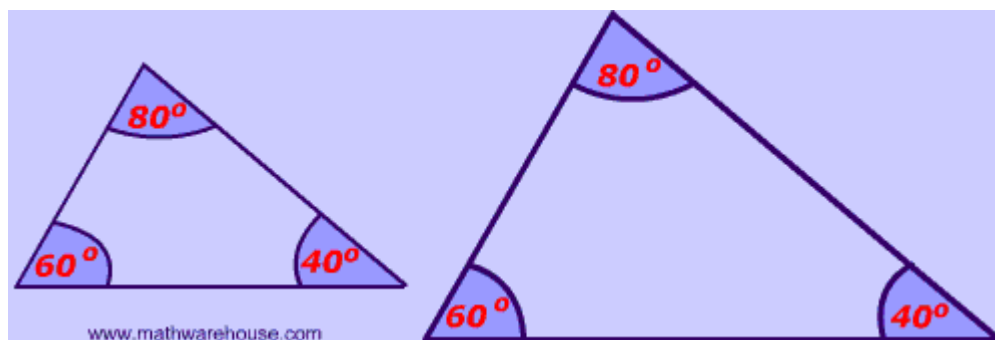
Angle – kampas

<http://www.mathsisfun.com/geometry/triangles-similar.html>

***What is true about the angles of similar triangles?***

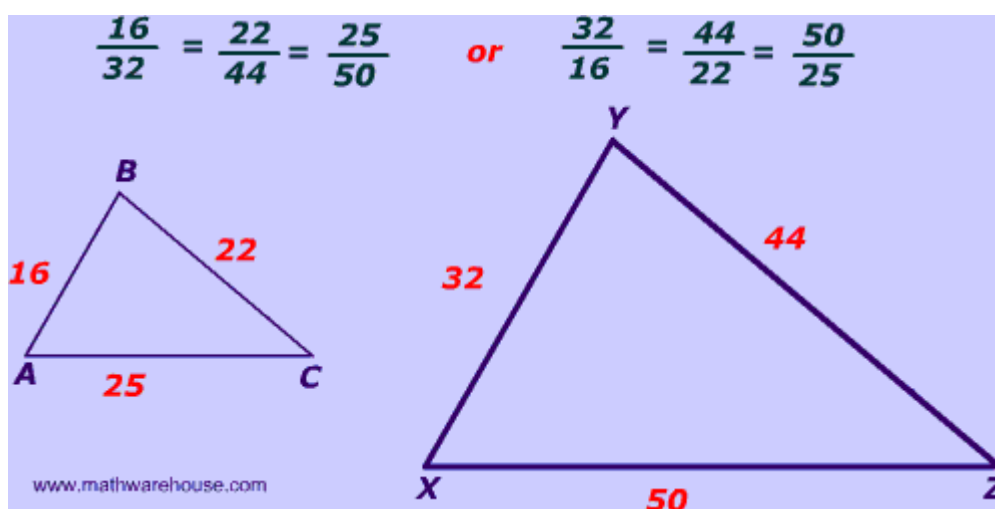
**Answer:** They are congruent. As the picture below demonstrates.

Congruent- kongruentiškas, sutampantis



### **What is true about the sides of similar triangles?**

**Answer:** The corresponding sides of similar triangles are proportional. The example below shows two triangles with their proportional sides ..



Corresponding sides – sutampančios kraštinės

### **What is the similarity ratio?**

**Answer:** It's the ratio between corresponding sides. In the picture above, the larger triangle's sides are two times the smaller triangle's sides so the scale factor is 2.

$$16 \cdot 2 = 32$$

$$22 \cdot 2 = 44$$

$$25 \cdot 2 = 50$$

Ratio – koeficientas, santykis

<http://www.mathwarehouse.com/geometry/similar/triangles/sides-and-angles-of-similar-triangles.php>

# How to Find if Triangles are Similar?

Kaip sužinoti, ar trikampiai panašūs?

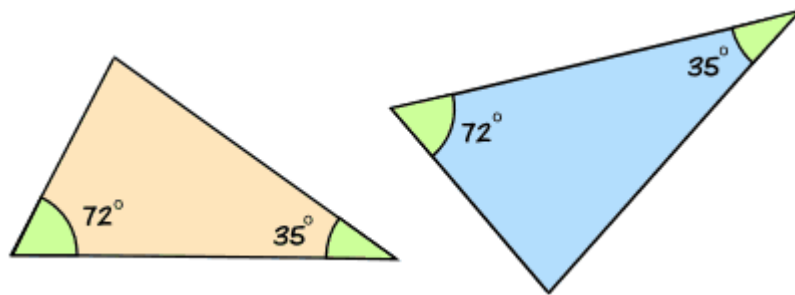
There are three ways to find if two triangles are similar: **AA**, **SAS** and **SSS**:

## AA

**AA** - "angle, angle" means that the triangles have two of their angles equal.

If two triangles have two of their angles equal, the triangles are similar.

**Example: these two triangles are similar:**



If two of their angles are equal, then the third angle must also be equal, because angles of a triangle always add to make  $180^\circ$ .

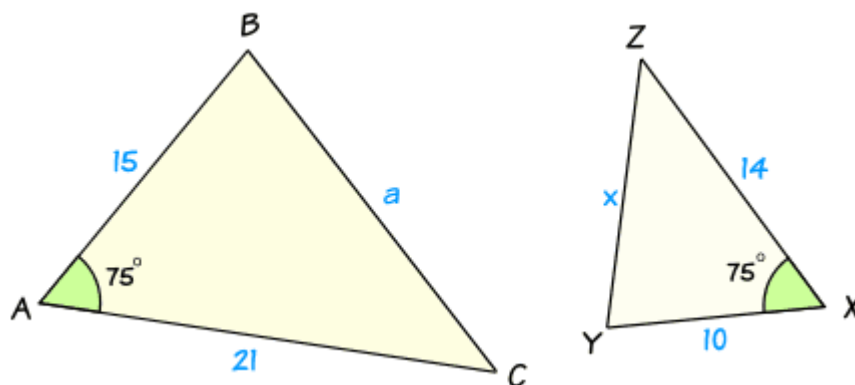
AA could also be called AAA (because when two angles are equal, all three angles must be equal).

## SAS

**SAS** - "side, angle, side" means that we have two triangles where:

- the ratio between two sides is the same as the ratio between another two sides
- and we we also know the included angles are equal.

**Example:**



In this example we can see that:

- one pair of sides is in the ratio of  $21 : 14 = 3 : 2$
- another pair of sides is in the ratio of  $15 : 10 = 3 : 2$
- there is a matching angle of  $75^\circ$  in between them

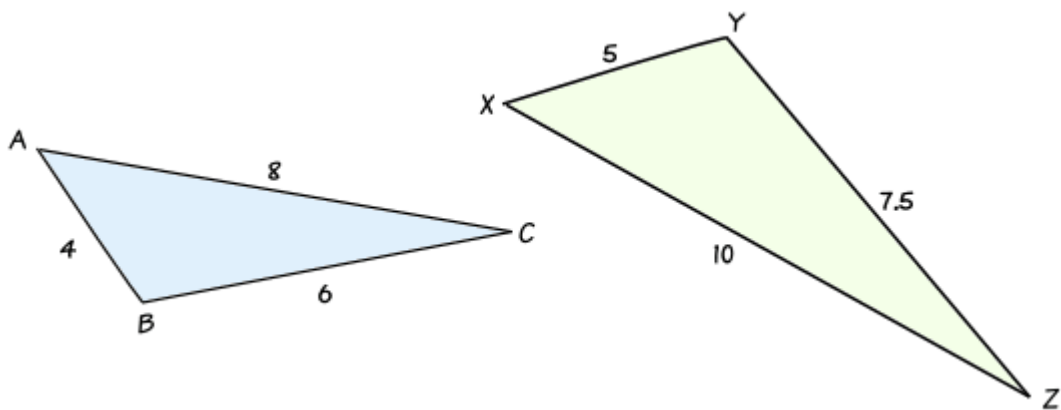
So there is enough information to tell us that the **two triangles are similar**.

## SSS

SSS "side, side, side" means that we have two triangles with all three pairs of corresponding sides in the same ratio.

If two triangles have three pairs of sides in the same ratio, then the triangles are similar.

### Example:



In this example, the ratios of sides are:

- a:  $x = 6 : 7.5 = 12 : 15 = 4 : 5$
- b:  $y = 8 : 10 = 4 : 5$
- c:  $z = 4 : 5$

These ratios are all equal, so the two triangles are similar.

Example - pavyzdys

To find – sužinoti, nustatyti

Way – būdas

To mean – reikšti

To add – sudėti

Matching – toks pat, vienodas

<http://www.mathsisfun.com/geometry/triangles-similar-finding.html>