Handout 1: Triangle categories grid

Definitions

Acute angled all angles less than 90°
Right angled one angle equal to 90°
Obtuse angled one angle greater than 90°

Scalene all angles different
Isosceles (at least) two angles equal
Equilateral three angles equal

	Acute angled	Right angled	Obtuse angled
Scalene			
Isosceles			
Equilateral			

Give me an example of a triangle that could fit in each box.

Handout 2
Data collection sheet 1 (for listing)

Possible angles	**Ac / Ri / Ob**	**Sc / Is / Eq**
10º, 10º, 160º	*Ob*	*Is*
10º, 20º, 150º	*Ob*	*Sc*
10º, 30º, 140º	*Ob*	*Sc*
10º, 40º, 130º	*Ob*	*Sc*
10º, 50º, 120º	*Ob*	*Sc*
10º, 60º, 110º	*Ob*	*Sc*
10º, 70º, 100º	*Ob*	*Sc*
10º, 80º, 90º	*Ri*	*Sc*
20º, 20º, 140º	*Ob*	*Is*
20º, 30º, 130º	*Ob*	*Sc*
20º, 40º, 120º	*Ob*	*Sc*
20º, 50º, 110º	*Ob*	*Sc*
etc		

Use only angles that are multiples of 10º. This rule can be changed: multiples of 15º is fairly quick, multiples of 5º takes a very long time (but may be suited to sharing the task across groups).

Write angles in increasing order – this avoids some duplicates (or are they?)

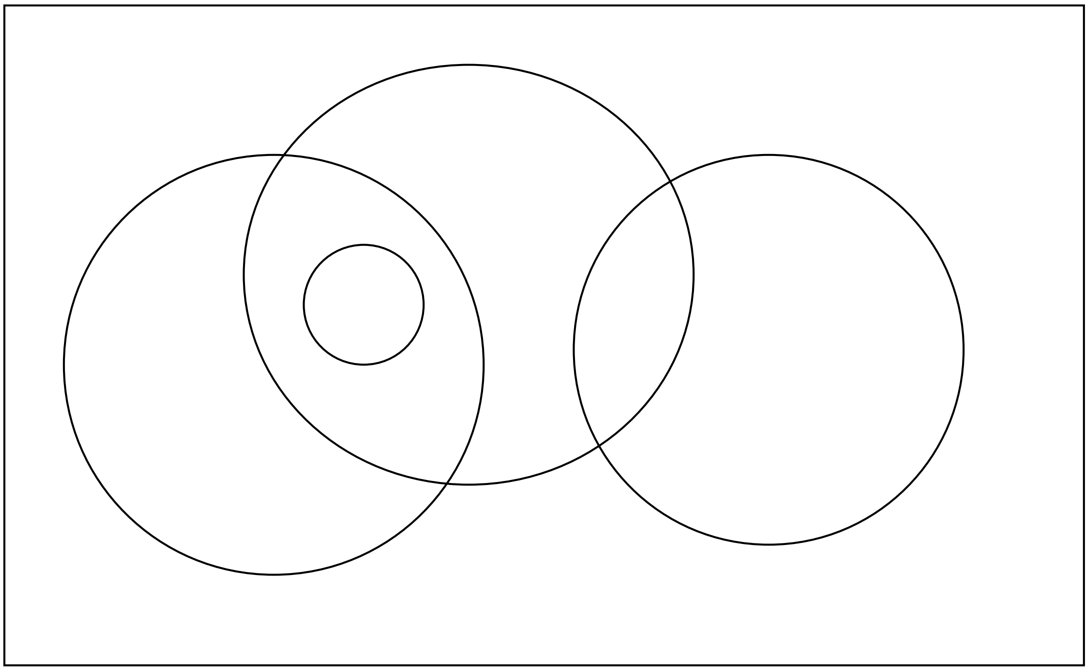
Encourage students to be systematic.

Can a triangle have an angle of 0º?

Handout 3
Data collection sheet 2 (for tallying)

	Acute angled	Right angled	Obtuse angled	Total
Scalene				
Isosceles				
Equilateral				
Total				

Handout 4: One way to represent the categories

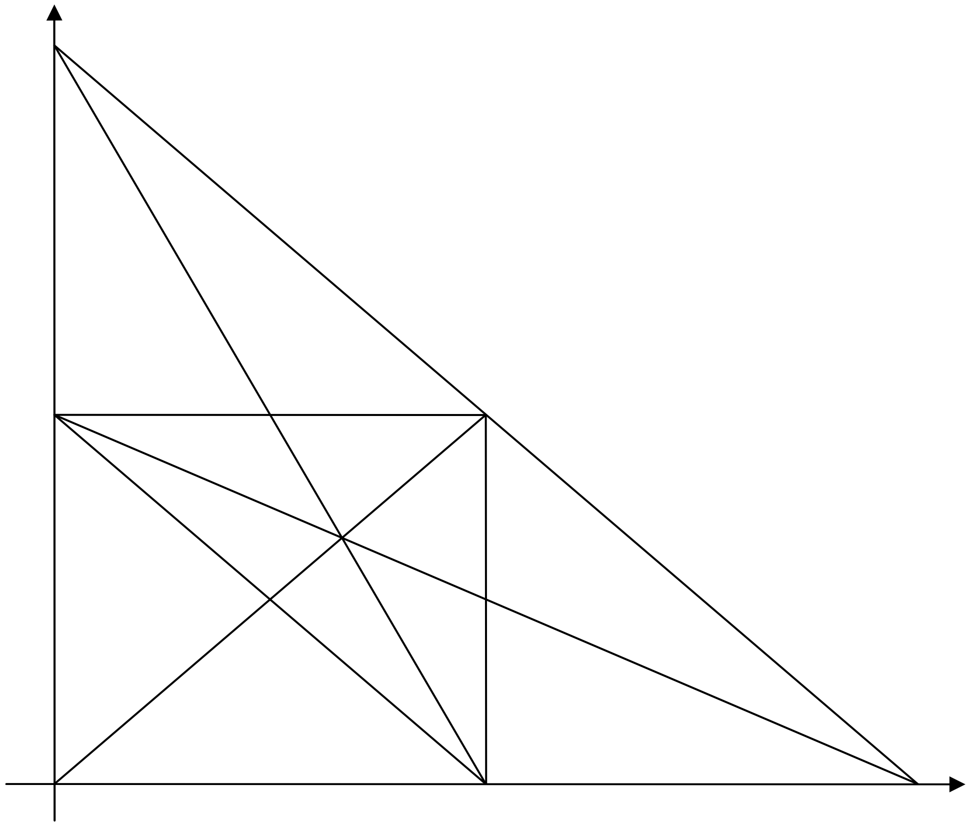


Label the different sets.

Can the categories of triangles be represented differently in Venn diagrams?

How many regions are there represented here? How does this compare with Handout 1?

Handout 5: Another way to represent the categories



Obvious line of isosceles triangles: $y = x$

Less obviously: combine $x = z$ and $x + y + z = 180°$ to get another line of isosceles triangles.

What is the third line of isosceles triangles?

Find the point of intersection of the three lines of isosceles triangles.

One obvious line of right-angled triangles: $y = 90°$

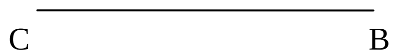
Why should $y = 90° - x$ be another line of right-angled triangles?

Shade the region that represents obtuse-angled triangles.

How many more obtuse-angled triangles are there than acute-angled triangles?

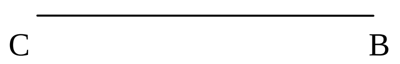
Handout 6

Draw the locus of points A such that triangle ABC is isosceles.



Handout 7

Draw the locus of points A such that triangle ABC is right-angled.



Handout 8

Shade the region that contains the set of points A such that triangle ABC is acute-angled.
Does this diagram prove that there are more obtuse-angled triangles than acute-angled triangles?