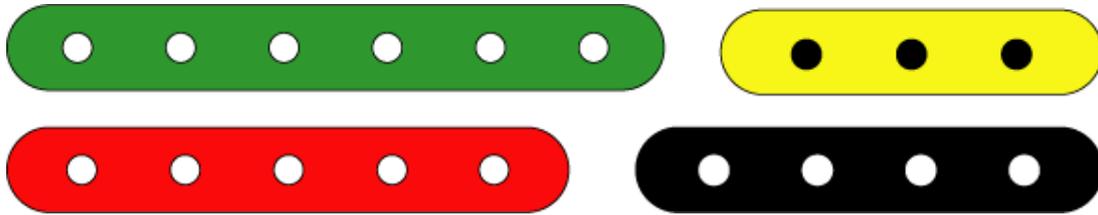


INVESTIGATING TRIANGLES

Mark and Stacey are making triangles with the class construction set. They have a pile of strips of different lengths.

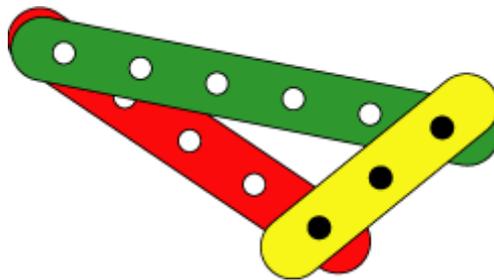


There are:

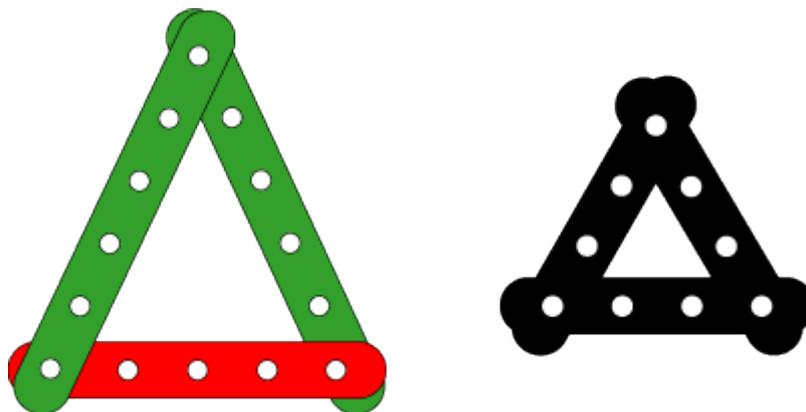
- **yellow** strips with 3 holes
- **black** strips with 4 holes,
- **red** strips with 5 holes and
- **green** strips with 6 holes.

There are plenty of strips of each colour.

Mark makes a triangle with a **green** strip, a **yellow** strip and a **red** strip.



Stacey makes a triangle with two **green** strips and one **red** strip and another triangle with three **black** strips.



How many different triangles can you make with these lengths?

Adopted from <https://nrich.maths.org/93>

Ask your students the following:

- Are some of you not able to form a triangle? If so, discuss why you think this is.
- If you were allowed to change only one stick, which stick would that be and why?
- Describe your triangle using as many of these words as you can (extend or contract this list as needed):

acute, obtuse, right, perpendicular, scalene, isosceles, equilateral, angle, side, length, degree,

larger, smaller, longer, shorter, area, square, opposite, adjacent.

Now give the students another stick so that they have four sticks altogether.

COOPERATIVE LEARNING AND MATHEMATICAL TALK: TRIANGLES

Ask your students to:

- make four different triangles
- tell their classmate what is the same and what is different about the four triangles they can make, again using as many of the words in the list above as possible.

Can you find three strips which cannot be made into a triangle when you use them together?

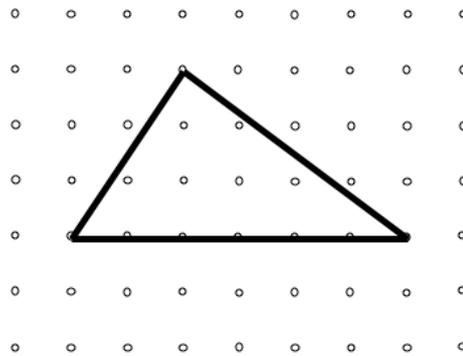
Possible Discussion Questions

Question 1:

What have you learned about a triangle from this investigation?

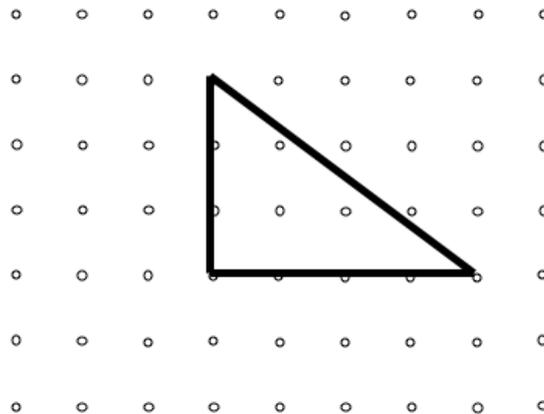
EXPLORING RIGHT ANGLED TRIANGLES

1. Allow students to use elastic band to form a triangle on the geo board as shown below.



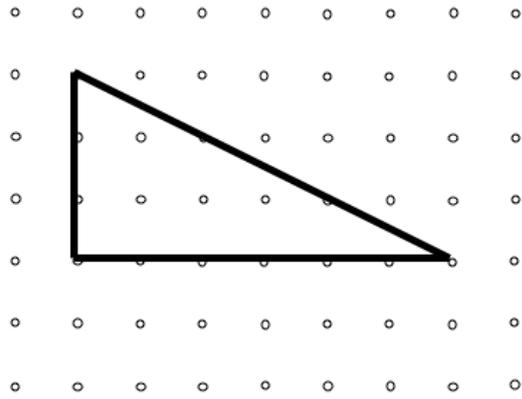
2. Task students to form a right-angled triangle by just moving one peg from the original triangle.

For Example:



3. Challenge students to repeat forming right angled triangles by moving just one peg from the last triangle formed.

For Example:



Identify Symmetrical Halves

4. Challenge students to see how many right -angled triangles can be formed if they stick to a row a grid of 7 rows of dots and 9 columns of dots?

5. Allow students to talk about the following:

- ✓ How they recognize when a right- angled triangle is formed.
- ✓ All the right angled triangles that they found
- ✓ The strategy used to make sure that the students find all the triangles.

Allow students to create a tessellation using right angled triangles.

Possible Discussion Questions

Question 1: If you could make a triangle that was as large as you wanted, would you be able to make one that had two right angles? Explain your thinking.

Question 2: Write everything you know that is true about all right triangles.

Question 3: Write in your own words the definitions for the new terms you have found (isosceles, scalene, acute, and obtuse).

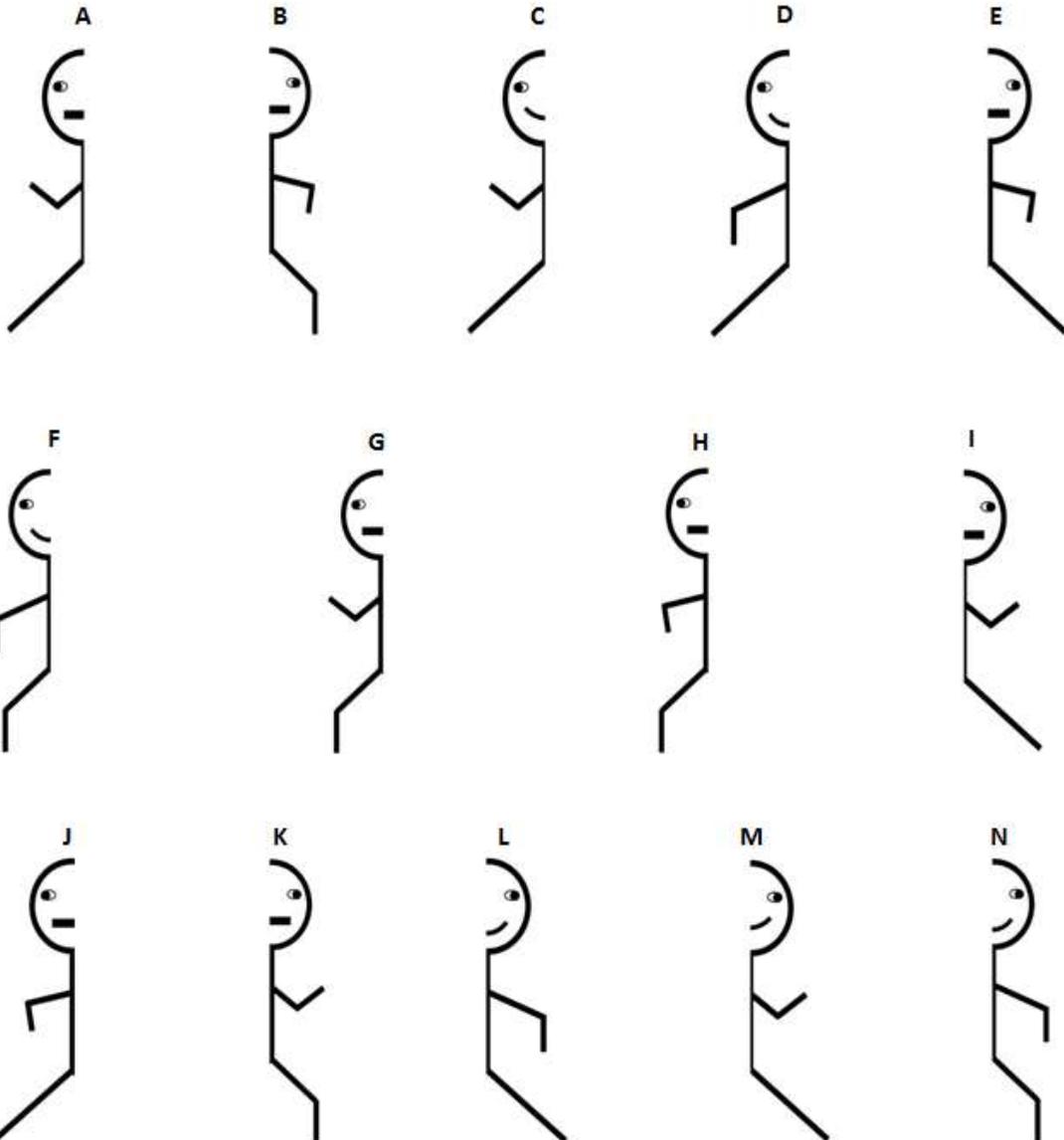
Summary question: Finish each sentence with as many different answers as possible:

All triangles have ...

Some triangles have

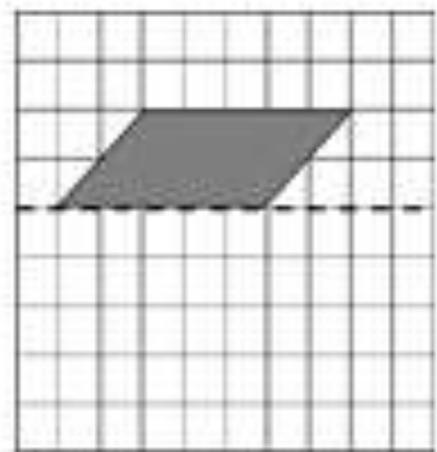
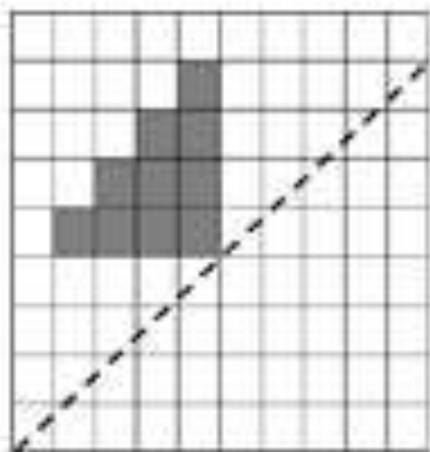
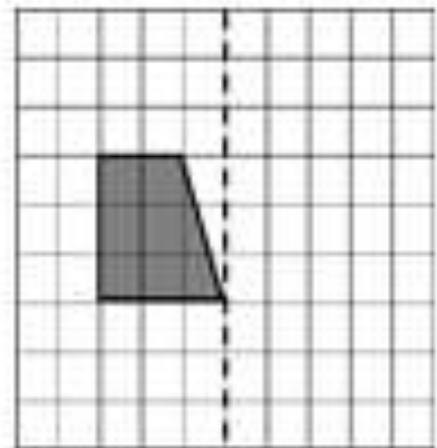
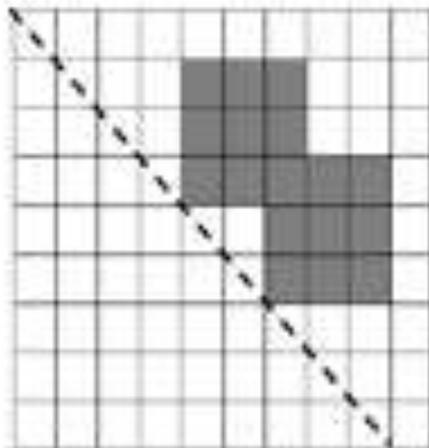
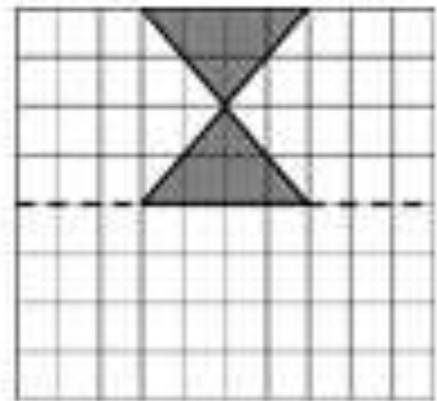
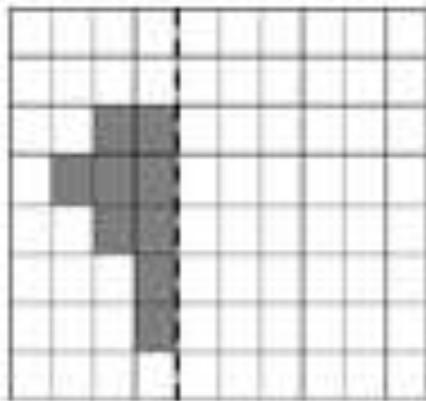
Identify Symmetrical Halves

Below are 14 halves of various 'stick-men'. **There are 7 different 'stick-men' in total and each is symmetrical.** Which halves can be joined to give a **symmetrical** stick man?



Completing Symmetric Figures

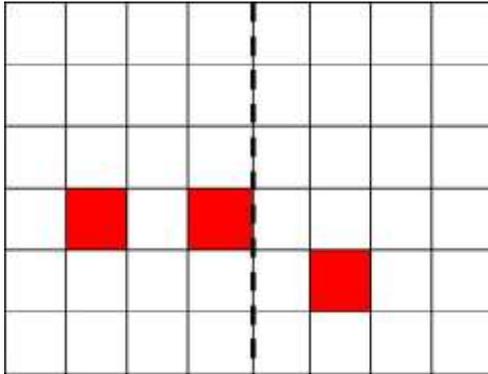
Each figure is half of a symmetric shape. Using the dotted line as a line of symmetry, complete each symmetric figure.



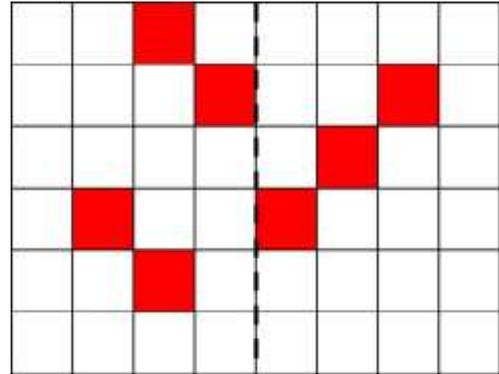
PROBLEM SOLVING



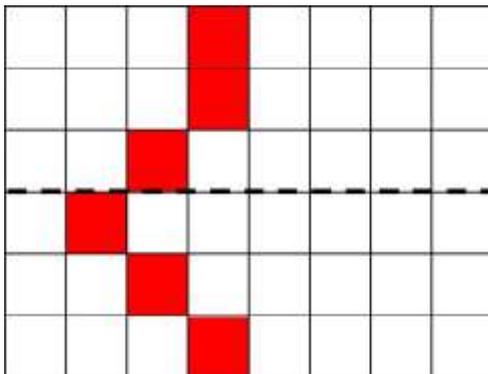
Colour 3 squares



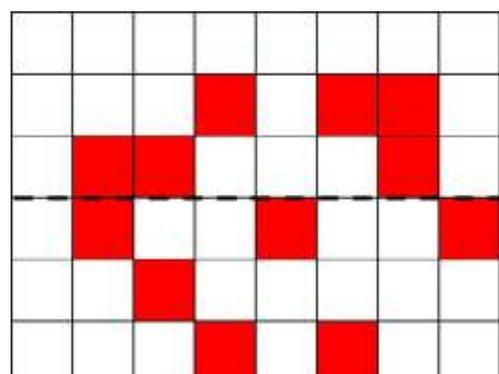
Colour 7 squares



Colour 4 squares



Colour 10 squares



Understand the problem
 Where is the line of symmetry? What is a symmetric pattern? How many squares do I have to colour?

Plan what to do
 How can I use the existing shadings to help me to determine which other squares to shade?

Carry out the plan
 Am I making progress? Do I need to re-visit the plan?

Check
 Is my end-product a symmetrical pattern?