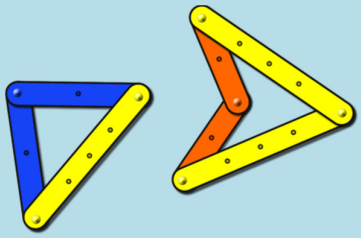
Geostrips: Classifying Triangles And Quadrilaterals



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INTRODUCTION

An earlier version of this task appears in the ATM publication: Learning and teaching mathematics without a textbook. I felt it was time to freshen it up a tad. I have used the idea with Y9 students but reckon it could easily be adapted for primary school classrooms.

MATHEMATICAL CONTENT

- Properties of shapes
- Inequalities
- Algebraic coding

APPLICABILITY

KS2 – KS3

Making and classifying triangles

Using sets of three lengths of three strips, coded as L (long), M (medium) and S (short), the first idea is to see how many different triangles can be made.

All ten triangles, classified as LLL, MMM, SSS, LLM, LLS, MMS, MML, SSM, SSL, LMS can be made providing the following conditions pertain:

S + M > L, 2S > M, 2S > L and (therefore), 2M > L

When distributing the strips I ensure some sets can only make subsets of the above.

For example if 2S < M, then SSM, SSL cannot be made. Furthermore if S+M < L then LMS also cannot be made.

This is in order to generate discussion about why certain triangles cannot be made thus leading to the engaging students in conditionality for making triangles..

Potential ideas arising from this are:

- Algebraic coding
- Properties of triangles
- Systematising
- Classifying
- Similarity
- Congruence
- Constructions

Making and classifying quadrilaterals

With four strips we move from a rigid to a dynamic situation.

Quadrilaterals can be initially be classified by considering the following conditions:

a) Pairs of parallels (or Pops) i.e. 0, 1, 2 or 2 pairs of parallels

b) Right Angles (RA) 0, 1, 2, 4