YuMi Deadly Maths

Year 2 Teacher Resource:

MG – Tracking triangles

Prepared by the YuMi Deadly Centre
Faculty of Education, QUT

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YuMi Deadly Maths Year 2 Teacher Resource: **MG – Tracking triangles**

ACKNOWLEDGEMENT

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Year 2 Measurement and Geometry

Tracking triangles

Learning goal

Students will:

- identify a variety of three-sided shapes
- describe the features of all triangles.

Content description

Measurement and Geometry – Shape

- Describe and draw two-dimensional shapes, with and without digital technologies (ACMMG042)

Big idea

Geometry – 2D shapes – interpretation

Resources

Maths Mat, large elastics of different colours, clipboard, pencils, geoboards, rubber bands, grid paper, paper triangles

Reality

Local knowledge

Where do we find shapes? [everywhere in the environment] Identify some shapes in the local environment and in the classroom. Discuss these shapes in terms of their features, including: sides, straight or curved edges, and number of corners or pointy bits.

Prior experience

Check students' prior knowledge of 2D shapes – rectangles, circles, triangles, squares. *What makes a triangle?* [three sides, three corners] Demonstrate that starting from a point, a turn from that point produces an angle, the turn of the angle can be rotated 180° to make a straight line, the straight line makes a path, the paths of 3 sides make a triangle.

Kinaesthetic

Shape hunt for triangles in the classroom and outside environment. Students are detectives trying to track down all the triangles they can see. Emphasise the properties of triangles: three sides and three corners. Students draw all the triangles they find. Teacher reinforces properties on the walk.

Abstraction

Body

Students walk on the straight lines of the mat turning to make four sides, counting the number of sides as they go. They then walk two straight lines, stop, and walk back to the starting point. *How many sides were walked this time?* [three] *What do we call shapes with three sides?*

Maths Mat and elastics: Teacher directs three students using one elastic to make various triangles, e.g. *Can you make a triangle where each side is a different length? Where all sides are the same length? Where two sides meet at a square? What is the same about all the triangles we have made? They have three sides and three corners*.

In groups of three, students take one elastic per group and walk a few steps apart. *What shape has been made? How do you know it's a triangle?* Stress the properties. *A triangle has three sides and three corners*. Name the sides, e.g. *From Jane to Anne, from Anne to Mary and Mary back to Jane.* Name the corners, e.g. *One corner is where Jane stands and others are where Anne and Mary stand. Make as many different triangles as you can. What makes them all triangles? What must all triangles have?* [Name the properties.]

Hand

Students make as many triangles from the environment and elastics activity as they can using a geoboard and rubber bands. In pairs, they describe their triangles.

Students draw many types of triangles on grid paper.

Mind

Students visualise various triangles nominated by students or the teacher, e.g. *The triangle we use to play music with, the triangle that is part of the roof of a house.* Reverse: *With your eyes closed, draw a triangle on the desk, on the back of the student next to you, in the air.*

Make a closed shape that has two long sides and a short side.

Creativity Students cut out different shapes and sizes of triangles and make a picture or pattern using the triangles.

Mathematics

Language/ symbols triangle, three-sided, shape, sides, straight, curved, corners, two-dimensional

Practice

1. Students cut out triangles to make different shapes, e.g. *What shapes can you make with two triangles, three, four, five, six?*
2. Students cut out triangles and make patterns with triangles of different colours.
3. Digital activities.
4. Make a class chart of the different triangles found in the classroom and the outside environment.

Connections Connect to shapes that have more than three sides.

Reflection

Validation Students locate in their world where a triangle is made, e.g. going from home to school to the shops and back home again; linking numbers in a triad 15 15 / 7 8 3 5

Application/ problems Provide applications and problems for students to apply to different contexts independently, e.g. making triangles with sticks, start with one stick per side and progress to making larger triangles using more sticks in the sides.

Extension

Flexibility. Students are able to identify/make as many differently shaped triangles as possible and state why they are all triangles. Discuss what's the same and what's different. Include triangles that have curved sides.

Reversing. Provide examples that start at any point and go to all other parts: story (*I am walking from the classroom to the tuckshop to my lunch seat and back to the classroom*) ↔ model of triangle ↔ properties ↔ drawing/making triangle.

Generalising. All triangles have three sides, three angles, three corners and are closed shapes. Cut off the corners and join them together to show the sum of the angles forms a straight line equal to 180°.

Changing parameters. Students translate, rotate and flip their triangles to view the different images. Explore 3D shapes that have a triangular base, e.g. Toblerone chocolate box, tents  , wedge of cheese 

Teacher's notes

- Stress only the properties of triangles – three sides, three angles, three corners; do not name the various types of triangles.
- In the Practice section, students should cut some triangles with straight sides and others with curved sides.
- Students need to be taught the skill of visualising: closing their eyes and seeing pictures in their minds, making mental images; e.g. show a picture of a kookaburra, students look at it, remove the picture, students then close their eyes and see the picture in their mind; then make a mental picture of a different bird.

- Suggestions in Local Knowledge are only a guide. It is very important that examples in Reality are taken from the local environment that have significance to the local culture and come from the students' experience of their local environment.
- Useful websites for resources: www.rrr.edu.au; https://www.qcaa.qld.edu.au/3035.html
- Explicit teaching that **aligns with students' understanding** is part of every section of the RAMR cycle and has particular emphasis in the Mathematics section. The RAMR cycle is not always linear but may necessitate revisiting the previous stage/s at any given point.
- Reflection on the concept may happen at any stage of the RAMR cycle to reinforce the concept being taught. Validation, Application, and the last two parts of Extension should not be undertaken until students have mastered the mathematical concept as students need the foundation in order to be able to validate, apply, generalise and change parameters.