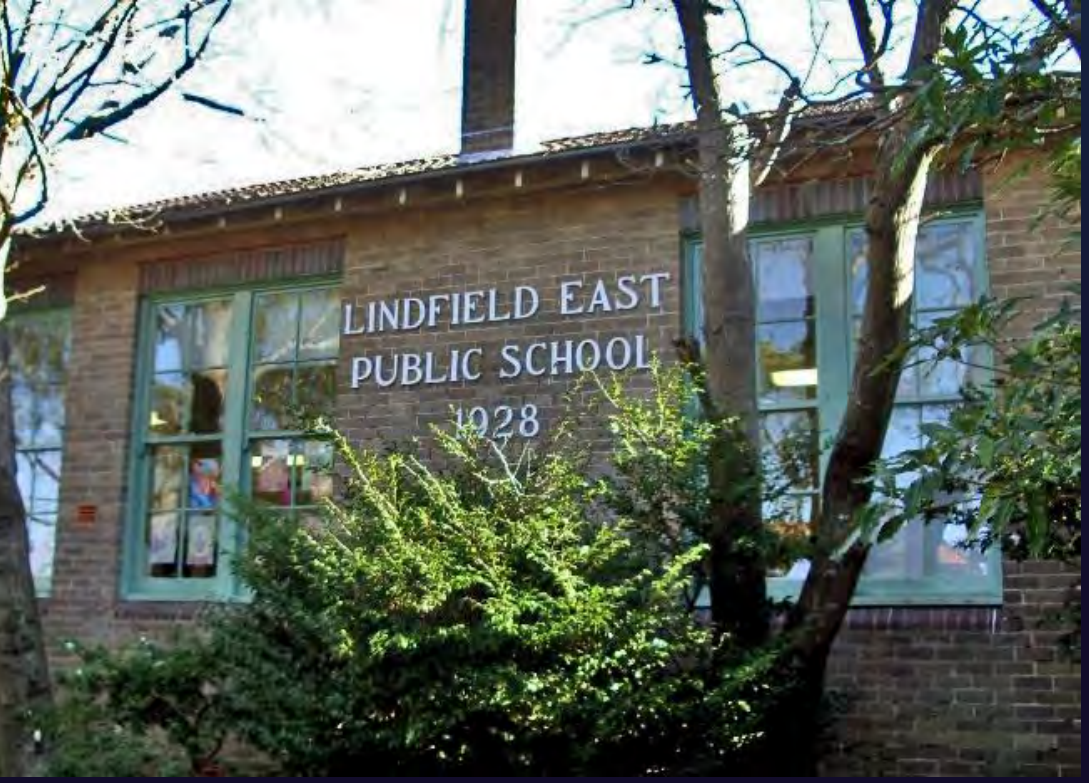


MATHEMATICS COLLABORATIVE LEARNING SESSION

11 August 2016

https://www.youtube.com/watch?v=3Wz-fGewi48

Stage One Numeracy Committee:

Diane Read, Connie Sawyer, Deanna Sonter, Emily Gaughan

Presenting Teachers: Deanna Sonter, Karlene Withers and Mandy Cuneo

Agenda

Stage 1 Session	
Time	**Activity**
3:30 - 3:40	Welcome and Introduction Distribute card and dice activities 1DS Classroom – Room 18 Children to wait in 1EG
3:40 - 3:55	Session 1
3:55 - 4:10	Session 2
4:10 - 4:25	Session 3
4:25 - 4:30	Conclusion and reflection 1DS Classroom – Room 18 – K2 COLA

Timetable

Time	Group	Classroom
3:40 - 3:55	Triangles	1DS
	Circles	1CS
	Squares	2MC
3:55 - 4:10	Triangles	2MC
	Circles	1DS
	Squares	1CS
4:10 - 4:25	Triangles	1CS
	Circles	2MC
	Squares	1DS

Agenda

Parents and their children will be grouped and rotate between the three teaching and learning activities.

1DS Classroom	Place Value Consolidation
1CS Classroom	Card Activities
2MC Classroom	2D Shapes

Mathematics K-6 Syllabus

NSW SYLLABUS for the Australian curriculum

MATHEMATICS K–10 SYLLABUS

Reflection

	Number and Algebra Whole numbers Addition and Subtraction Multiplication and Division Fractions and Decimals Patterns and Algebra	Measurement and Geometry Length Area Volume & Capacity Mass Time 2D space 3D Space Angles Position	Statistics and probability Chance Data
Communicating			
Problem solving			
Reasoning			
Understanding			
Fluency			

Number Strategies

Emergent

- Is learning to count visible items

Perceptual counting

- Counts visible items to find the total count

Figurative counting

- Visualises concealed items and determines the total by counting from one

Counting-on-and-back

- Counts on or back to solve problems

Facile

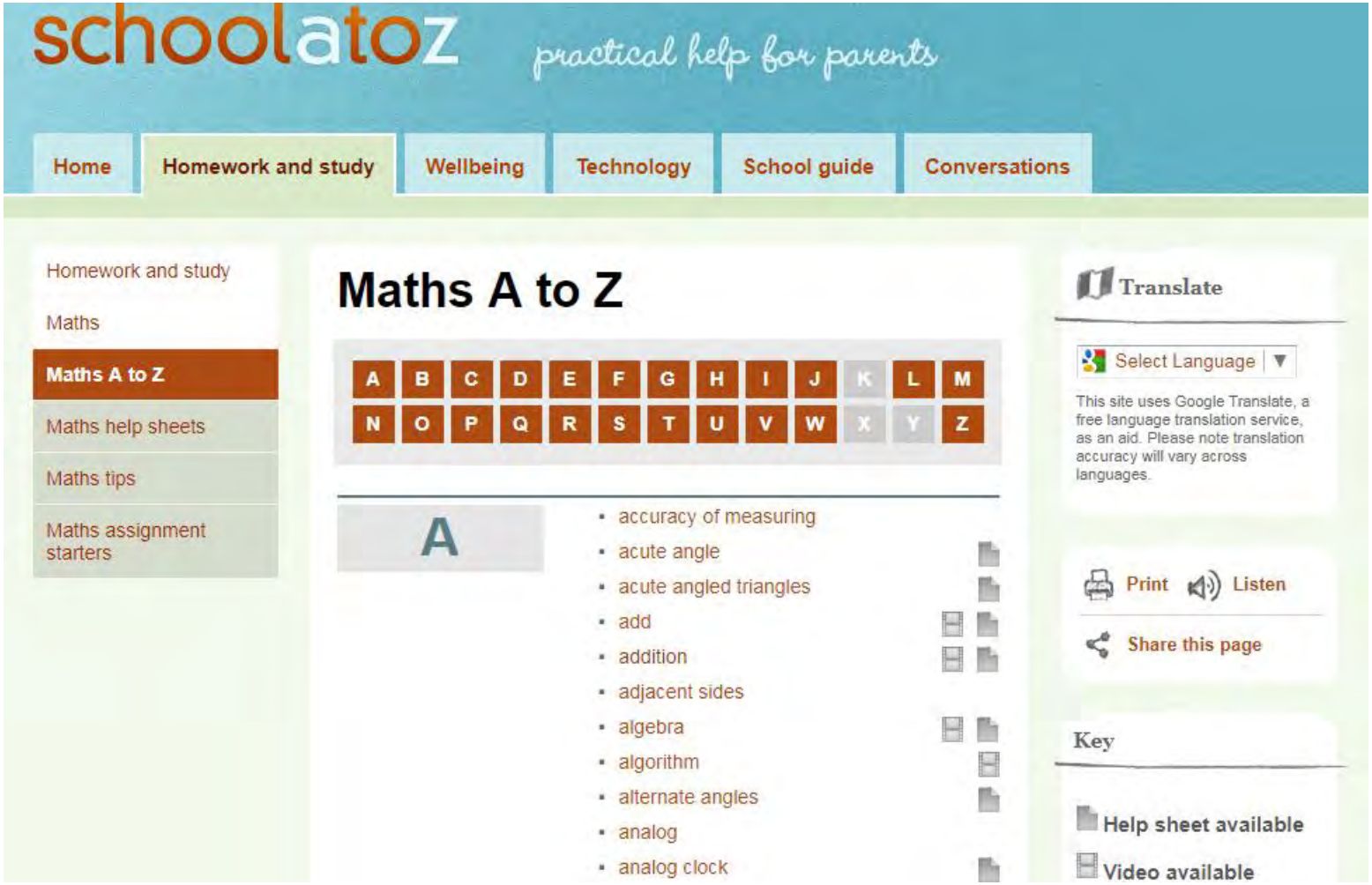
- Uses known facts, number structure and other non-count-by-one strategies to solve problems (involving 1 or 2 digits)

Number Strategies

How would you solve this problem?

9 + 6

Schools A-Z



https://www.det.nsw.edu.au/eppcontent/glossary/app/resource/factsheet/4021.pdf

Place Value Consolidation

https://www.youtube.com/watch?v=-H1bN3GQpok

https://www.youtube.com/watch?v=hdKWF5RdwK8

https://www.youtube.com/watch?v=cqhJdWgLU-g

100 or Bust

Throw	Dice Number	Value	Subtotal
Throw 1			
Throw 2			
Throw 3			
Throw 4			
Throw 5			
Throw 6			
Throw 7			
Total			

Card Activities

https://www.youtube.com/watch?v=1XpGCfqmmyM

Salute

*short deck of cards (1-10)
2 players + 1 dealer

- Deal 1 card face down to each player

- When dealer says 'SALUTE', each player raises the card to their forehead.
-
- The dealer says the total.
-
- Each player has to work out the number of the card on their forehead by looking at the other players card and subtracting it from the total.
-
- The 1st person to get their card right gets a point.

Variations:
Use multiplication
include picture cards with values Jack=11, Queen=12, King=13

Aug 17-2:16 PM

I SPY

* short deck of cards (1-10)
* 2 players

- 40 cards are dealt face up in a 8x5 array
-
- 1 player challenges the other player to find 2 cards next to each other that add to make a particular number
- "I spy two cards which add to make....."
-
- The other player looks for as many matches as they can next to each other.
-
- If they miss any pairs, the other player may keep them.
-
- Players swap roles and continue till all cards are gone.

Aug 17-2:27 PM

STAGE 1

PARENT INFORMATION

GEOMETRY-2D SHAPES

GEOMETRY

Children's Misconceptions

Many misconceptions about space are 'learned misconceptions'

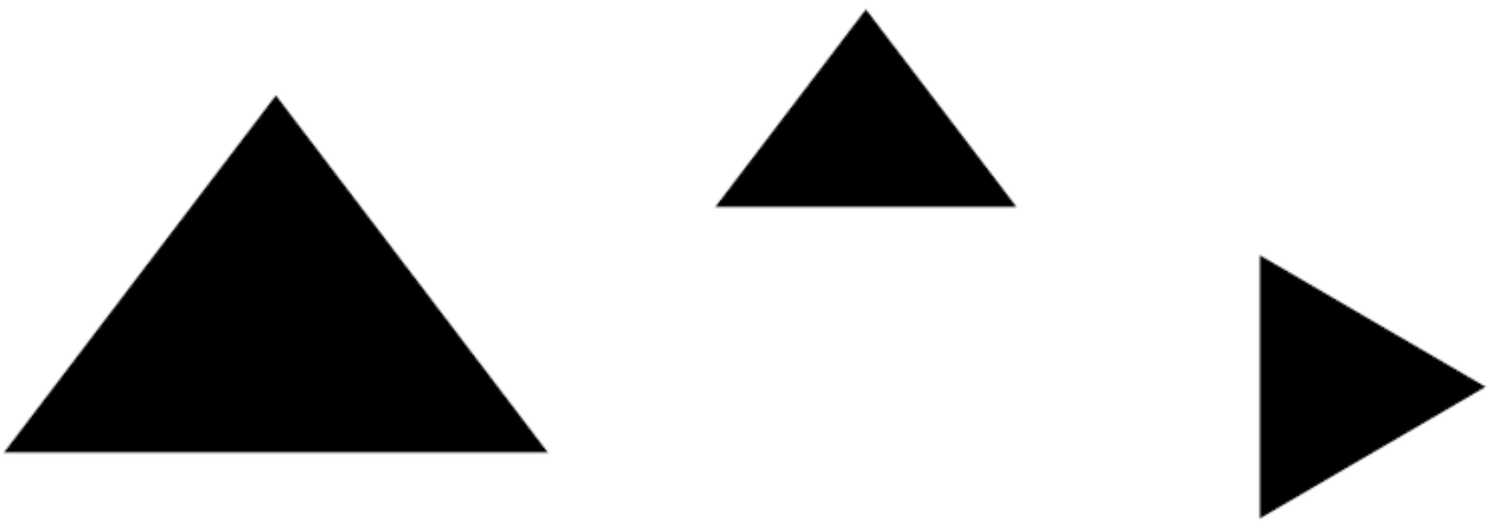
Children focus on the wrong characteristics and develop limited or false concepts

Geometrical figures are often presented in standard orientations making it difficult for children to generalise these concepts

GEOMETRY

Learned Misconceptions 1

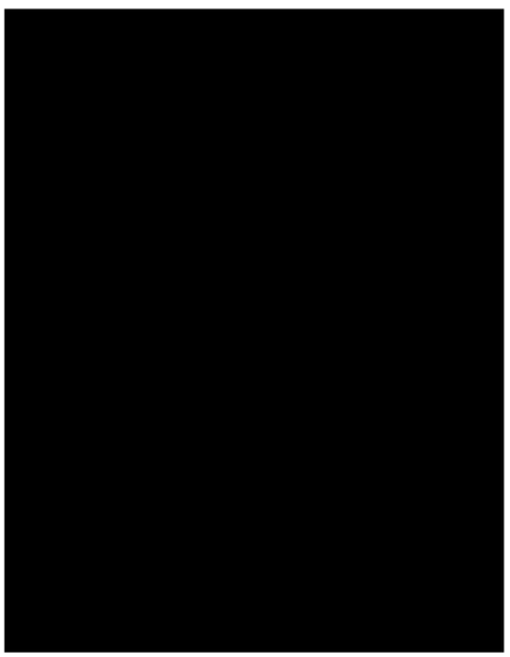
‘It’s not a triangle because it has fallen over’



GEOMETRY

Learned Misconceptions 2

‘Rectangles lie down’



GEOMETRY

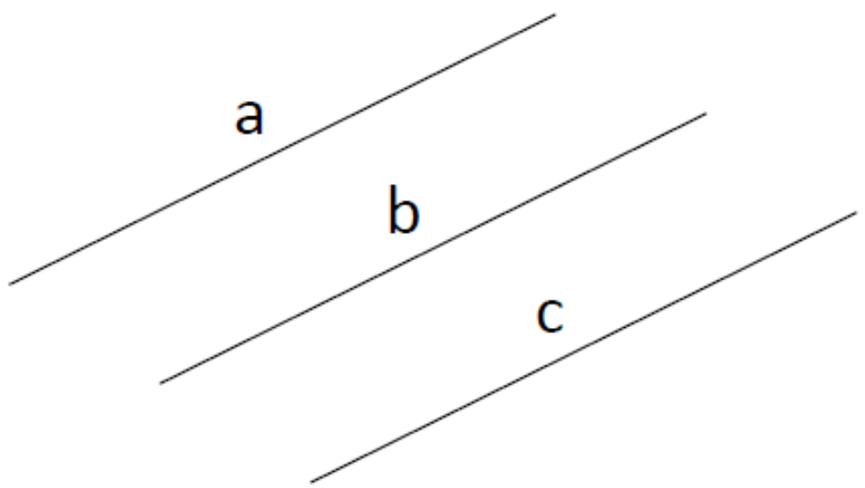
Learned Misconceptions 3

‘It’s too thin to be a rectangle. Rectangles are about twice the size of a square’

GEOMETRY

Learned Misconceptions 4

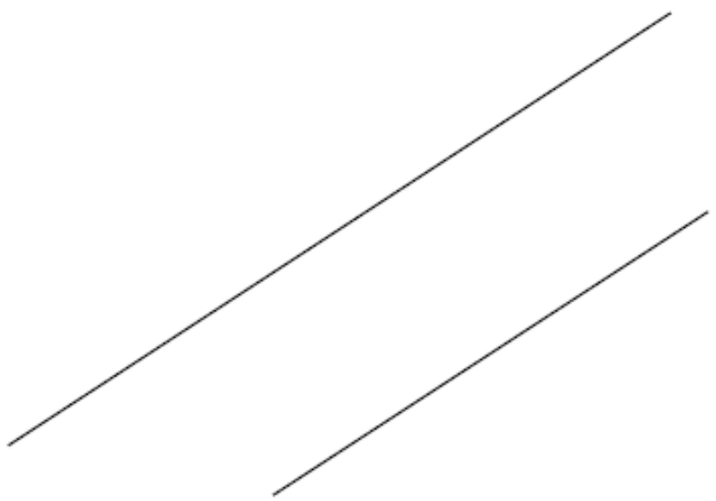
‘a is not parallel to c because b is in the way’



GEOMETRY

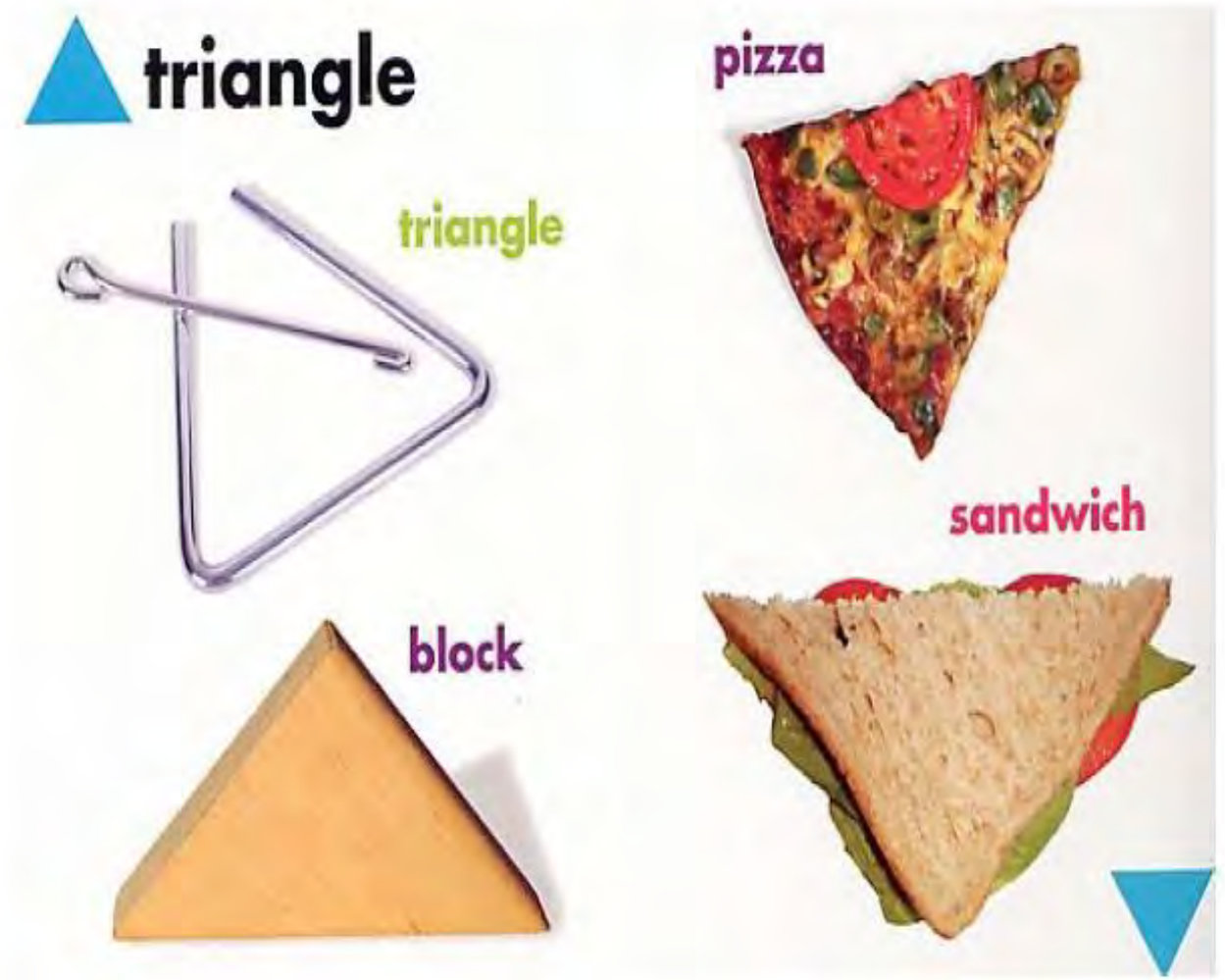
Learned Misconceptions 5

‘But parallel lines have the same length!’



GEOMETRY

Things to watch for … (I)



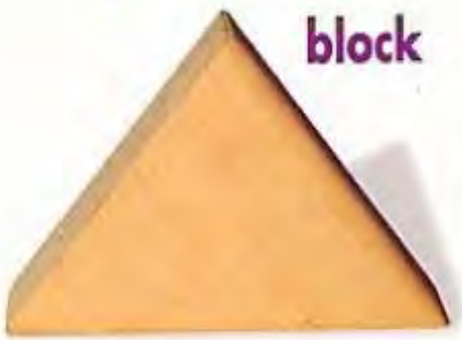
GEOMETRY

Things to watch for … (I)

Not “closed” shape

triangle

3D object

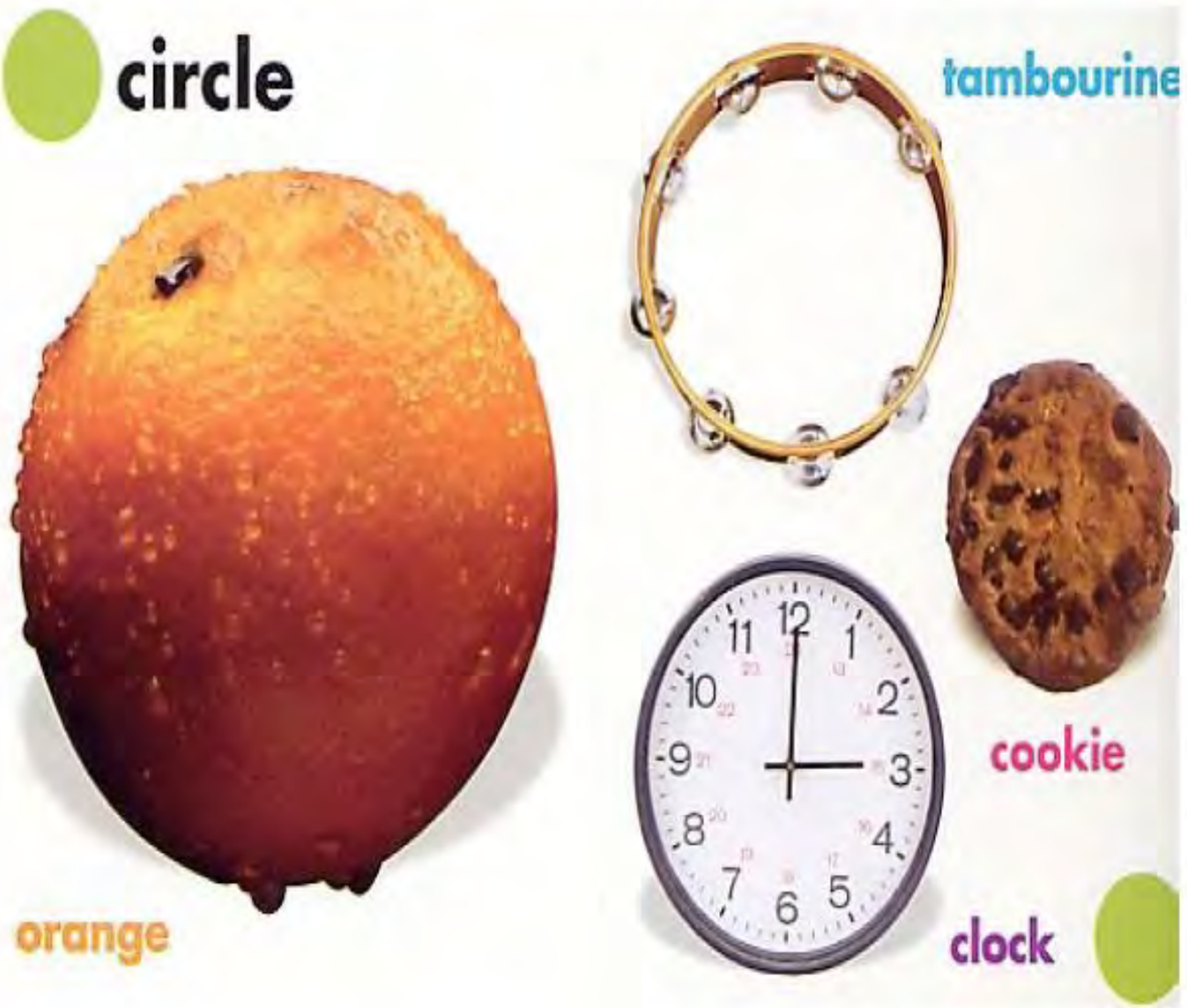


One curved side

Sides not straight

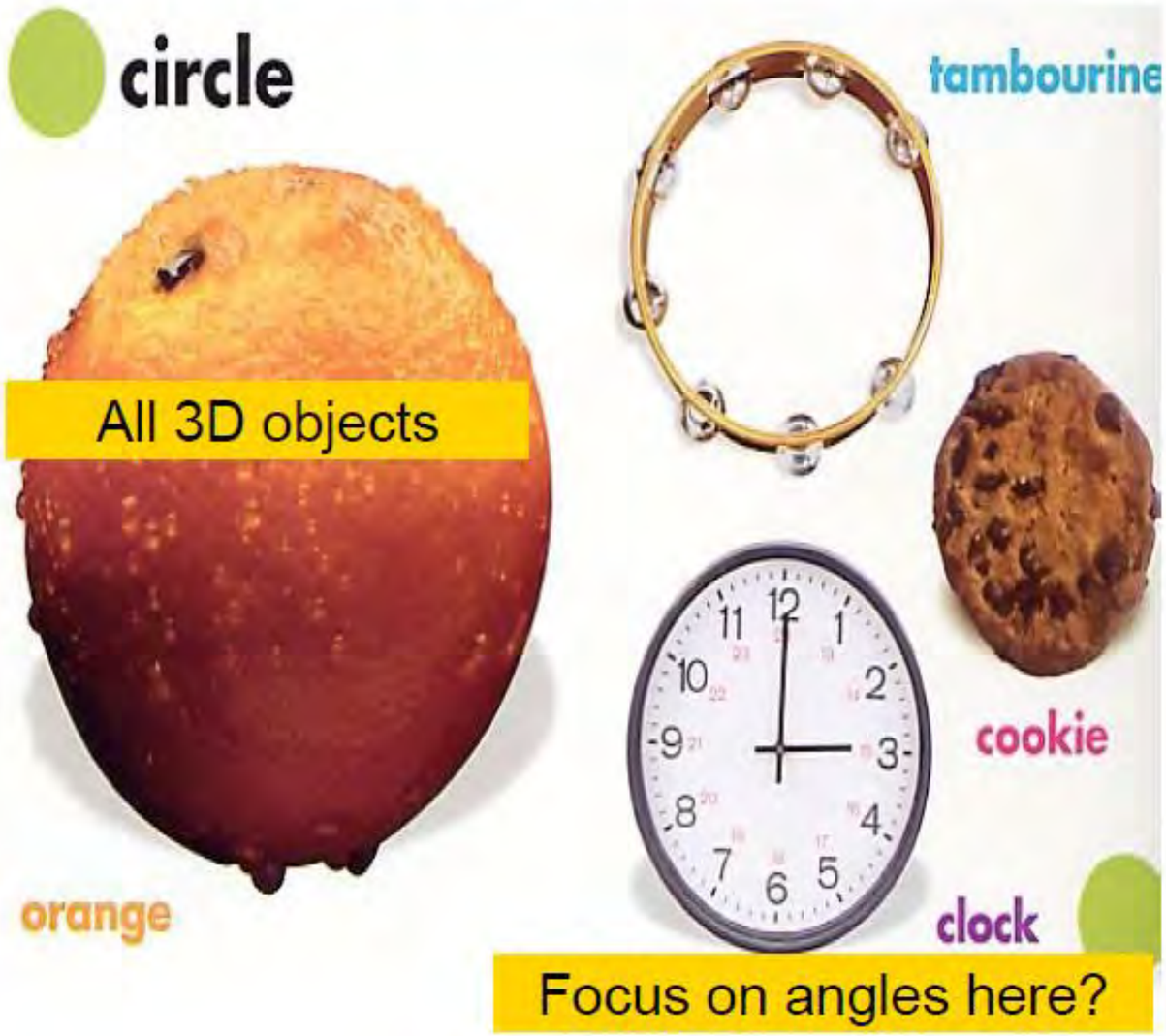
GEOMETRY

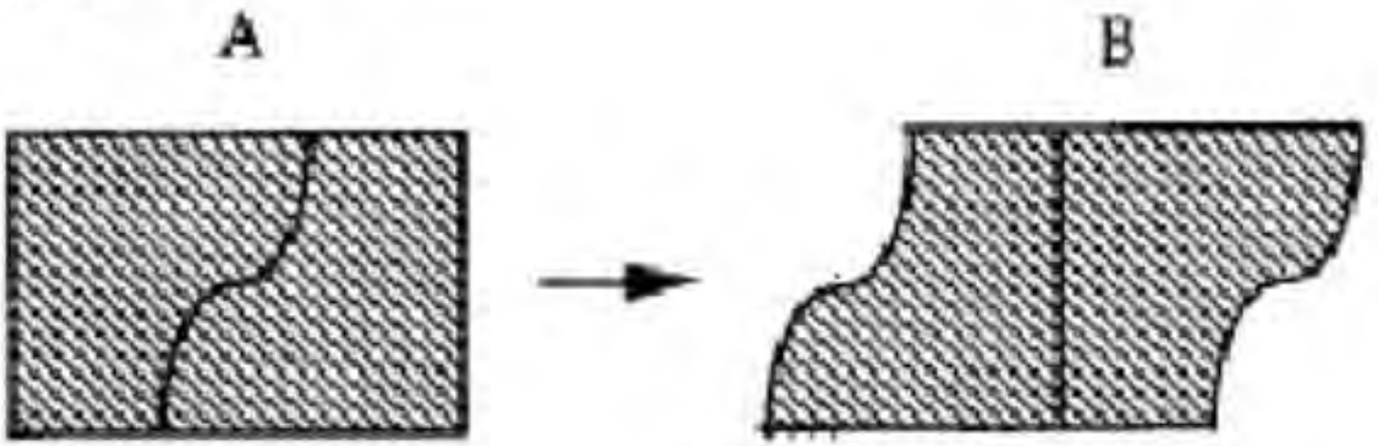
Things to watch for … (II)



GEOMETRY

Things to watch for … (II)





Ring two statements that are true:

The area of A is greater than the area of B

The area of A is less than the area of B

Both areas are the same

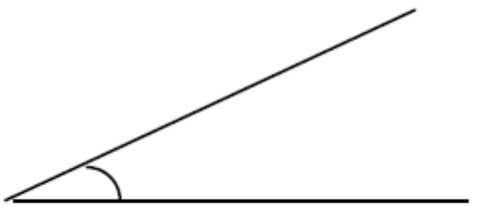
The perimeter of A is greater than the perimeter of B

The perimeter of A is less than the perimeter of B

Both perimeters are the same

Example of misconception:

Angle A



Angle B

Q. Compare the sizes of Angle A and Angle B.

Ans. Angle A is smaller than Angle B

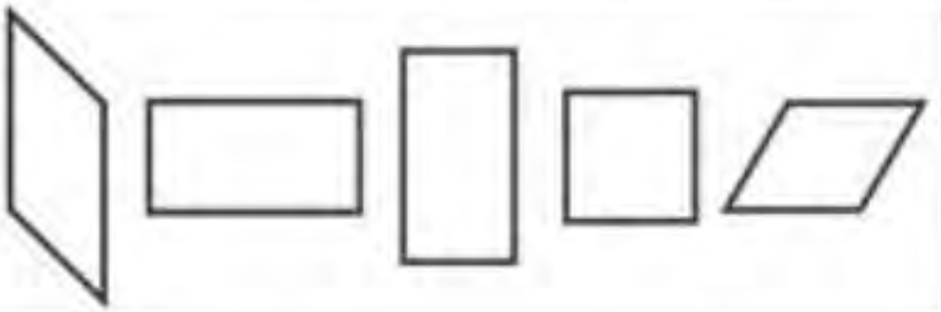
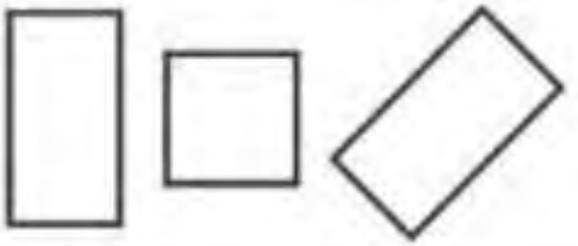
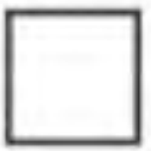
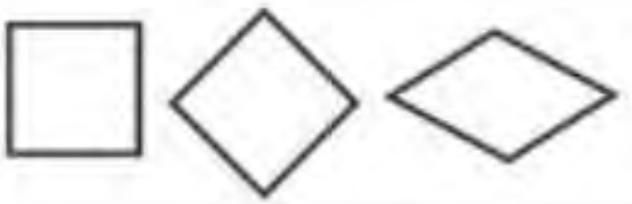
Some of the common misconceptions of triangles are as follows:

- Triangles have one point at the top and two points at the bottom
- The bottom of a triangle is flat

Some of the common misconceptions of rectangles are as follows:

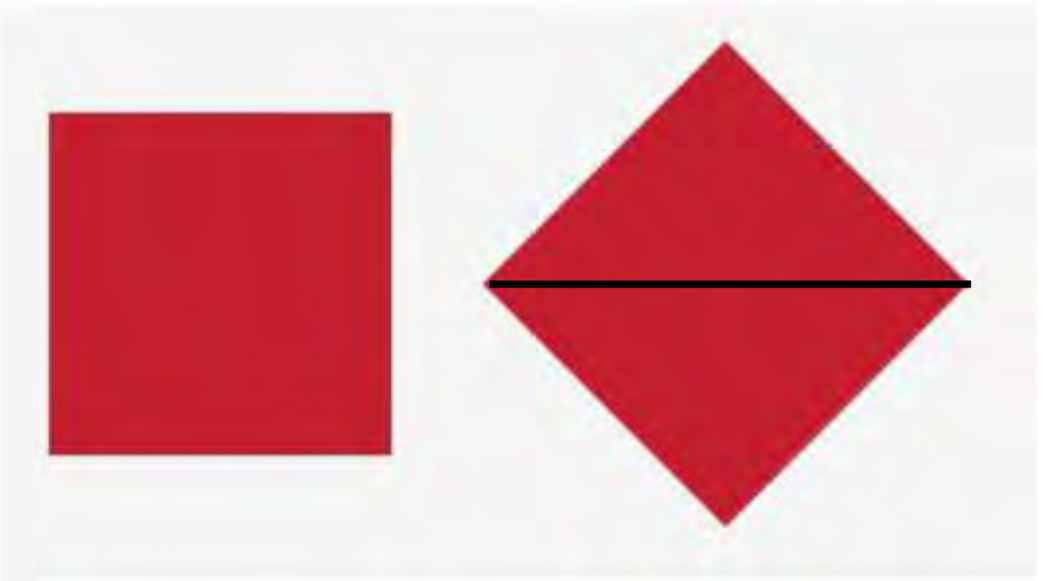
- Rectangles are always long
- Rectangles have two long sides and two short sides

Example of misconception:

Shape	Shape Prototype	Figures Possibly not Recognized when Reasoning with a Concept Image and not a Concept Definition
Parallelogram		
Rectangle		
Square		
Rhombus		

Example of Misconception:

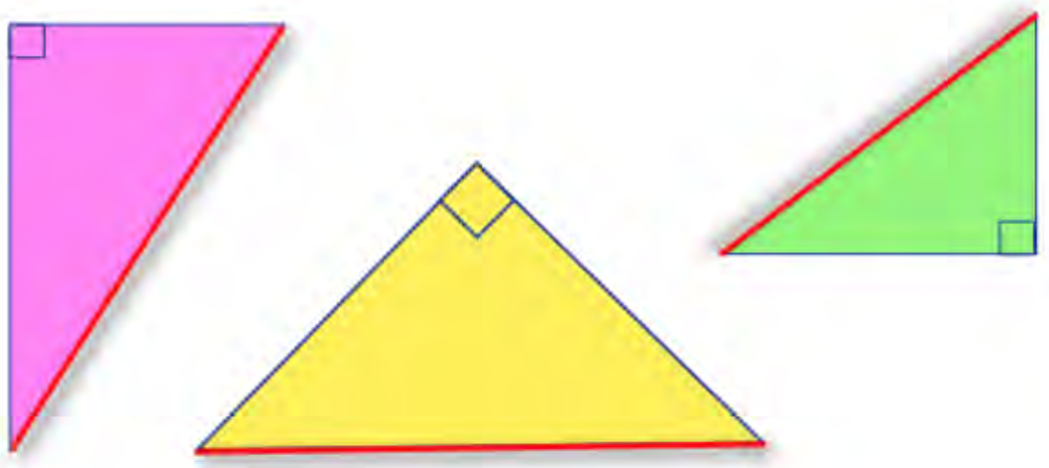
In the diagram below students may not recognize the second shape as the same square, but instead a diamond or a kite.



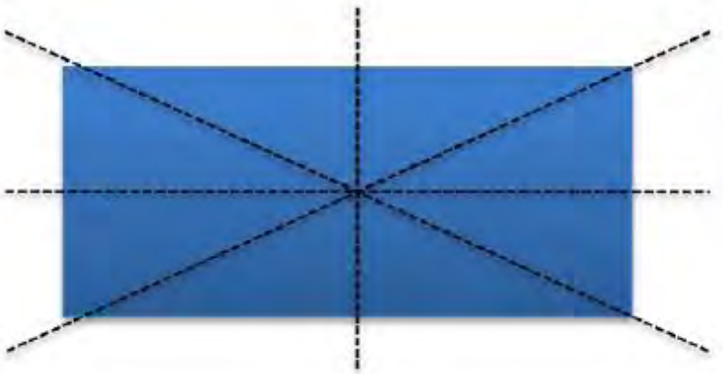
Line not identified as a diagonal unless it is a sloping line.

Example of misconception:

Given the right angled triangles below students may identify only the pink and green triangles as right angled triangles since they can clearly identify the right angles using the sides which are vertical and horizontal. However, since the yellow triangle does not have a vertical side meeting a horizontal one, students may not be able to acknowledge the existence of the right angle.



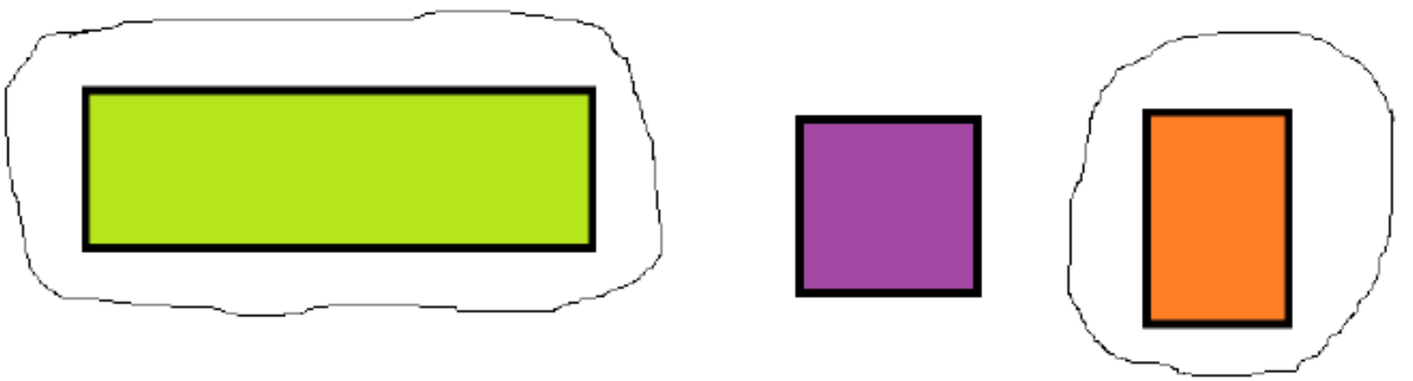
Example of Misconception:



From the diagram above, the number of lines of symmetry is easily misinterpreted as 4.

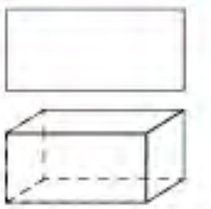
Example of Misconception:

- Circle the rectangles given the following shapes:



School AtoZ

2D shapes and 3D objects or solids



2D shapes have two dimensions – length and width.

3D objects or solids have three dimensions – length, width and depth.

A polygon is a 2D shape with straight sides and many angles.
A regular polygon has all sides the same length and all angles the same size.

These polygons are regular:

These polygons are irregular:

http://www.schoolatoz.nsw.edu.au/homework-and-study/mathematics/help-sheets

DoE handouts - click this link

FEATURES OF 2D SHAPES

2 dimensions - length and width

FEATURES OF POLYGONS

- sides are lines, lines are straight
- sides - length - equal, not equal
  number
- angles - number and size - amount of turn between two lines that meet at a corner. (more than a right angle, less than a right angle, right angle)
- corners (vertices (vertex for one)) - number
- sets of parallel lines - number

Definition in your own words

A triangle is a 2D shape. It has:-

- 3 sides that can be equal or not equal,
- 3 vertices and
- 3 angles that can be equal or not equal.
- It has no sets of parallel lines.

Facts/characterisics

3 sides that are equal or not equal

3 angles that are equal or not equal

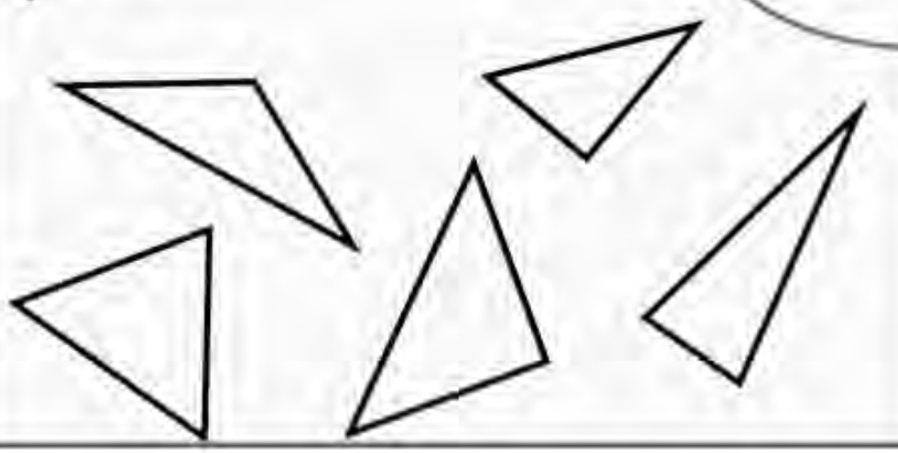
No sets parallel lines

3 vertices

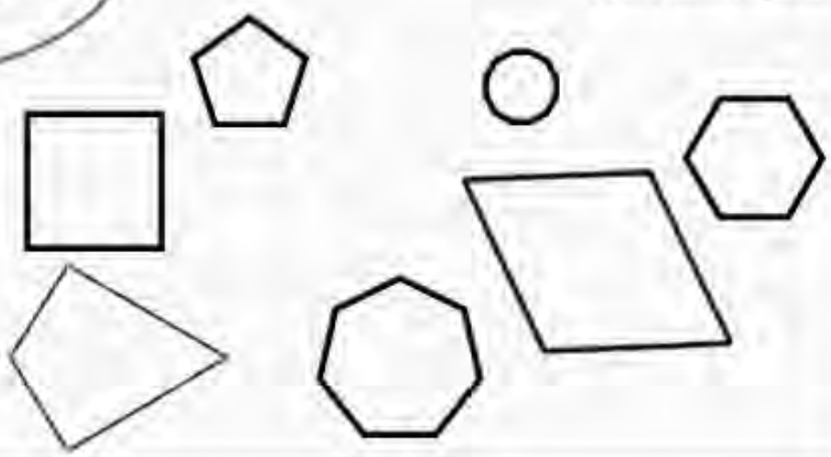
Word

Triangle

Examples



Non-examples



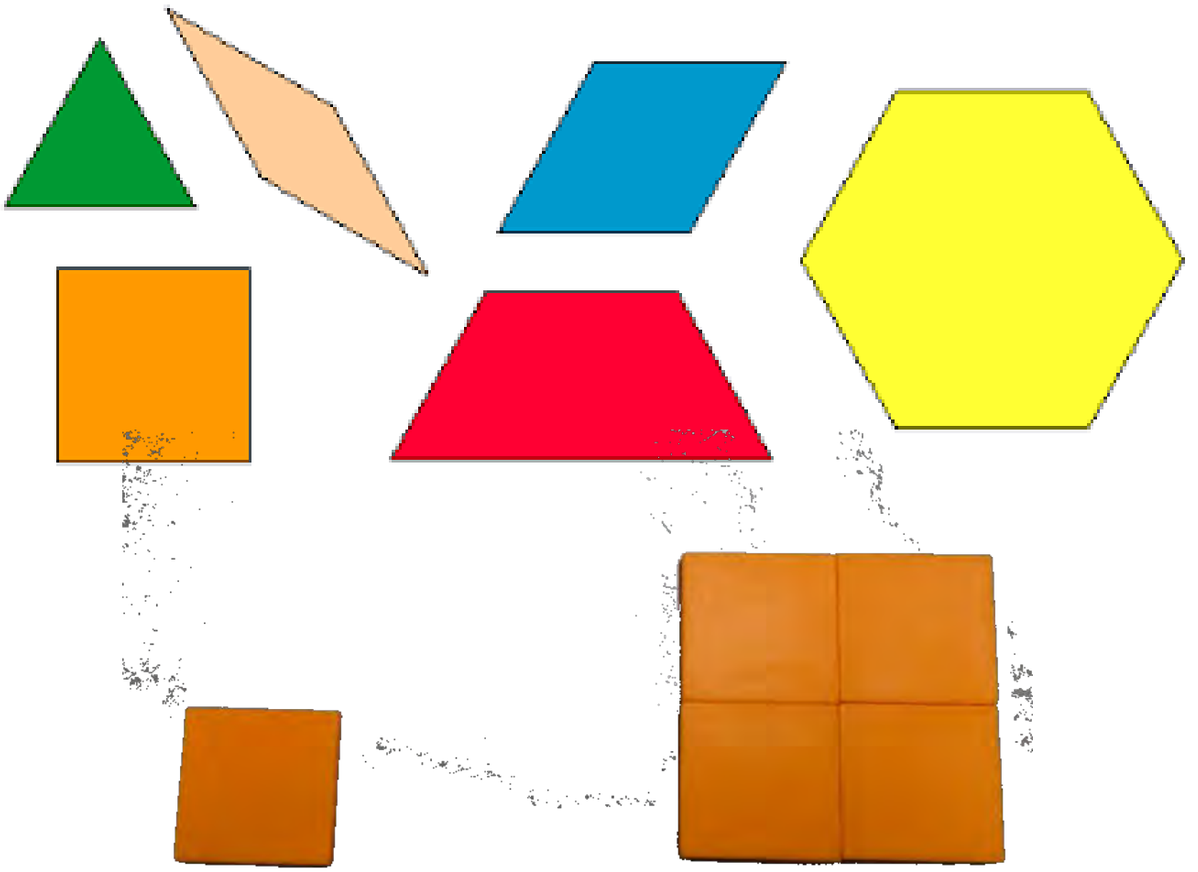
ACTIVITIES

IN 2MC

CLASSROOM

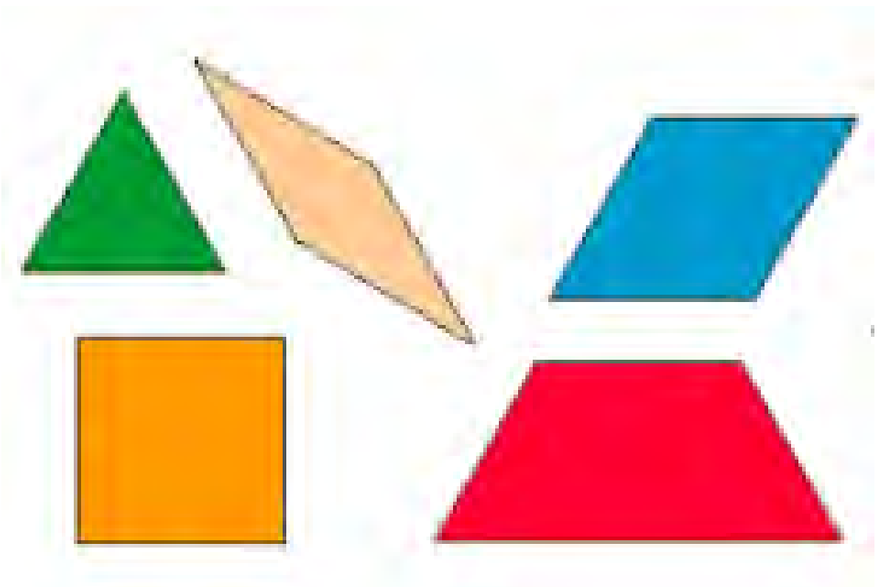
Make a larger version using the same shape.

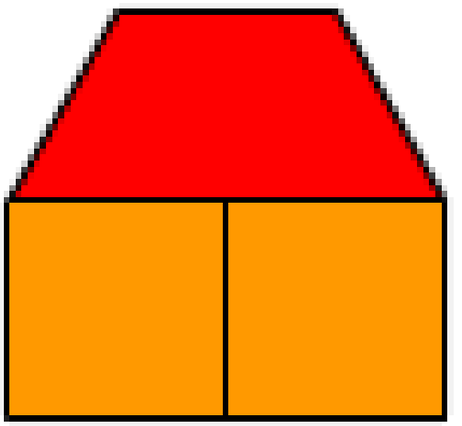
e.g. using triangles make a larger triange.



Try the two different rhombus and trapezium too.

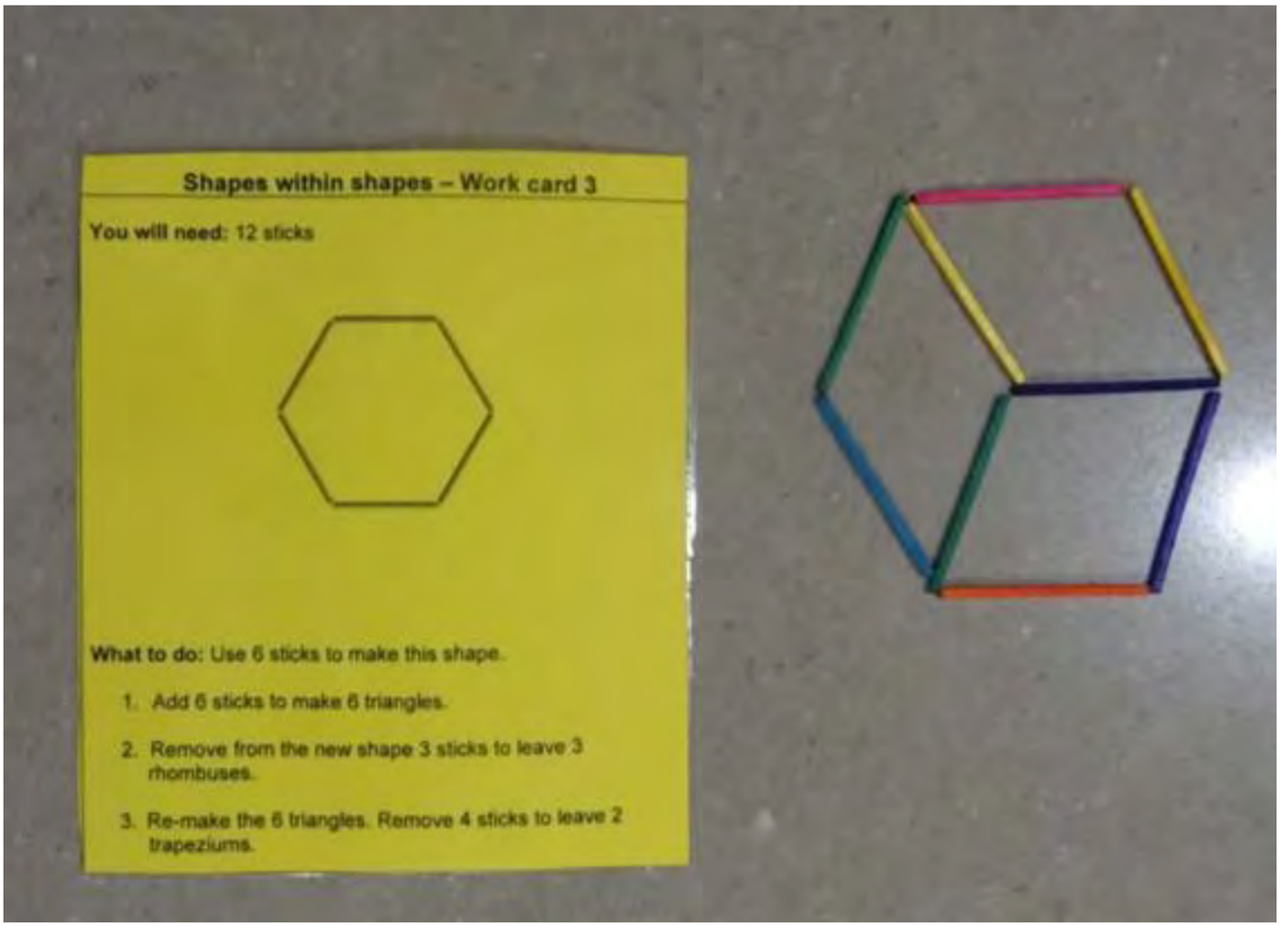
MAKE A HEXAGON - how many ways can you make a hexagon using pattern blocks.
How can you make a hexagon from squares?
Draw your constructions.





Repeat this activity with a pentagon?

Work Cards - Shapes within Shapes



Can you draw your constructions?

Always, Sometimes, Never

Always, Sometimes or Never?

Always, Sometimes or Never? – Grid

Always True	Sometimes True	Never True
	Quadrilaterals can be cut into two equal triangles	Cutting a corner off a square makes a pentagon

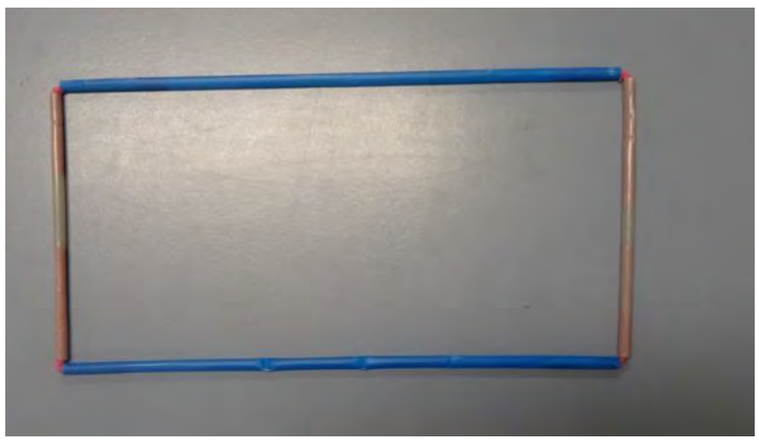
Discuss and sort the statements into the agreed box. Test your ideas .

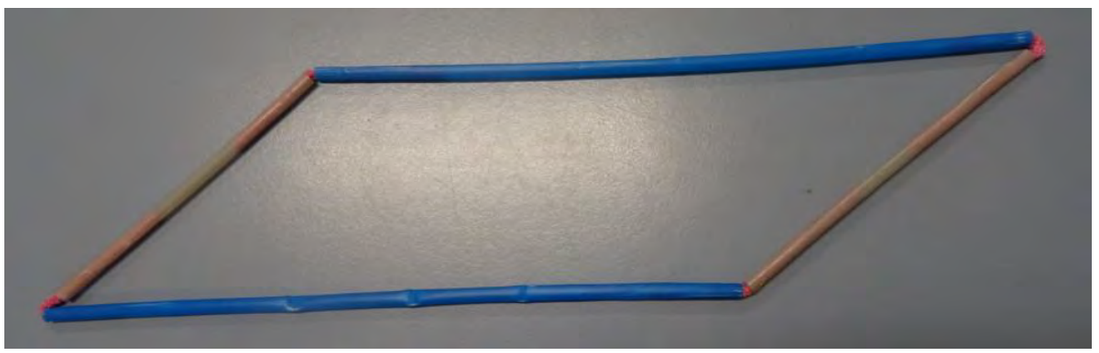
Hidden Shape Slow Reveal

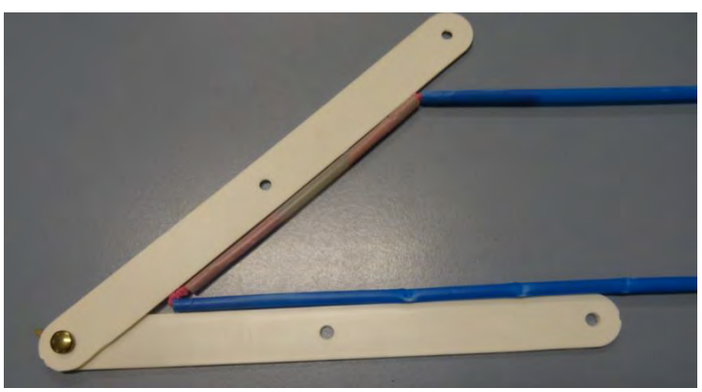
What shapes could this be? Why?

Very slowly reveal and discuss how the possibilities change at each stop.

MAKE SHAPES
FROM STRAWS AND PIPECLEANERS





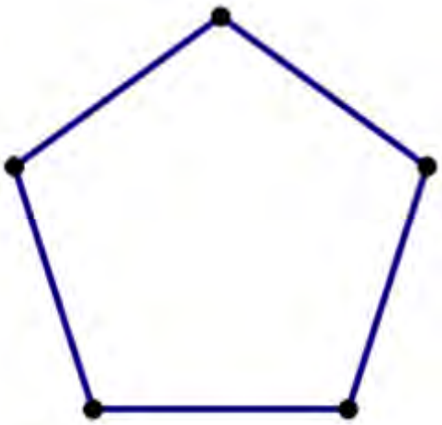


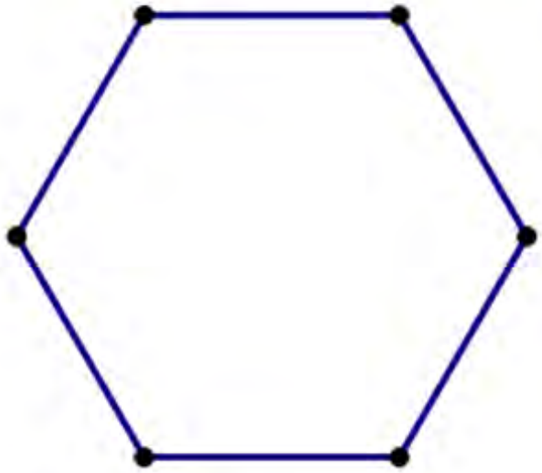
CAN YOU CHANGE THE ANGLES?

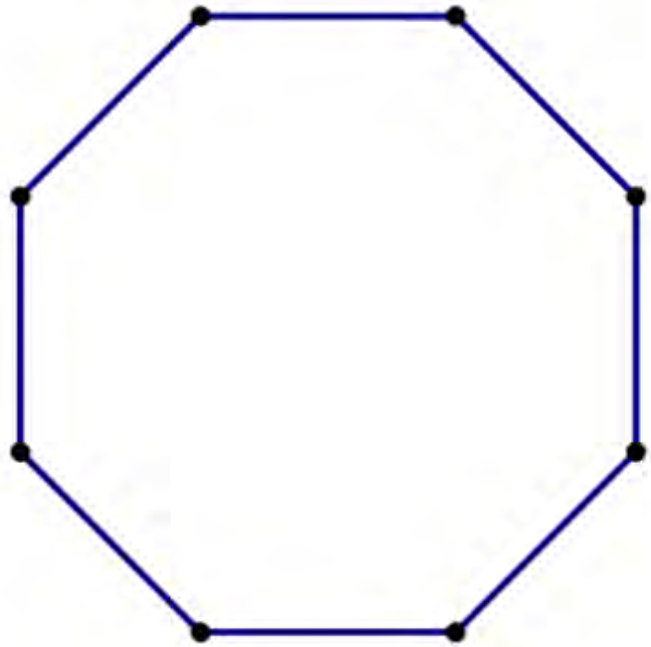
MEASURE AND COMPARE ANGLES

CUT AND CONSTRUCT POLYGONS

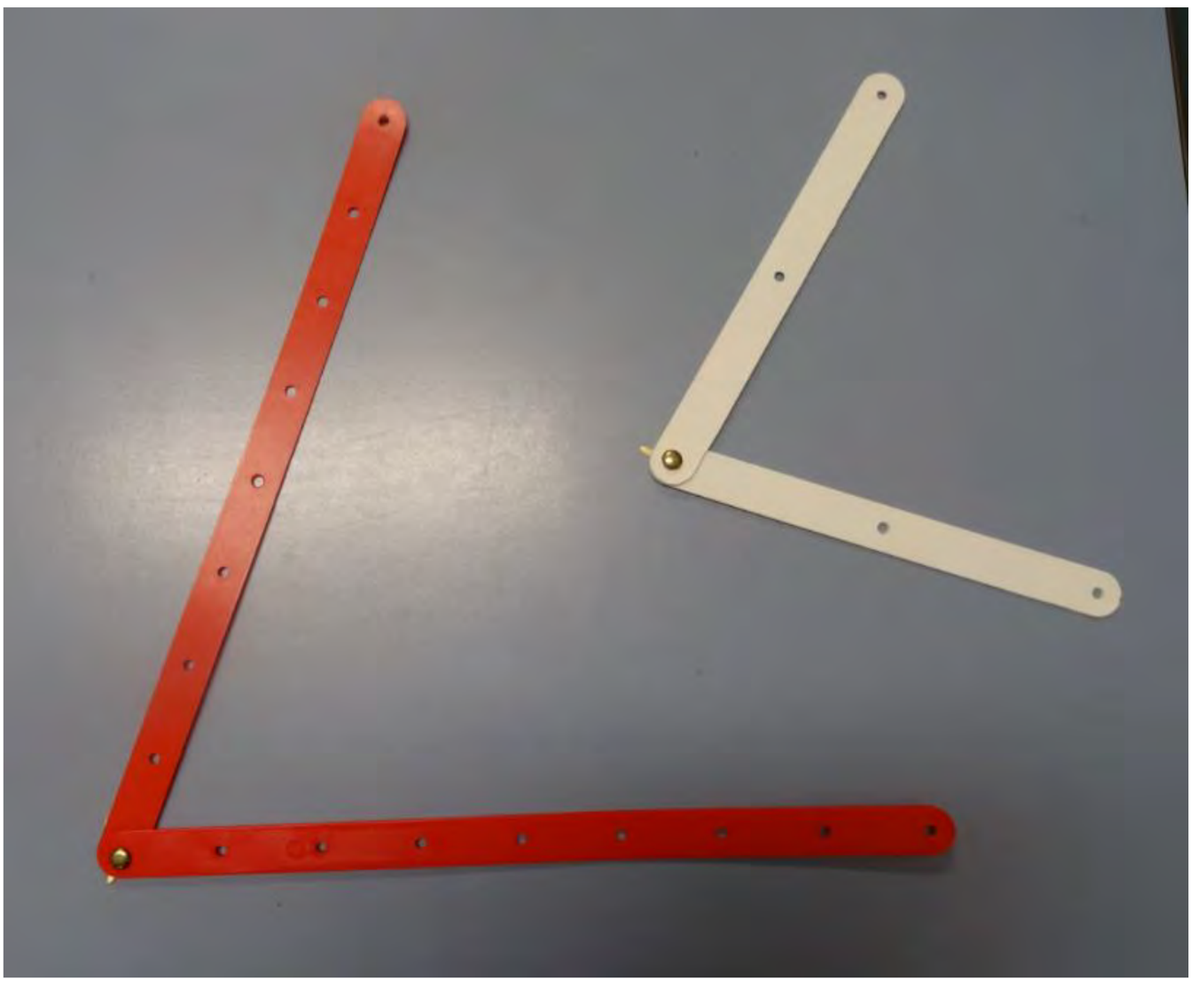
Cut each polygon into triangles. You can only cut from corner to corner.
Can you put the polygons back together?



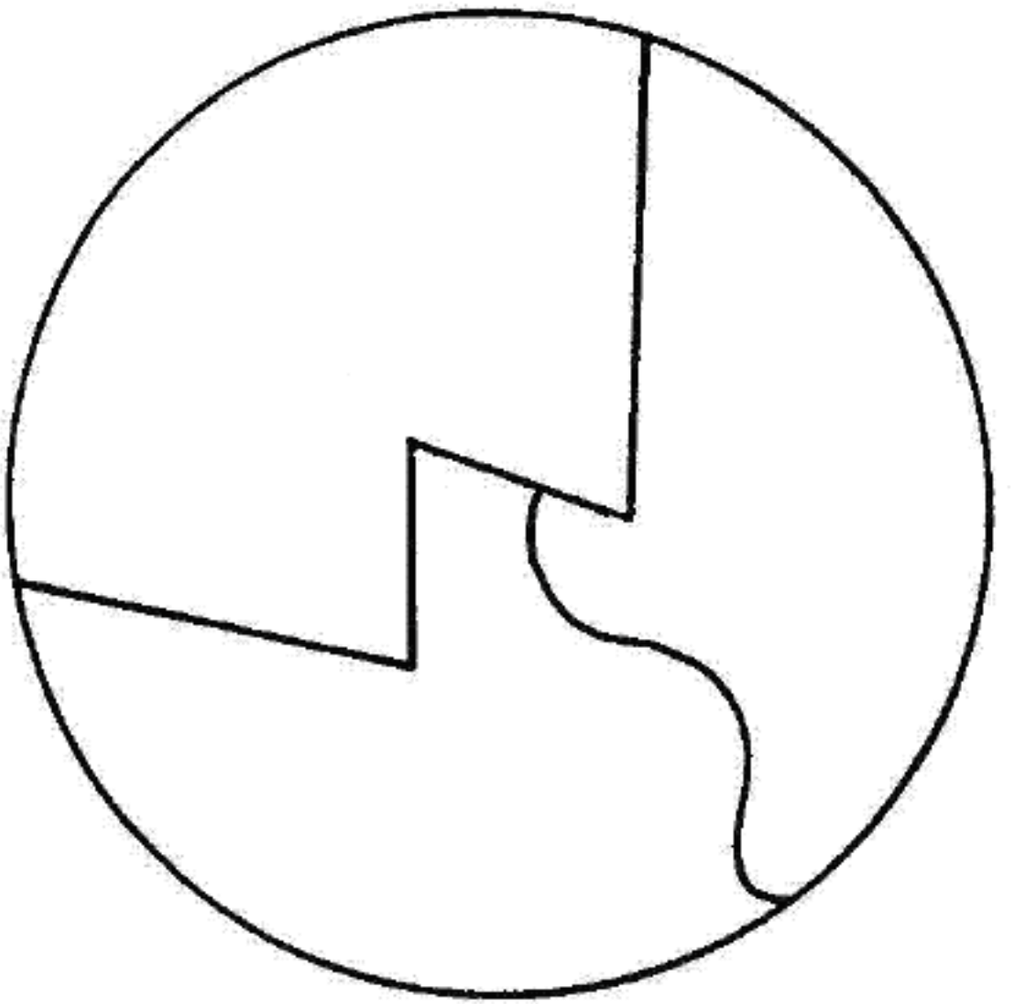




Make an Angle Tester -
one with long arms and one with short arms. Change the angle and compare.
Measure angles using both angle testers.



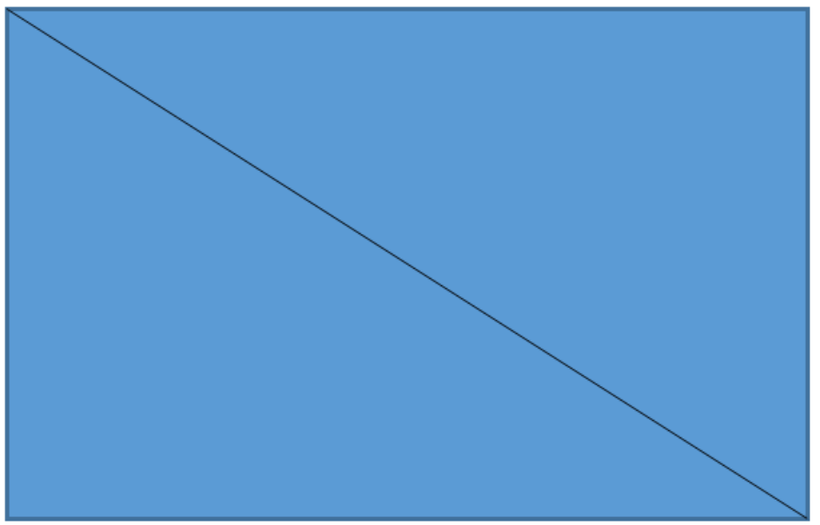
Circle Jigsaws

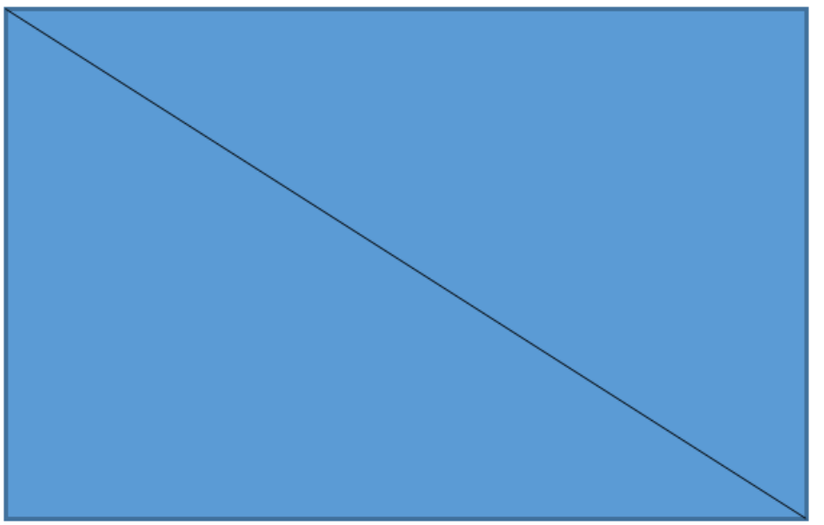


Make your own 2D shape jigsaws

MAKE A SHAPE

1. Cut out a rectangle and cut it in half. Glue it back together. Draw the shape next to it.
2. Repeat until you cannot make any new shapes.





Can you copy the shape, too.?

DRAW YOUR OWN SHAPES

- Draw different types of triangles. Add a rectangle around each one. Colour in contrasting colours.
- Draw hexagon inside a triangle using the sides of the triangle as part of the hexagon.
- Draw a square inside a circle and a circle inside a square.
- Use a ruler to make the sides of your shape straight
- Fold paper in half and create 2D shapes

NRICH enriching mathematics

Primary Secondary Topics Search NRICH Go

Home Students Teachers Roadshow Events

Shapes

Board Block

Stage: 1 ★

Take it in turns to make a triangle on the pegboard. Can you block your opponent?

Building with Solid Shapes

Stage: 1 ★

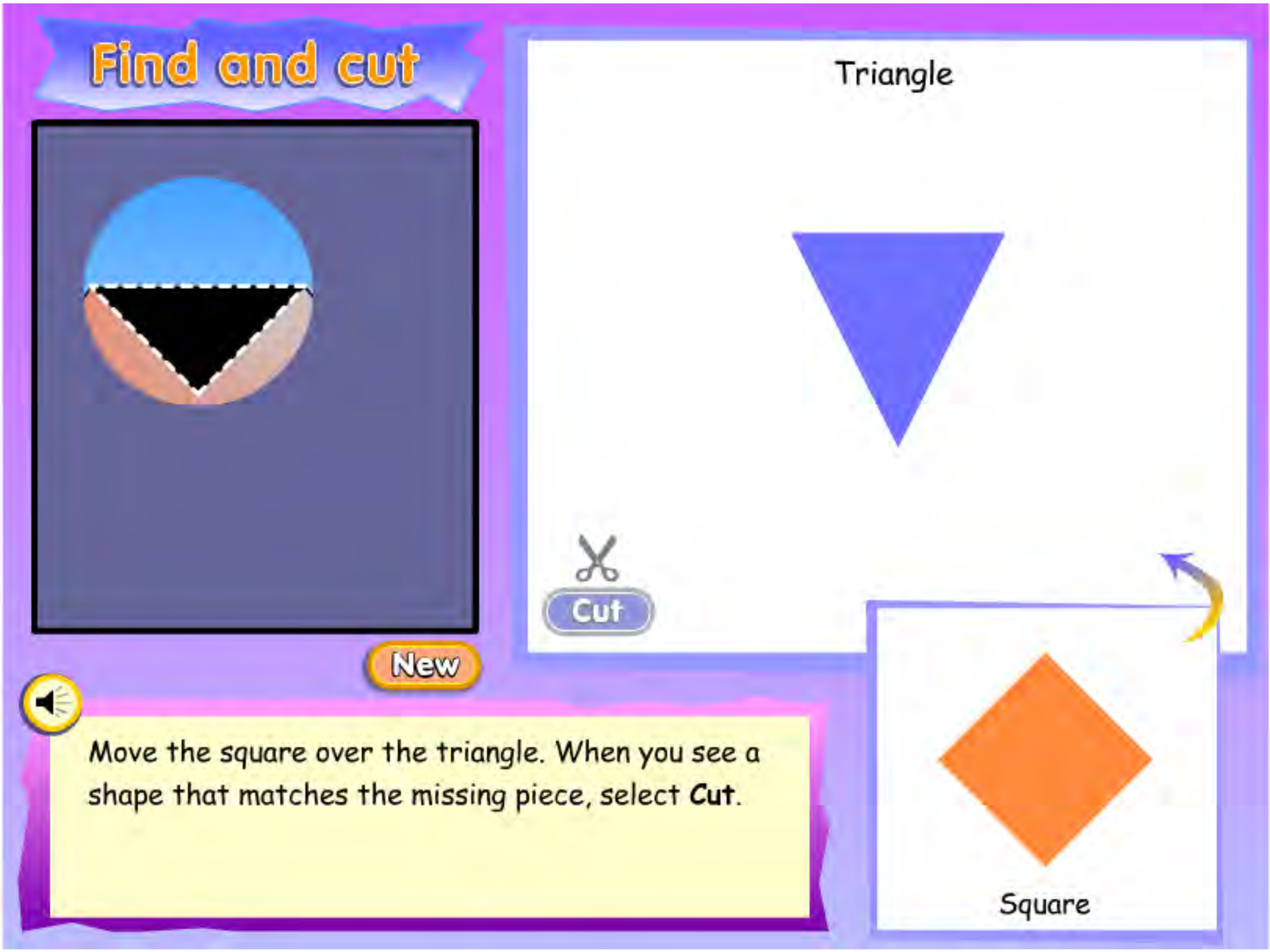
We have a box of cubes, triangular prisms, cones, cuboids, cylinders and tetrahedrons. Which of the buildings would fall down if we tried to make them?

Repeating Patterns

Stage: 1 ★

Try continuing these patterns made from triangles. Can you create your own repeating pattern?

CLICK ON THIS LINK (PICTURE IS A LINK) FOR INTERESTING TASKS



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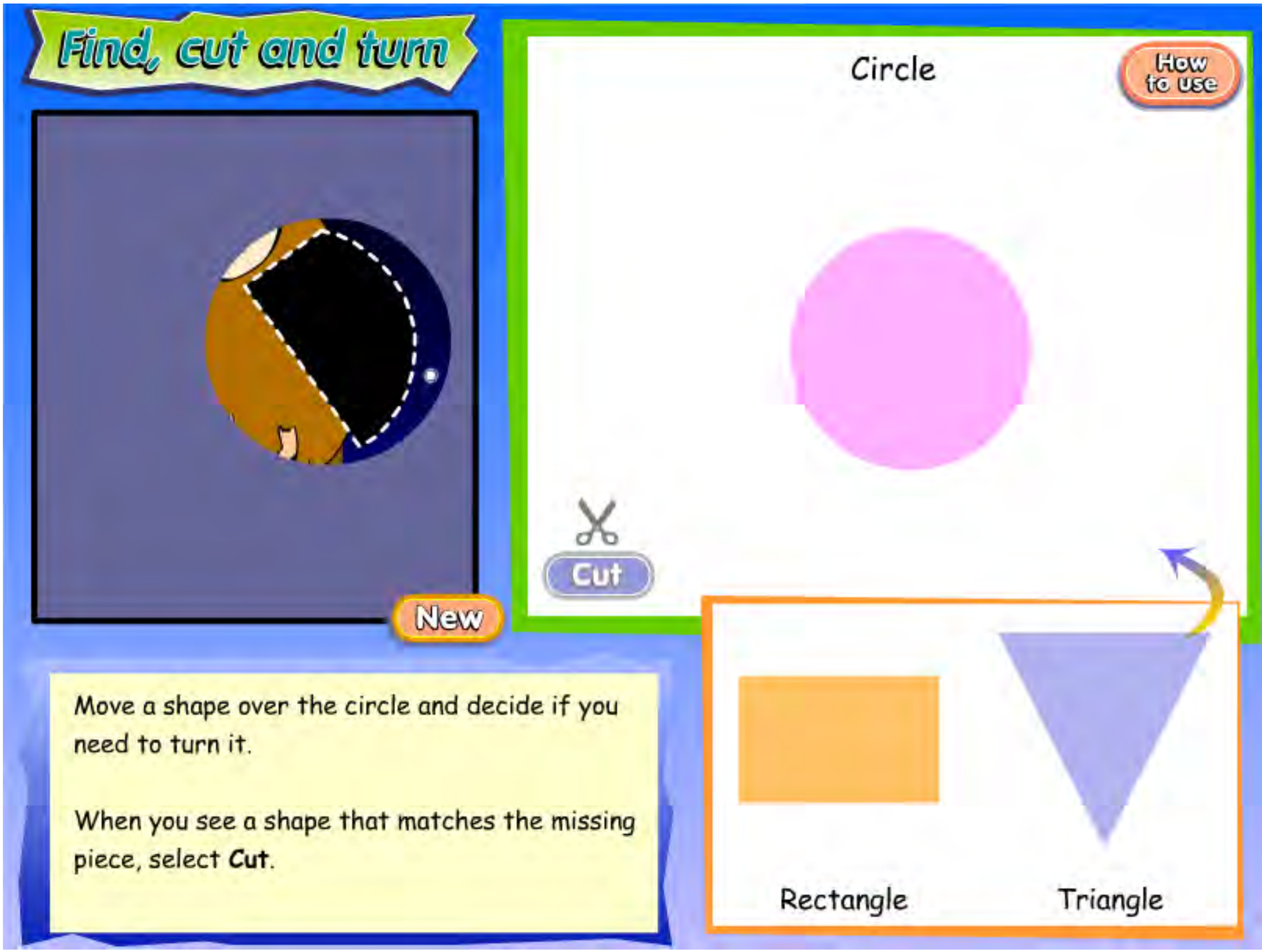
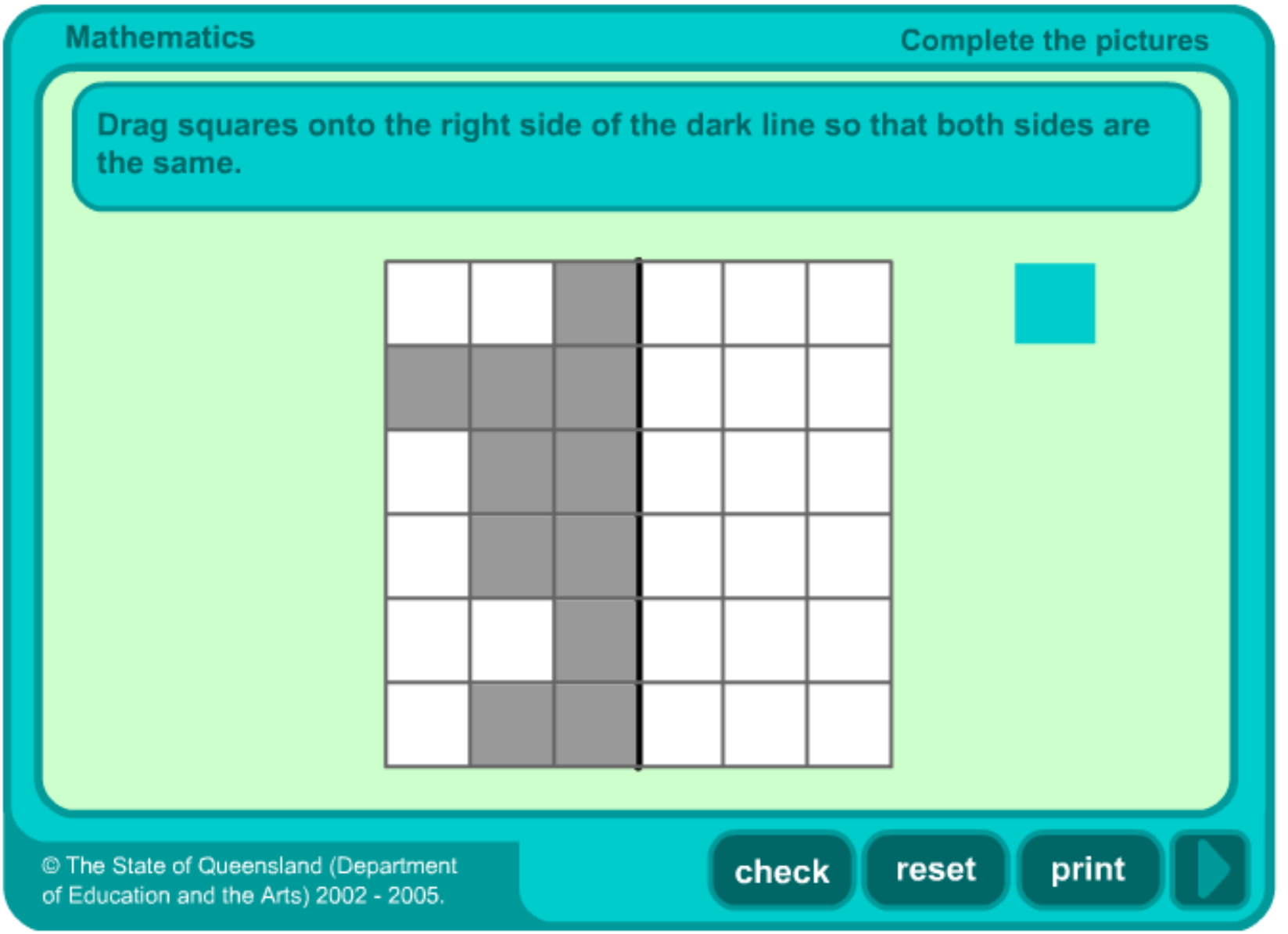


CLICK ON THIS LINK (PICTURE IS A LINK) FOR INTERESTING TASKS



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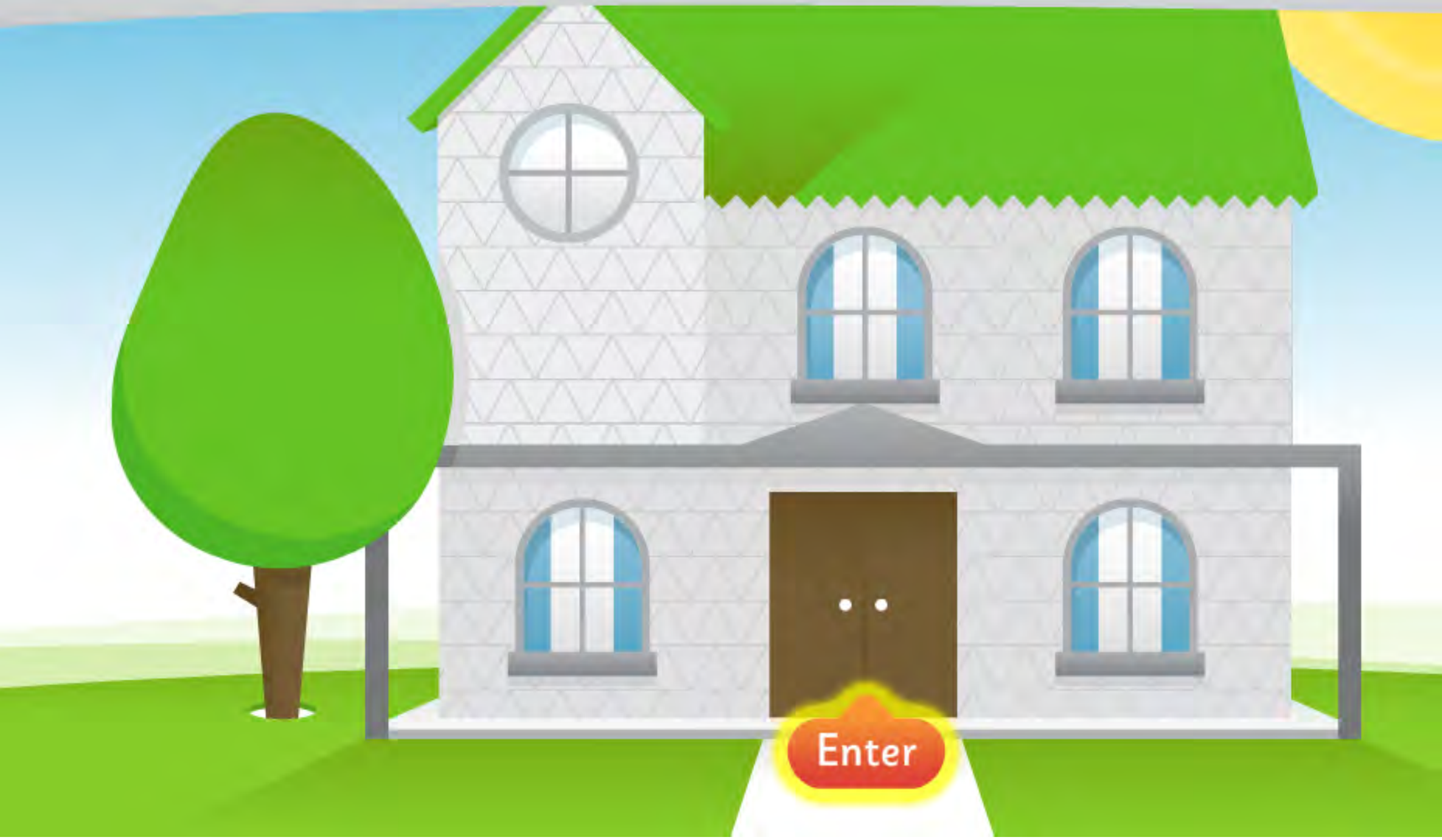
A pattern without gaps is called a **tessellation**.



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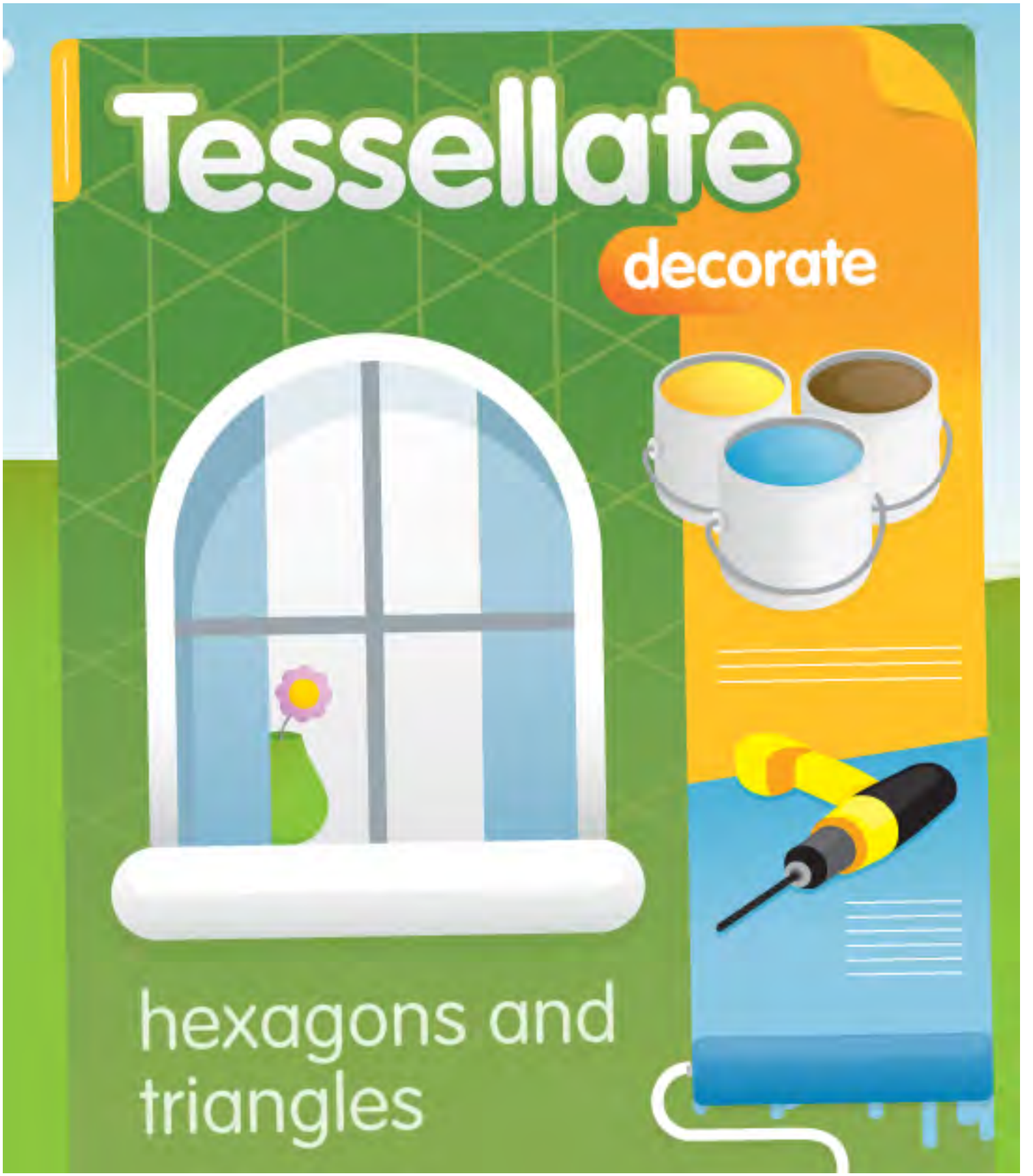

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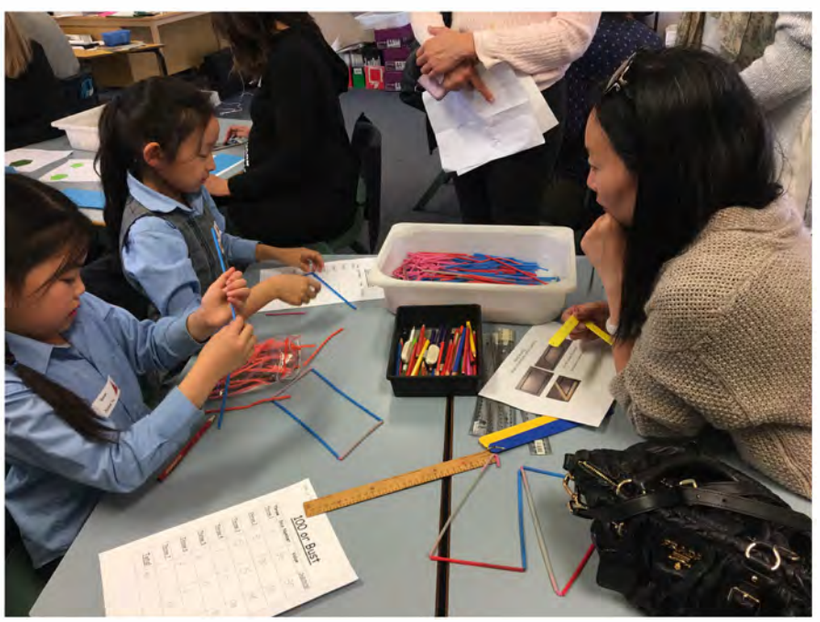
100 or Bust

Thank you

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