

# Shape & Space

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## KEY CONCEPT:

Shape and space

## KEY WORDS:

Red, yellow, blue, green, big, small, medium, little, large, above, below, next to, beside, under, in between, square, circle, triangle, rectangle.



## LEARNING INTENTION:

We are learning to name common 2D shapes and describe their colour and position.

## SUCCESS CRITERIA:

- Talk about what a shape is and spot shapes around us.
- Match the names to the shapes of a circle, square, triangle and rectangle.
- Recognise the colour of the shapes.
- Describe the size of the shape by comparing it to other shapes.
- Use key words to explain the position of the shape.

## STRATEGY USED:

Collaborative memory mapping

Ranking

## 1. Identify Important Concepts

Some of the key areas to investigate within and around the concepts of 'Shape and Space' are the following:

- The properties of regular 2d shapes (size, number of sides, number of corners)
- Our understanding of shape within a space
- How shapes are used around us
- Relationship between, shape, size and position

*Concepts are the foundations of thinking. Dialogue will give you a really nice insight into your students' beliefs, questions and misconceptions.*

## 2. Challenge Children's Understanding

**Here are some examples of cognitive conflict we expect your children to experience:**

Opinion	Conflicting Opinion
Shape is about how something looks	Shape is about how something feels
You can recognise things by their shape	The shape of something can change but its identity (what it is) can stay the same
The world is full of shapes	Some things seem to be shapeless
Shapes have names	There is no name for the shape of a butterfly's wing or for each different shape of clouds or leaves

**Create challenge using some of these questions:**

- What is shape?
- What shapes can you see around you?
- How do you know something has a shape?
- Can you think of things that are always the same shape?
- Does everything have a shape?
- How can something be shapeless?
- If you change the shape of something does it change what it is?
- If you changed shape would you not be you anymore?
- Why do we have shapes?
- Why is shape important?
- Does a shape change if we change its position? (put it above our heads or turn it upside down?)
- What do you think about first when you see something; its size or its shape?
- What shape is the best?

### 3. Construct Understanding:

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**Help your children make sense of their thoughts using some of these questions and activities:**

Hold each shape up in turn beginning with a circle and ask the following questions:

- What is this shape called?
- How do we know this is a circle and not a square?
- What is the same about all circles? (ask the same question of other shapes)
- What is different about this circle compared to this circle? (hold 2 different coloured or sized circles up to be compared and repeat with other shapes/sizes/colours)

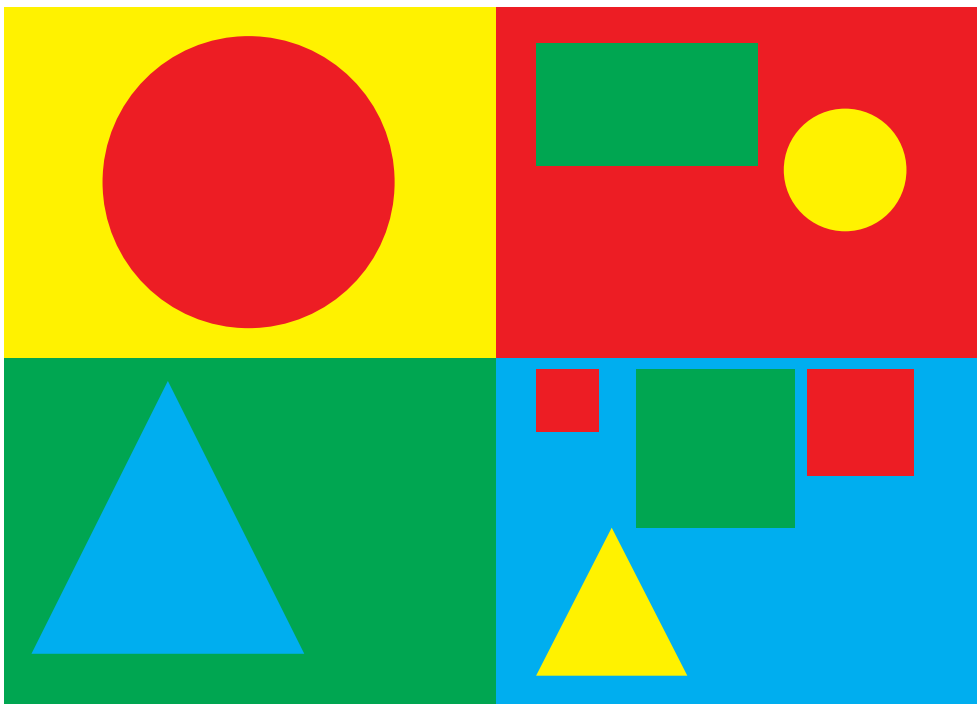
Place the circle next to the square and on top of the triangle and ask the children to describe where the circle is, encouraging them to use positional vocabulary as well as size, shape and colour vocabulary.

- What is it next to/on top of/underneath/opposite/above/below? Etc.

#### **Activity: Collaborative Memory**

Use the base board and a selection of shapes of different sizes and colours to create a memory board. Do not show your children this yet.

Here is an example memory board:



The memory board you create for your children could be much simpler than this and only have 3 or 4 shapes on to begin with or could be more challenging with more shapes and some shapes overlapping others. This will depend upon your children's existing knowledge and understanding of shape as well as their language development.

Organise your children into groups of 3 and give each group a base board and a set of the relevant shapes they need to complete their map.

- Number the children 1, 2 and 3 and ask all the number 1's to be a 'spy'.
- Show them the memory map you have created behind a screen.
- After a short time (15-30 seconds depending on the age and ability of the child) send them back to their group to describe where the shapes need to be positioned on the board.
- The 'spies' are not allowed to touch the shapes or the board while they are still a 'spy'.
- Explain to your children that it is the job of the spy to look, remember and whisper information back to the group. The rest of the group have the job of listening carefully and following instructions.
- Once the groups have had 1 or 2 minutes to work on the information the spy has told them, the number 2 children become the spies and the process gets repeated until all children have had a turn at being a spy.

At this stage your children need to consider the accuracy of their memory map and how well they think they have done so far:

- How happy are you with the way your map looks?
- How much does your map look like the one behind the screen?
- What do you think you got right?
- Which parts do you think may be wrong?
- Which bit would you like to look at again?
- What could you do to try and remember more next time?
- Who remembered the most?

Give each child another turn at being a spy. Once everyone has had 2 turns they should create their final map. The original design should now be revealed and the groups should compare their own design to this and think about how well they did with the task.

- How well did each team member work as a spy?
- How well did each team member work as a listener?
- How well did you follow instructions?
- How well did you work as a team?
- How much do you know about shape and colour names now?

#### **SIMPLIFICATION/EXTENSION:**

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##### **Simplification**

- Use less shapes
- Create a simpler design
- Give the children longer to spy and longer to feedback to the group
- Give each child more turns to spy
- Give them the exact shapes needed

## Extension

- Use more shapes
- Create a more complex design
- Use additional 2D shapes
- Introduce some 3D shapes
- Give less spy time and feedback time
- Give out more shapes than are needed so that the students have to sort out the relevant parts from the irrelevant

*This final stage encourages students to reflect on how their thinking has changed, been adapted, assimilated and/or constructed throughout the course of the lesson.*

## 4. Consider The Learning Journey:

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Provide your children with the opportunity to reflect on the learning process and talk about the following areas:

- How close their map is to the original?
- How well their group worked as a team?
- What skills were used during the process?

### Comparing their design to the original

- Which parts are exactly the same?
- Which parts are almost the same?
- Which parts are very different?
- What would have made it easier to get it exactly the same?
- Is it possible to get it exactly the same?
- Why are some parts the same and some not?
- What made some parts easier or harder than others to copy?
- Which were the most difficult to remember? Why was this?
- Which parts were easiest to remember?

### The quality of the group work

- What things did your group do that worked really well?
- What things did not work quite so well?
- What would you do differently if you did the activity again?
- What would you do the same?
- Which role in the group did you like best, spy or listener?
- What was the most important role?

### The knowledge and skills used and developed during the activity

- Which shapes did you find the easiest to remember?
- Did knowing the size and colour of the shapes help you?
- Was it more difficult to describe the position, the size or the colour of the shape?
- What words or names did you find hardest to remember or use?
- What is the most important think you need to know or do to do well in this activity?

## Reflective Ranking

As a whole group examine the skills cards. Talk about the skills on each of the cards and encourage them to think about how well they used these skills in their groups during the activity. Show them the simple ranking frame and explain that the most important card goes at the top and the least important at the bottom, with two cards that are of medium importance in the middle.

Ask the group: What is the most important skill you need to do well in this activity?

Take each card in turn and encourage them to evaluate each skill in relation to the other skills in order to decide as a group on the most important, then place the chosen skill card at the top of the ranking frame. Repeat this for the least important needed, placing that card at the bottom and again for the skills of medium importance.

Ask questions such as:

- Why do you think that skill is more important than this one?
- Does anyone disagree?
- Does anyone think there is a more important skill? Which one? Why?
- Are there any skills we did not need at all?
- What do we mean by important?

Rather than using the ranking frame, you may wish to just rank the cards as 1st, 2nd and 3rd in order of importance or simply just agree on the 'Most Important' and the 'Least important' skill card.

## Transfer Activities

- Hide some 2D and 3D shapes in a bag. Ask your children to dip their hand into the bag and choose a shape; without pulling it out, ask the children to describe the shape to the rest of the group according to its properties. If this is too challenging for the children alternatively you could do it and describe the shape to the children.
- Create shape pictures using a range of 2D shapes.
- You could give children the outline of various 2D shapes and ask them to trace them by bending pipe cleaners.
- Show the children images of Kandinsky paintings, have the children identify as many shapes as they can find in the paintings, create a tally chart of how many times each shape was used by writing tally marks on the shapes.
- Take the children on a 'shape walk' to find shapes in and around the house/classroom/school. On the walk you could take pictures of the children with shapes that they find, then put the pictures in a photo album.

