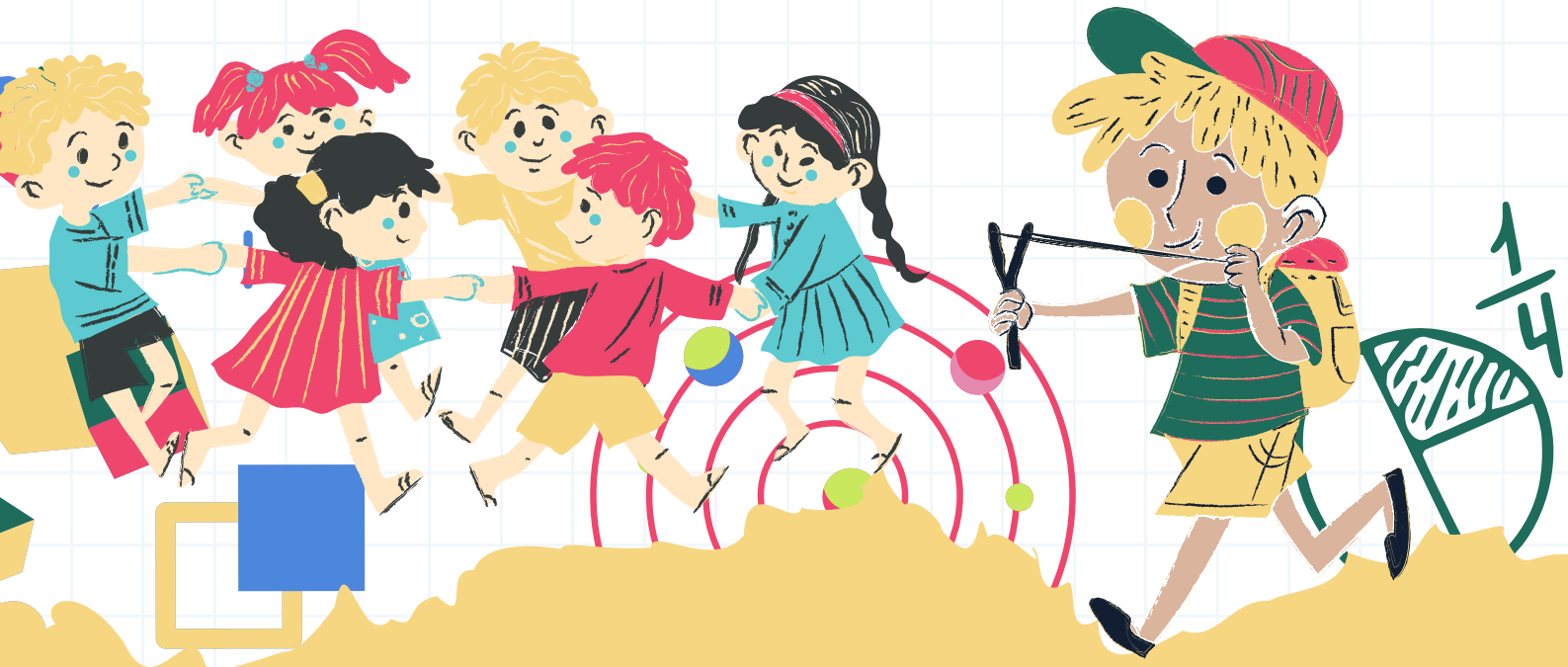
MATH&MOVE

LESSON

USING MOVEMENT TO

calculate sides and edges of geometric shapes



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This lesson focuses on pupils identifying the sides and edges of geometric shapes by placing simple shapes (circles, squares, triangles and rectangles) on a canvas according to placement cues and collaboratively constructing a new, more complex shape.

At the end of this lesson, pupils should be able to:

- Count the sides and edges of complex shapes
- Adhere to placement cues to construct a new object together

TOPIC: Geometry (sides and edges of shapes)

DURATION: 20 - 30 mins

LEVEL: Ages 8-9

PARTICIPANTS: Whole class divided into two groups

Lesson

LESSON PREPARATION

Required skills

For this lesson, pupils should already know how to:

- Understand the elements of geometric shapes – sides and edges
- Recognise the differences and similarities between geometric shapes (for example, a square has 4 edges/sides, a circle has 0)

Required materials and set up

1 **1 empty space for pupils to move and conduct the activity**

- 1 part of the learning area should be clear and at least 2m x 2m, with a rectangular START sign placed in the centre, to represent where the construction of the new complex geometric shape will begin.

2 **4 boxes filled with geometric shapes and directional cues**

- Fill 2 boxes with circles, triangles, squares and rectangles. The number of shapes should correspond to the number of pupils in each group.

- Fill 2 boxes with placement cues – left, right, up, down. The number of directional cues should also correspond to the number of pupils in each group.

Required materials and set up

3 **Pieces of paper/cardboard with the outlines of geometric shapes and scissors**

- The geometric shapes should be cut out by the pupils and placed in the boxes.

LESSON INSTRUCTIONS

Lesson

1

- Pupils cut out triangles, squares, circles and rectangles from pieces of paper or cardboard. The teacher discusses the elements of the shapes they're cutting – squares and rectangles have 4 sides/edges, triangles have 3 sides/edges and circles have 0 faces/edges. Clarify that a 'side' refers to the flat surface of an object, while 'edge' refers to the boundary or border between two sides.

- Then, divide pupils into two groups and place all geometric shapes into 2 boxes – 1 for each group. Following this, explain the rules of the activity.

2

- Pupils line up into two rows in the classroom, in front of 2 boxes for each of their groups.

- Once given a signal by the teacher, one by one, a pupil from each of the groups will take out an item from both boxes – one of the items will be a geometric shape and the other will be a placement cue. The placement cues clarify where they should place their shape, according to the shape placed their previously. Each pupil should call out their two items, to be remembered by the pupil after them – as they will add on to the previous pupil's work (ie. TRIANGLE – DOWN).

2

- The pupil's turn is over once they have added their shape to the canvas according to the placement cue that they drew from the box– the first pupil adds their shape in position to the START sign on the canvas (ie. If they drew TRIANGLE – DOWN, they place their triangle below the START sign on the canvas) - all other pupils add their shapes to the shape of the pupil that came before them (ie. the pupil whose turn is next places his shape to the left of the triangle of the first pupil if their clues are SQUARE-LEFT)

3

- Pupils take turns constructing a more complex geometric shape together. The activity continues until all pupils from both groups have added their geometric shapes to the canvas according to their placement cues.

CONCLUSION

Once both groups have constructed their complex shapes, ask them to calculate:

- The number of sides of their new shape
- The number of edges of their new shape

They should pay attention to only calculate the sides/edges seen from the outer lines (the outline of the shape), and not the inner ones within the complex shape.

TO GO FURTHER

Provide pupils with a final number of sides/edges that their complex shape should have (ie. 20) and ask them how they can construct a shape with that many sides/edges it using the shapes in their box.

RECOMMENDATIONS FOR INCLUSION

How to adapt this lesson to younger pupils

The lesson can be adapted to pupils aged 6-7 years old by having the entire class work together to draw shapes from one box and adhere to the placement cues. After the complex shape has been constructed, ask pupils to count how many triangles, rectangles, circles and squares make up their new shape.

Accommodations for pupils with specific learning disorders

- For pupils that struggle with memorisation of tasks, suggest that all pupils write the order in which they drew their shape – the first pupil will write 1 on the front of their shape once they take it to signify it being the first shape to be added to the canvas, the second will write 2, etc. so that pupils can better identify where the most recent shape was placed and where to then place their shape once it's their turn.
- Have the shapes already cut out for pupils that struggle with the fine motor skills needed to use scissors.

BIBLIOGRAPHY

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