

OUT AND ABOUT

OUTDOOR ACTIVITIES FOR KEY STAGE 2 MATHEMATICS

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NUMBER AND ALGEBRA

Art Gallery

Learning focus

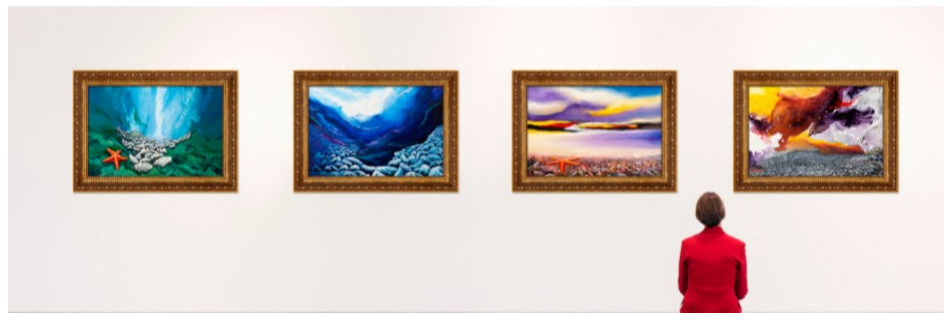
- Recall multiplication table facts up to 10×10
- Find the sum of three numbers
- Explain calculation methods

Key vocabulary

- Value
- Worth
- Calculate
- Multiply
- Add
- Total
- Expensive
- Most
- Least
- Afford

Resources

- Natural resources such as sticks, stones and pine cones
- Chalk



Activity

Introduce this activity by discussing what children already know about an art gallery.

*Have you ever visited an art gallery? Where did you go?
What did you see?
What is the purpose of an art gallery?*

Display images of the work of a famous artist such as Andy Goldsworthy.

*What is the same about each picture? What is different?
What shapes can you see? What patterns can you see?
What materials has he used?
What might you use to create a similar effect?*

Explain that children will work in small groups to create their own pictures for display in the outdoor 'art gallery'. They will use natural resources to create a picture and then they will determine the value of their picture. To begin with, use three different natural resources (such as sticks, stones and pine cones) and limit the number of each to a maximum of ten. Assign values to each resource: sticks (10), stones (5) and pine cones (2). This will restrict the multiplication challenge to multiplication facts up to 10×10 .

Allow sufficient time for children to collect the resources required and then give each group approximately 2 minutes to create their picture. Once the pictures are complete, each group should then calculate the value of their picture and record it using chalk on the playground. Encourage them to show their working out.

Take time to walk around the 'art gallery' to view the 'exhibits'. Invite each group to share their creative work with their peers for

constructive feedback. Draw attention to the different methods they used to calculate the value of their pictures. Encourage children to use appropriate mathematical language when explaining their methods.

Teaching point

Children may record their working out in different ways. Some may record each calculation, step-by-step; others may use a table.

See examples below for a picture which uses 8 sticks, 6 stones and 4 pine cones:

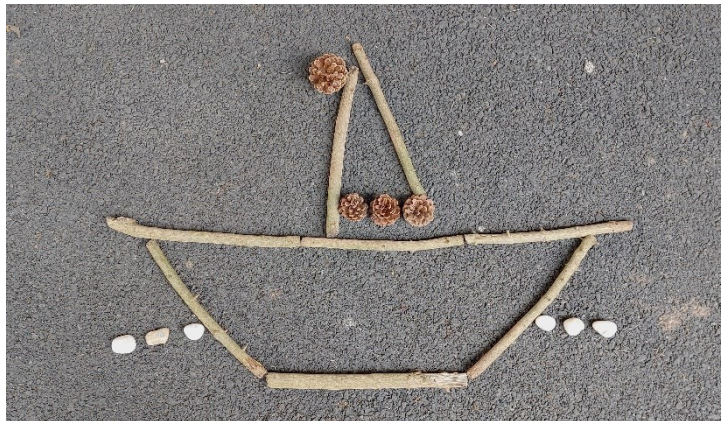
Example 1

$$8 \text{ sticks} - 8 \times 10 = 80$$

$$6 \text{ stones} - 6 \times 5 = 30$$

$$4 \text{ pine cones} - 4 \times 2 = 8$$

$$\text{Total value} = 80 + 30 + 8 = 118$$



Example 2

Sticks	Stones	Pine Cones	Total value
$8 \times 10 = 80$	$6 \times 5 = 30$	$4 \times 2 = 8$	$80 + 30 + 8 = 118$

Ask questions which focus on their understanding of number and place value. (Use pounds or euros as appropriate.)

Which picture is the most / least expensive? How do you know?

Which pictures cost more / less than £100? How do you know?

Which pictures could I afford if I have £250 to spend?

What change will I get from £120 if I buy this picture?

What happens to the value of the picture if I add ... (one more stick/stone/pine cone)?

Taking ideas further

This activity could be adapted for different multiplication table facts by assigning different values to the sticks, stones and pine cones.

The activity could also be adapted to explore decimal fractions. For example, sticks could be used to represent tens, stones could be used to represent ones, leaves could be used to represent tenths and pine cones could be used to represent hundredths. Again, limit the number of each resource to a maximum of ten. Children could record the value of each picture in different ways. For example, a picture which uses 5 sticks, 3 stones, 8 leaves and 2 pine cones is worth:

£53.82 or fifty-three pounds and eighty-two pence

Children could order the pictures from the most expensive one to the least expensive.

Children could explore the work of other famous artists/sculptors.

Assessment opportunities

Are the children able to:

- Quickly recall multiplication facts within 10×10
- Calculate the total of three numbers using mental or written methods
- Record their calculations clearly
- Explain their thinking using appropriate mathematical language