

# Reasoning and Problem Solving

## Step 1: Halving Shapes or Objects

### National Curriculum Objectives:

Mathematics Year 1: (1F1a) [Recognise, find and name a half as one of two equal parts of an object, shape or quantity](#)

Mathematics Year 1: (1M1): [Compare, describe and solve practical problems for lengths and heights \[for example, long/short, longer/shorter, tall/short, double/half\]](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Explain if statements about halving shapes are correct. All shapes halved by a vertical line.

**Expected** Explain if statements about halving shapes are correct. Shapes halved by a vertical or horizontal line.

**Greater Depth** Explain if statements about halving shapes are correct. Shapes halved by a vertical, horizontal or diagonal line.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Shade 2 shapes to match 2 given labels.

**Expected** Shade 3 shapes to match 3 given labels.

**Greater Depth** Shade 3 irregular shapes to match 3 given labels. Includes shapes halved by a diagonal line.

Questions 3, 6 and 9 (Problem Solving)

**Developing** Identify and explain the odd one out. Includes halving objects with a vertical line.

**Expected** Identify and explain the odd one out. Includes halving objects with a vertical or horizontal line.

**Greater Depth** Identify and explain the odd one out. Includes halving objects with a vertical, horizontal or diagonal line.

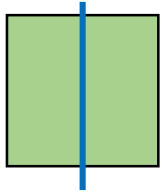
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# Halving Shapes or Objects

# Halving Shapes or Objects

1a. Are the children correct?

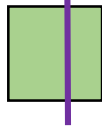
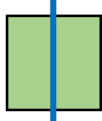


My shape is split equally.

I've shown 2 ways to halve my shape.



Sonya

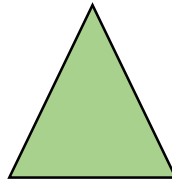


Explain your answer.



R

1b. Are the children correct?

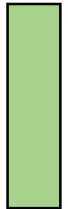


This triangle can make 2 triangles when it's cut in half.

This rectangle can make 2 squares when it's cut in half.



Tim

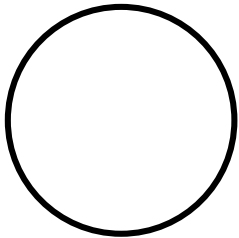


Explain your answer.

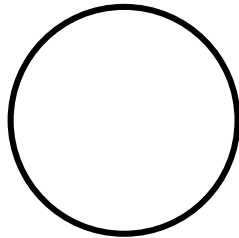


R

2a. Colour the circles to match their labels.



less than half



exactly half

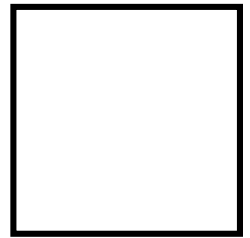


PS

2b. Colour the squares to match their labels.



more than half



exactly half



PS

3a. Circle the odd one out.



A



B



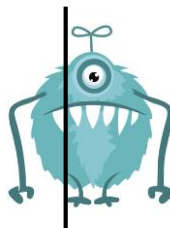
C

Explain your reasoning.



R

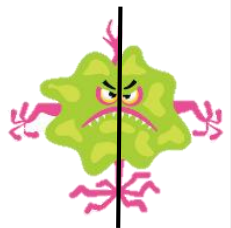
3b. Circle the odd one out.



A



B



C

Explain your reasoning.

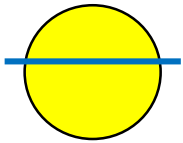


R

# Halving Shapes or Objects

# Halving Shapes or Objects

4a. Are the children correct?



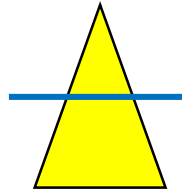
Marcia

I have two parts so they are halves.

My line is in the middle so the shape has been cut in half.



Amal



Explain your answer.



R

4b. Are the children correct?



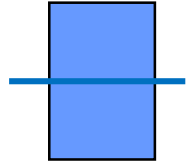
Joey

My shape can't be cut in half.

I have found the only way to half the shape.



Suma

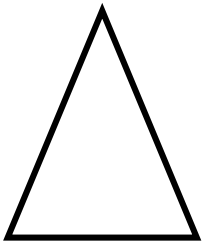


Explain your answer.

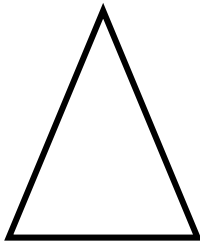


R

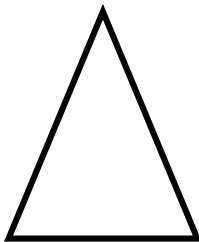
5a. Colour the triangles to match their labels.



less than half



exactly half

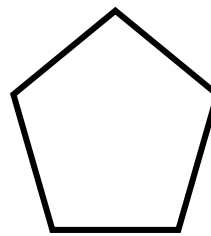


more than half

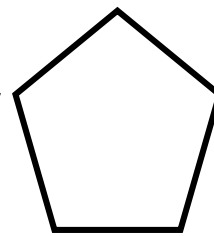


PS

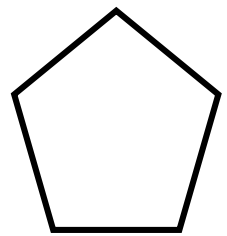
5b. Colour the pentagons to match their labels.



less than half



exactly half



more than half



PS

6a. Circle the odd one out.



A



B



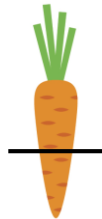
C

Explain your reasoning.



R

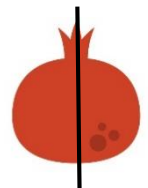
6b. Circle the odd one out.



A



B



C

Explain your reasoning.

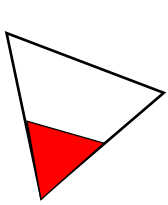


R

# Halving Shapes or Objects

# Halving Shapes or Objects

7a. Are the children correct?



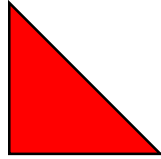
Half of my shape is red.

Gordon

My shape is half of a square.



Kristin

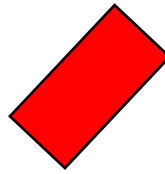


Explain your answer.



R

7b. Are the children correct?



Alan

My shape is half of a rectangle.

My shape is half of a circle.



Amaya

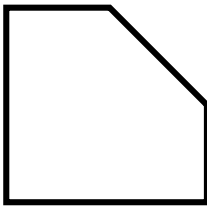
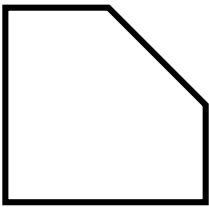
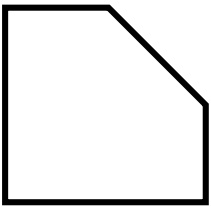


Explain your answer.



R

8a. Colour the shapes to match their labels.



less than half

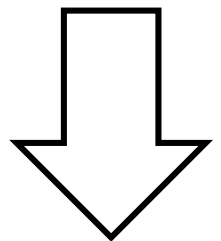
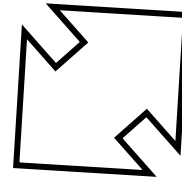
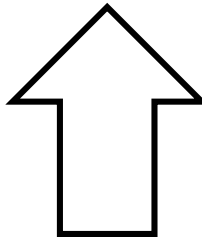
exactly half

more than half



PS

8b. Colour the shapes to match their labels.



less than half

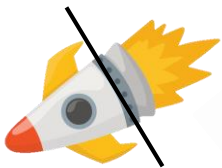
exactly half

more than half



PS

9a. Circle the odd one out.



A



B



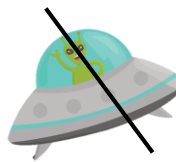
C

Explain your reasoning.

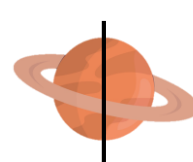


R

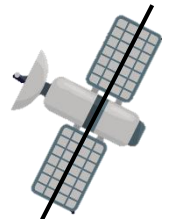
9b. Circle the odd one out.



A



B



C

Explain your reasoning.



R

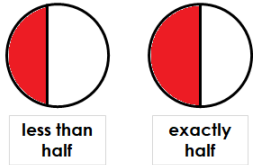
# Reasoning and Problem Solving

## Halving Shapes or Objects

### Developing

1a. Harry is correct because his shape is split into 2 equal parts. Sonya is not correct because the second shape is not split into 2 equal parts.

2a. Various possible answers, for example:

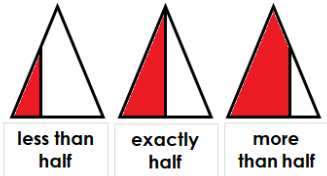


3a. B is the odd one out because it is the only shape not split into 2 equal parts.

### Expected

4a. Marcia is not correct because the parts need to be equal to be halves. Amal is not correct because the parts are not equal.

5a. Various possible answers, for example:

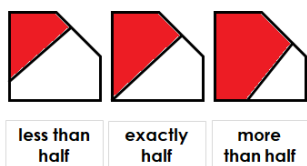


6a. B is the odd one out because it is the only shape split into 2 equal parts.

### Greater Depth

7a. Gordon is not correct because the parts are not equal. Kristin is correct because the diagonal line of the triangle could be the half way split in a square.

8a. Various possible answers, for example:



9a. B is the odd one out because it is the only shape split into 2 equal parts.

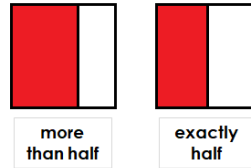
# Reasoning and Problem Solving

## Halving Shapes or Objects

### Developing

1b. Danika is correct because if she splits the shape in half she will create 2 right angled triangles. Tim is not correct because the rectangle will make 2 rectangles if it is split in half.

2b. Various possible answers, for example:

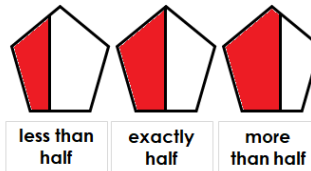


3b. A is the odd one out because it is the only shape not split into 2 equal parts.

### Expected

4b. Joey is not correct because you can cut the shape in half using a vertical line down the middle. Suma is incorrect because you can also halve the shape using a vertical or diagonal line.

5b. Various possible answers, for example:

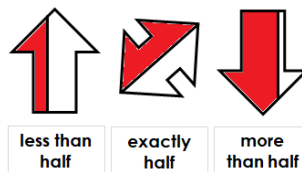


6b. C is the odd one out because it is the only shape split into 2 equal parts.

### Greater Depth

7b. Alan is correct because his shape could be half of a rectangle. Amaya is not correct because her shape is less than half of a circle.

8b. Various possible answers, for example:



9b. B is the odd one out because it is the only shape split into 2 equal parts.