

# Reasoning and Problem Solving

## Step 3: Find a Quarter of a Shape or Object

### National Curriculum Objectives:

Mathematics Year 1: (1F1b) [Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity](#)

Mathematics Year 1: (1M1) [Compare, describe and solve practical problems for mass/weight \[for example, heavy/light, heavier than, lighter than, half, quarter\]](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Sort shapes into a table showing if they are correctly divided into quarters or not. Shapes are regular and dividing lines are vertical or horizontal.

**Expected** Sort shapes into a table showing if they are correctly divided into quarters or not. Shapes are sometimes irregular.

**Greater Depth** Sort shapes into a table showing if they are correctly divided into quarters or not. Shapes are sometimes irregular and lines are in varying directions.

Questions 2, 5 and 8 (Problem Solving)

**Developing** Shade a quarter, more than a quarter or less than a quarter of 2 simple shapes to match given labels.

**Expected** Shade a quarter, more than a quarter or less than a quarter of 2 shapes to match given labels.

**Greater Depth** Shade a quarter, more than a quarter or less than a quarter of 3 complex shapes to match given labels.

Questions 3, 6 and 9 (Reasoning)

**Developing** Decide if a statement about a shape being quartered is correct. Explain your reasoning. Regular polygons only.

**Expected** Decide if a statement about a shape being quartered is correct. Explain your reasoning. Irregular shape used and more than one way of making quarters.

**Greater Depth** Decide if a statement about a shape being quartered is correct. Explain your reasoning. Questions have multiple steps to work out.

More [Year 1 Fractions](#) resources.

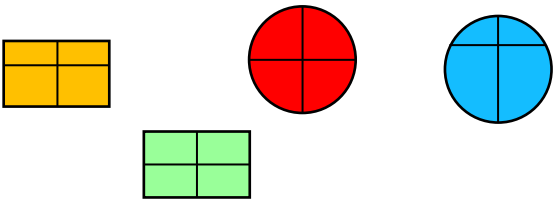
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Find a Quarter of a Shape or Object

Find a Quarter of a Shape or Object

1a. Sort the shapes into the table.

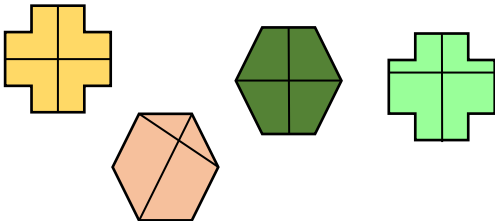
Shapes that are split into quarters	Shapes that are not split into quarters



PS

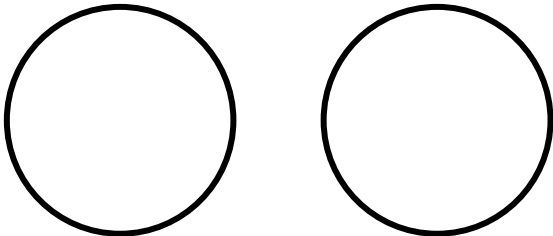
1b. Sort the shapes into the table.

Shapes that are split into quarters	Shapes that are not split into quarters



PS

2a. Colour the circles to match their labels.



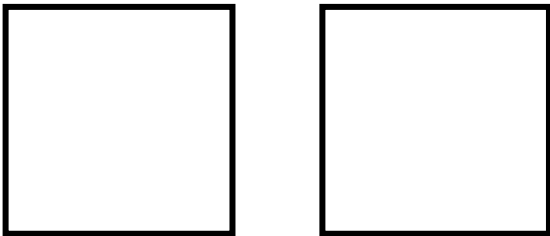
less than a quarter

exactly a quarter



PS

2b. Colour the squares to match their labels.



more than a quarter

exactly a quarter

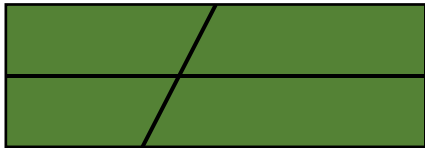


PS

3a. Ben says:



This rectangle is in quarters.



Is he right? Explain your answer.

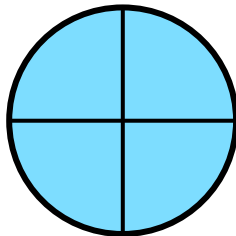


R

3b. Lucy says:



This circle has been divided into quarters.



Is she right? Explain your answer.



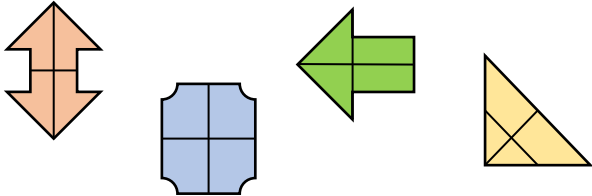
R

Find a Quarter of a Shape or Object

Find a Quarter of a Shape or Object

4a. Sort the shapes into the table.

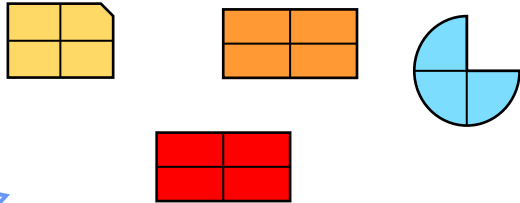
Shapes that are split into quarters	Shapes that are not split into quarters



PS

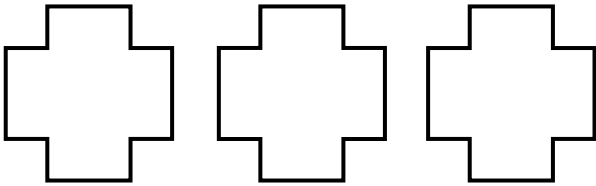
4b. Sort the shapes into the table.

Shapes that are split into quarters	Shapes that are not split into quarters



PS

5a. Colour the shapes to match their labels.



less than a quarter

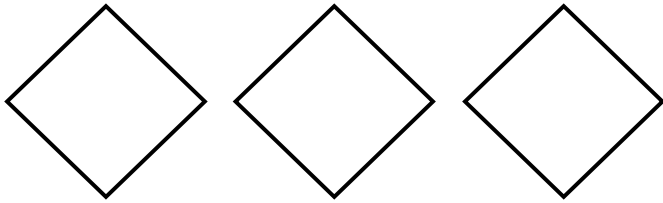
exactly a quarter

more than a quarter



PS

5b. Colour the squares to match their labels.



less than a quarter

exactly a quarter

more than a quarter

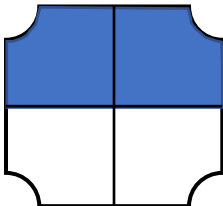


PS

6a. Aisha says:



A quarter of this shape is coloured in.



Is she right? Explain your answer.

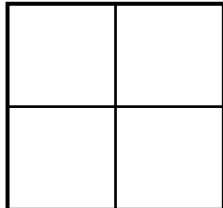


R

6b. Liz says:



This is the only way to divide this shape into quarters.



Is she right? Explain your answer.



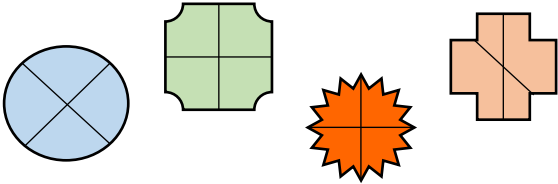
R

Find a Quarter of a Shape or Object

Find a Quarter of a Shape or Object

7a. Sort the shapes into the table.

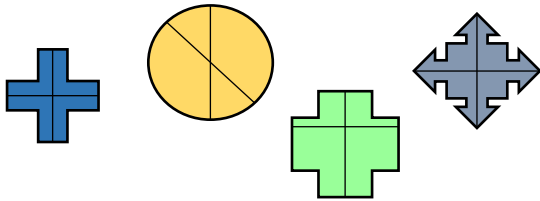
Shapes that are split into quarters	Shapes that are not split into quarters



PS

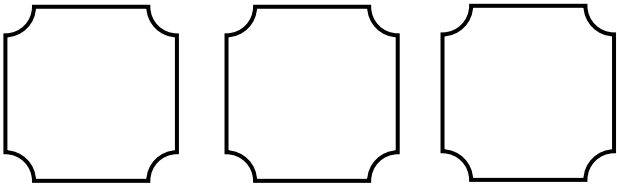
7b. Sort the shapes into the table.

Shapes that are split into quarters	Shapes that are not split into quarters



PS

8a. Colour the shapes to match their labels.



less than a quarter

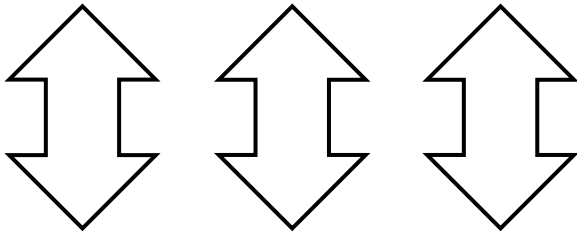
exactly a quarter

more than a quarter



PS

8b. Colour the shapes to match their labels.



less than a quarter

exactly a quarter

more than a quarter



PS

9a. Sam says:



You can split this shape into quarters by drawing two lines or by drawing 3 lines.



Is he right? Explain your answer.

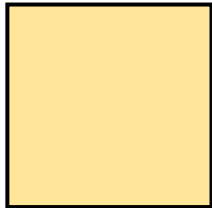


R

9b. Emily says:



If you divide this shape into quarters it makes 4 squares.



Is she right? Explain your answer.

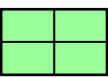
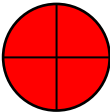
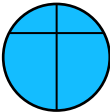



R

## Reasoning and Problem Solving Find a Quarter of a Shape or Object

### Developing

1a.

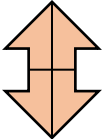
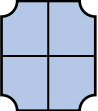
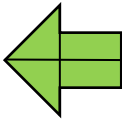
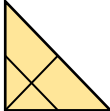
Shapes that are split into quarters	Shapes that are not split into quarters
 	 

2a. **Answers will vary.**

3a. **Ben is wrong because each quarter will need to be equal.**

### Expected

4a.

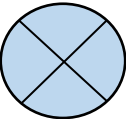
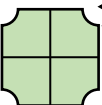

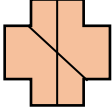
Shapes that are split into quarters	Shapes that are not split into quarters
 	 

5a. **Answers will vary.**

6a. **Aisha is wrong because her shape is in quarters but she has coloured two of the quarters.**

### Greater Depth

7a.

Shapes that are split into quarters	Shapes that are not split into quarters
  	

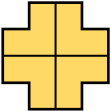

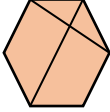
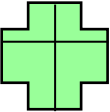
8a. **Answers will vary.**

9a. **Sam is right. It can be done by having two lines that cross over or 3 lines that do not.**

## Reasoning and Problem Solving Find a Quarter of a Shape or Object

### Developing

1b.



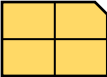
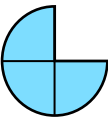
Shapes that are split into quarters	Shapes that are not split into quarters
 	 

2b. **Answers will vary.**

3b. **Lucy is right because her shape is in 4 equal parts.**

### Expected

4b.



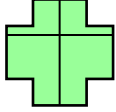
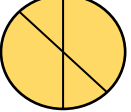
Shapes that are split into quarters	Shapes that are not split into quarters
 	 

5b. **Answers will vary.**

6b. **Liz is wrong because you could have diagonal lines to make quarters as well.**

### Greater Depth

7b.

Shapes that are split into quarters	Shapes that are not split into quarters
 	 

8b. **Answers will vary.**

9b. **Emily could be right if she divides it that way. However, you can also divide this shape into quarters which are triangles.**