Reasoning and Problem Solving
Step 1: What is Area?

National Curriculum Objectives:

Mathematics Year 4: (4M7b) Find the area of rectilinear shapes by counting squares

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Explain which shape is best for covering the area of a square or rectangle.
Expected Explain which shape is best for covering the area of a rectilinear shape of up to 6 sides using the given shapes as a reference.
Greater Depth Explain which shape is best for covering the area of a rectilinear shape of up to 8 sides using the given shapes as a reference.

Questions 2, 5 and 8 (Problem Solving)
Developing Use the given squares to complete a shape with 4 sides. Calculate the area of the shapes created.
Expected Use the reference square to calculate the area of a given shape and then complete the 6-sided shape so it has the correct area.
Greater Depth Use the square and half square to create a shape which meets the set parameters.

Questions 3, 6 and 9 (Reasoning)
Developing Explain which is the odd one out. Using squares and rectangles.
Expected Explain which is the odd one out. Using rectilinear shapes with up to 6 sides.
Greater Depth Explain which is the odd one out. Using complex rectilinear shapes with up to 8 sides which include half squares.

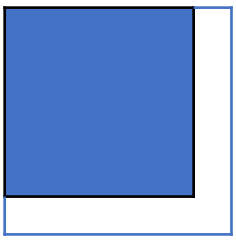
More Year 4 Area resources.

Did you like this resource? Don't forget to review it on our website.

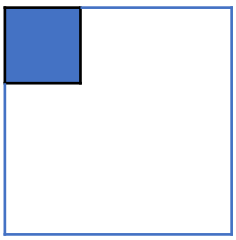
What is Area?

1a. Davey is choosing a paving slab to use to cover the space below. He wants the slabs to cover the area completely.

A.



B.



Which slab should he use? Explain your answer.

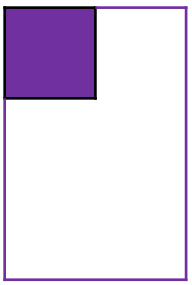
D

R

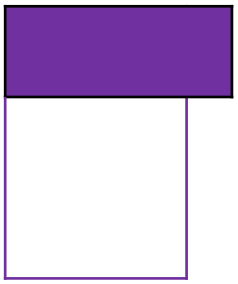
What is Area?

1b. Maya is choosing a brick to use to cover the space below. She wants the bricks to cover the area completely.

A.



B.

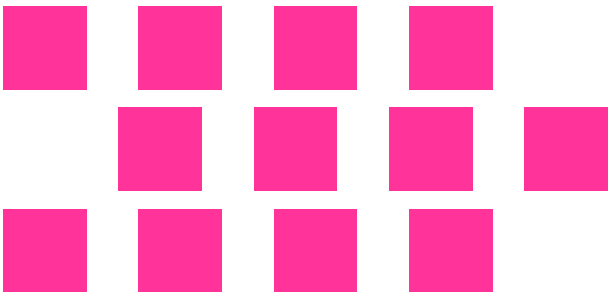


Which brick should she use? Explain your answer.

D

R

2a. Christy is making a 4-sided shape using all of the squares below.

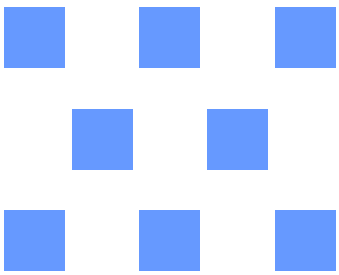


Create two shapes Christy could make. What is the area of each shape?

D

PS

2b. Melody is making a 4-sided shape using all of the squares below.



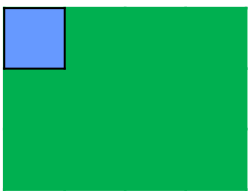
Create two shapes Melody could make. What is the area of each shape?

D

PS

3a. Which shape is the odd one out? Use the reference square to help you.

A.



B.

C.

Explain your choice.

D

R

3b. Which shape is the odd one out? Use the reference square to help you.

A.

B.

C.

Explain your choice.

D

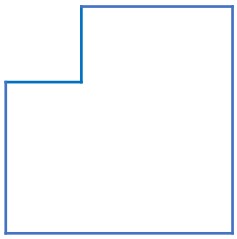
R

What is Area?

4a. Aiden is choosing a carpet tile to use to cover the space below. He wants the tiles to cover the area completely.

A.

B.



Which tile should he use? Explain your answer.

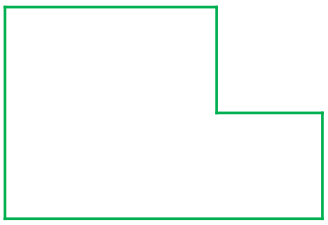
E

R

4b. Amy is choosing which wall tile to use to cover the space below. She wants the tiles to cover the area completely.

A.

B.



Which tile should she use? Explain your answer.

E

R

5a. Keira has started making a 6-sided shape using squares. The surface of her shape will have an area of 15 squares.

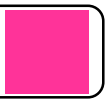
reference square 

Use the reference square to work out how many squares need adding, then find two ways to complete Keira's shape.

E

PS

5b. Joti has started making a 6-sided shape using squares. The surface of his shape will have an area of 10 squares.

reference square 

Use the reference square to work out how many squares need adding, then find two ways to complete Joti's shape.

E

PS

6a. Which shape is the odd one out? Use the reference square to help you.

reference square 

A.

B.

C.

Explain your choice.

E

R

6b. Which shape is the odd one out? Use the reference square to help you.

reference square 

A.

B.

C.

Explain your choice.

E

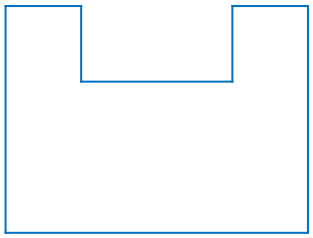
R

What is Area?

7a. Dylan is choosing a bathroom tile to use to cover the space below. He wants the tiles to cover the area completely.

A.

B.



Which tile should he use? Explain your answer.

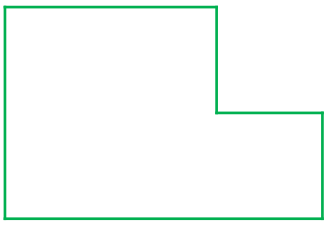
GD

R

7b. Aisha is choosing a kitchen tile to use to cover the space below. She wants the tiles to cover the area completely.

A.

B.



Which tile should she use? Explain your answer.

GD

R

8a. Max is making a 6-sided shape using squares and half squares. The surface of his shape will have an area of 12 squares.

Use the reference square and half square to create two shapes Max could make.

GD

PS

8b. Ariba is making a 8-sided shape using squares and half squares. The surface of her shape will have an area of 15 squares.

Use the reference square and half square to create two shapes Ariba could make.

GD

PS

9a. Which shape is the odd one out? Use the reference square to help you.

reference square 

A.

B.

C.

Explain your choice.

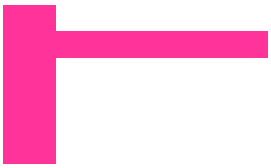
GD

R

9b. Which shape is the odd one out? Use the reference square to help you.

reference square 

A.



B.

C.

Explain your choice.

GD

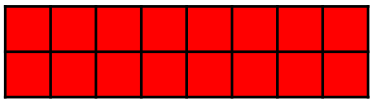
R

Reasoning and Problem Solving
What is Area?

Developing

1a. Davey should use slab B because slab A does not cover the space completely.

2a. When using all squares, the area is always 16 squares. Various shapes, for example:

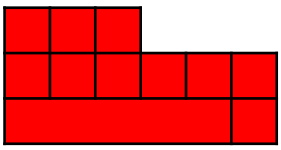


3a. C is the odd one out because it has an area of 10 squares. A and B have an area of 12 squares.

Expected

4a. Aiden should use tile B because tile A does not cover the space completely.

5a. 10 squares need adding. Various shapes, for example:

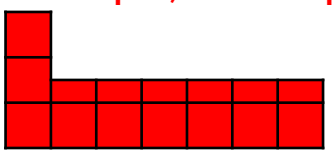


6a. B is the odd one out because it has an area of 10 squares. A and C have an area of 9 squares.

Greater Depth

7a. Dylan could use either tile. Two of tile A could be used to cover the same space as tile B and both would cover the area.

8a. Various shapes, for example:



Each shape should have 6 sides and an area of 12 squares, made from whole squares and half squares

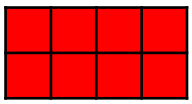
9a. B is the odd one out because it has an area of 8 squares. A and C have an area of 9 squares.

Reasoning and Problem Solving
What is Area?

Developing

1b. Maya should use brick A because brick B would not fit exactly as it would overlap.

2b. When using all squares, the area is always 8 squares. Various shapes, for example:

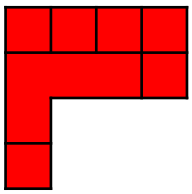


3b. A is the odd one out because it has an area of 9 squares. B and C have an area of 8 squares.

Expected

4b. Amy could use either tile. Two of tile A could be used to cover the same space as tile B and both would cover the area.

5b. 6 squares need adding. Various shapes, for example:

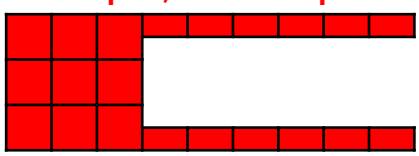


6b. C is the odd one out because it has an area of 8 squares. A and B have an area of 7 squares.

Greater Depth

7b. Aisha should use tile B because tile A does not have right-angled corners and so would not cover the space completely.

8b. Various shapes, for example:



Each shape should have 8 sides and an area of 15 squares, made from whole squares and half squares

9b. C is the odd one out because it has an area of 7 squares. A and B have an area of 5 squares.