

WA4MMGME1

Non-spatial measurement

Core + Challenge

Area by Counting Squares

I can find the area of a shape by counting whole and half grid squares.

Name: _____ Date: _____ Score: / 53

Key idea

Area by counting squares: on a grid, each square represents a fixed area (e.g. 1 cm^2). Count the whole squares the shape covers completely. For squares that are only half covered, two half squares combine to make one whole square (since $\frac{1}{2} + \frac{1}{2} = 1$).

Area = whole squares + (half squares $\div$ 2).

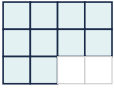
A

Fluency *practise the skill*

/16 marks

Each shape is drawn on a grid where every square = 1 cm^2 . Find the area of each shape.

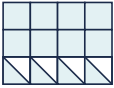
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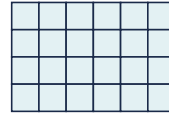
1. 10 whole squares, 0 half squares.
Area = ? _____



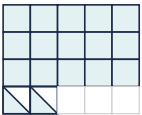
9. 5 whole squares, 10 half squares.
Area = ? _____



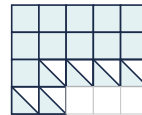
2. 8 whole squares, 4 half squares.
Area = ? _____



10. 24 whole squares, 0 half squares.
Area = ? _____



3. 15 whole squares, 2 half squares.
Area = ? _____



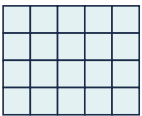
11. 11 whole squares, 6 half squares.
Area = ? _____



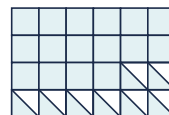
4. 6 whole squares, 6 half squares.
Area = ? _____



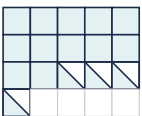
12. 7 whole squares, 4 half squares.
Area = ? _____



5. 20 whole squares, 0 half squares.
Area = ? _____



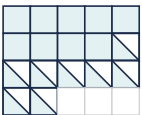
13. 16 whole squares, 8 half squares.
Area = ? _____



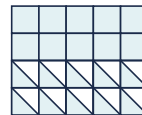
6. 12 whole squares, 4 half squares.
Area = ? _____



14. 13 whole squares, 2 half squares.
Area = ? _____



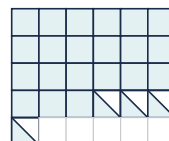
7. 9 whole squares, 8 half squares.
Area = ? _____



15. 10 whole squares, 10 half squares.
Area = ? _____



8. 18 whole squares, 2 half squares.
Area = ? _____



16. 21 whole squares, 4 half squares.
Area = ? _____

B

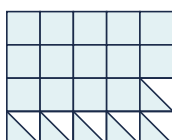
Core *apply the skill to problems*

/21 marks

1

A leaf shape drawn on a 1cm grid covers 14 whole squares and 6 half squares. What is the area of the leaf shape?

[3 marks]



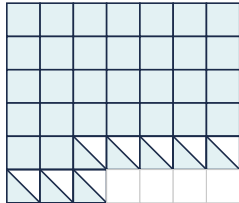
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Answer: _____

2

A pond shape on a grid (each square = 1m^2) covers 30 whole squares and 8 half squares. (a) Find the area of the pond. (b) The pond needs to be filled with gravel at a cost of \$15 per m^2 . What is the total cost?

[4 marks]



Answer: _____

3

Two shapes are drawn on the same grid. Shape A covers 18 whole squares and 4 half squares. Shape B covers 20 whole squares and 2 half squares. Which shape has the larger area, and by how much?

[3 marks]

Answer: _____

4

A garden bed on a 1m grid covers 25 whole squares and 10 half squares. (a) Find the area of the garden bed. (b) Each square metre of garden needs 3 plants. How many plants are needed in total?

[4 marks]

Answer: _____

5

A window shape on a grid (1 square = 1cm^2) covers 9 whole squares and 12 half squares. What is the area of the window shape?

[3 marks]

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Answer: _____

6

A swimming pool shape on a 1m grid covers 40 whole squares and 6 half squares. (a) Find the area of the pool. (b) Pool cover material costs \$8 per m². What is the total cost of covering the pool?

[4 marks]

Answer: _____

C

Reasoning *explain, justify and check*

/9 marks

1

Explain why two half-covered squares on a grid can be counted as one whole square when finding area.

[2 marks]

2

A student counts the area of a shape by only counting whole squares and ignoring the half squares completely. Explain the mistake this makes.

[2 marks]

3

Explain why counting squares only gives an accurate area when all the squares on the grid are the same size.

[2 marks]

4

Shape A covers 16 whole squares with no half squares. Shape B covers 14 whole squares and 4 half squares. A student says Shape B has more area because it has more 'squares counted in total' ($14 + 4 = 18$ pieces vs 16). Explain why this reasoning is incorrect, and state which shape actually has the greater area.

[3 marks]

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D

Challenge *multi-step and problem-solving*

/7 marks

1

A shape has an area of 25cm^2 found by counting squares, made up of whole squares and half squares only. If there were 20 whole squares, how many half squares were there?

[2 marks]

Answer: _____

2

A shape's area is 18cm^2 , made only of half squares (no whole squares counted). How many half squares cover the shape?

[2 marks]

Answer: _____

3

A rectangle on a 1cm grid is 6 squares wide and 5 squares tall, completely filled (no half squares). A second shape has the same total area as this rectangle but is made up of 20 whole squares and the rest half squares. How many half squares does the second shape have?

[3 marks]

Answer: _____

How did I go?

Fluency ___/16 Core ___/21 Reasoning ___/9 Challenge ___/7 **Total ___/53**

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