

Time For Tiling - Investigation Guide

Reproducible Page

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Do the task first.

Use this Guide to find out more.

Prepare a report.

1. Generalising

- The square is 50×50 . Explain how to find the number of dark tiles.
- Explain in a different way if you can.
- The square is 51×51 . Explain how to find the number of dark tiles.
- Explain in a different way if you can.
- If someone told you **any square**, explain how you would find the number of dark tiles.
- Write an equation that shows how D (Dark tiles) is found for any even square ES .
- Write an equation that shows how D (Dark tiles) is found for any odd square OS .

2. Substituting

Side of Square	Dark Tiles
19	
20	
21	
128	
319	
1000	

Copy &
complete
these
tables

3. Solving - Working Backwards

Side of Square	Dark Tiles
	12
	25
	97
	60
	100
	1001

Explain as much as you can about how to find the side of the square if someone tells you any total.

4. Making A Table

Use the numbers 1 to 12 as the sides of the squares and make an organised table showing the dark tiles for each one.

5. Graphing Pairs

- Make a graph from your table in Question 4 and explain what you see.
- Make one more dot that you think belongs on your graph. Call it **My Dot**. Explain the information **My Dot** gives about squares and dark tiles.

6. Graphing in Excel

- Use the information in your table to make two tables in Excel - one for **Even Squares** and one for **Odd Squares**.
- Select the **Even** table and use it to insert a chart. Use the **XY (Scatter)** graph with the first sub-type.
- Select the chart and choose **Chart/Add Trendline**. On the **Options Tab** select **Display equation on chart**. Explain how this equation links to Question 1f.
- Repeat for the **Odd** table and link to Question 1g.

7. What happens if...?

- Investigate how to find the **Light Tiles** if you know the side of the square.
- Design your own dark and light tile pattern and investigate it.