

Statistics: Sandwich Line Graphs

Aim: Solve comparison, sum and difference problems using information presented in a line graph. I can answer questions about data presented in a straight-line graph.	Success Criteria: I can interpret data in bar charts and line graphs. I can identify the features of a straight-line graph. I can answer comparison, sum and difference questions about data presented in a straight-line graph.	Resources: Lesson Pack
	Key/New Words: Straight-line graph, bar chart, data, axis.	Preparation: Fairtrade Bar Chart Handout - as required Cost of Bread Line Graph Handout - as required Cost of Fillings Line Graph Handout - as required Differentiated Sandwich Line Graphs Activity Sheets - one per child Cost of Salads Line Graph Handout - as required

Prior Learning: It will be helpful if children have experience of interpreting data in bar charts and line graphs, and plotting coordinates in the first quadrant.

Learning Sequence

	Fairtrade Supermarket Prices: Answer questions about the cost of Fairtrade products using the bar chart shown on the Lesson Presentation and the Fairtrade Bar Chart handout. The questions get progressively more complex and involve calculating different weights of the products based on the 100g weight given. There is an opportunity at the end of the activity for the children to write their own question about the bar chart for a friend to solve.				
	Sandwich Designing: Using the text and images on the Lesson Presentation, introduce the real-life context of the lesson - using straight-line graphs that show the cost by weight of different ingredients to design and make sandwiches.				
	Cost by Weight Straight-Line Graphs: Use the straight-line graph shown on the Lesson Presentation and the Cost of Bread Line Graph Handout to rehearse answering questions about data presented on a line graph. Discuss the scales used on each axis.				
	Sandwich Fillings Straight-Line Graph: Use the straight-line graph shown on the Lesson Presentation and the Cost of Fillings Line Graph Handout to explain how a straight-line graph can be used to calculate a value that is off the scale of the axis by using multiplication. Challenge the children to write their own questions for a friend to solve about the cost of the sandwich fillings by weight.				
	Sandwich Line Graphs: Children complete the differentiated Sandwich Line Graph Activity Sheets to show they can answer questions about data presented in a straight-line graph. <table border="0" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center; width: 33%;"> Interpret the double straight-line graph correctly to answer questions about the cost and weight of sandwich ingredients. </td> <td style="text-align: center; width: 33%;"> Interpret the triple straight-line graph correctly to answer questions about the cost and weight of sandwich ingredients. </td> <td style="text-align: center; width: 33%;"> Interpret the quadruple straight-line graph correctly to answer questions about the cost and weight of sandwich ingredients. </td> </tr> </table>	Interpret the double straight-line graph correctly to answer questions about the cost and weight of sandwich ingredients.	Interpret the triple straight-line graph correctly to answer questions about the cost and weight of sandwich ingredients.	Interpret the quadruple straight-line graph correctly to answer questions about the cost and weight of sandwich ingredients.	
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	Super Salad True or False: Use the straight-line graph shown on the Lesson Presentation and the Cost of Salads Line Graph Handout to identify if the statements about the cost and weight of the salad ingredients are true or false.				

Masterit

Doit: Use the straight-line graphs contained in this lesson to design and cost their own sandwich and hold a sandwich making party.

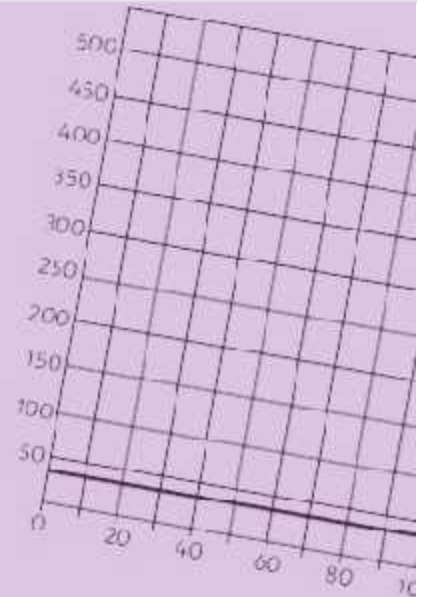
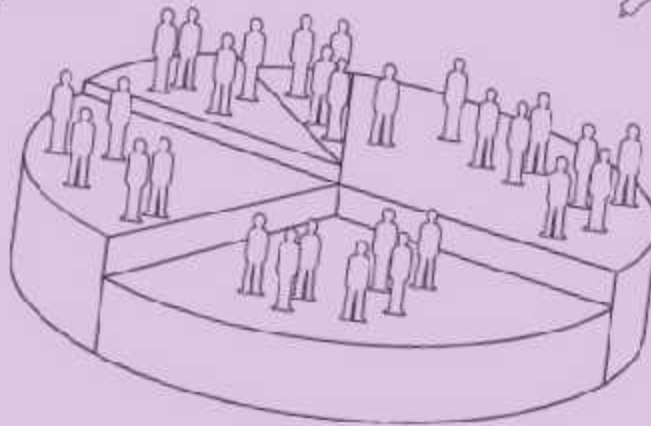
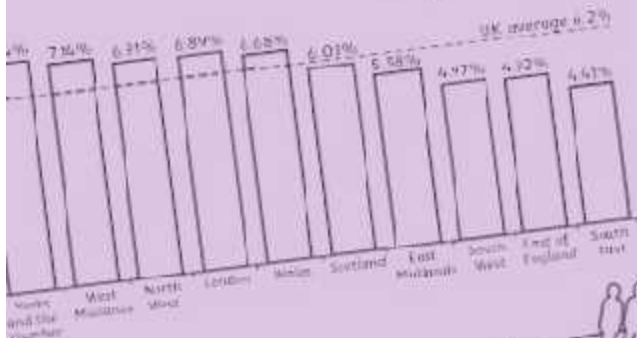
Exploreit: Use a supermarket website to find the price of different products based on their weights and draw straight line graphs to show the data.



Maths

Statistics

Sandwich Line Graphs



Aim

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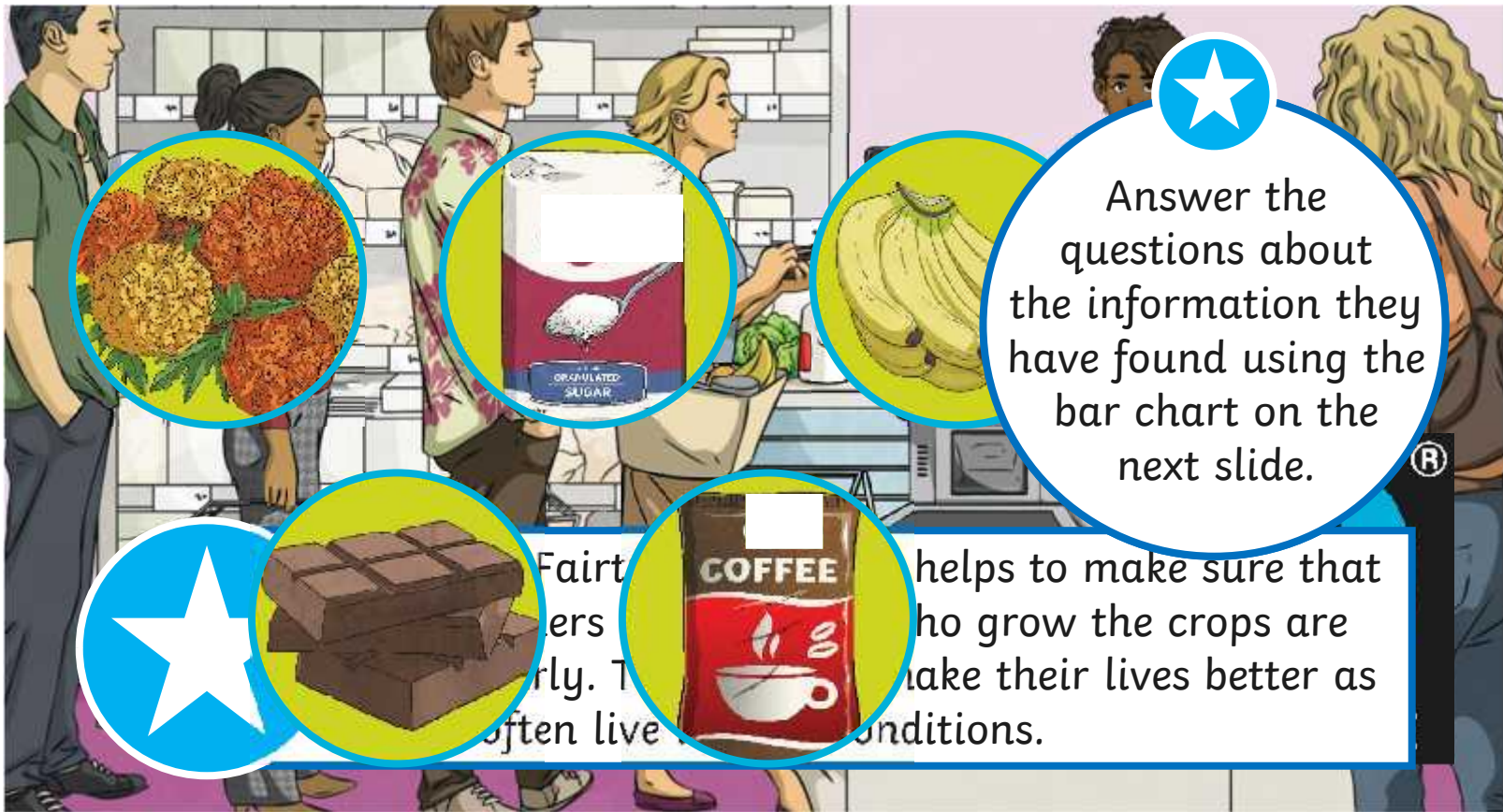
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Fairtrade Supermarket Prices



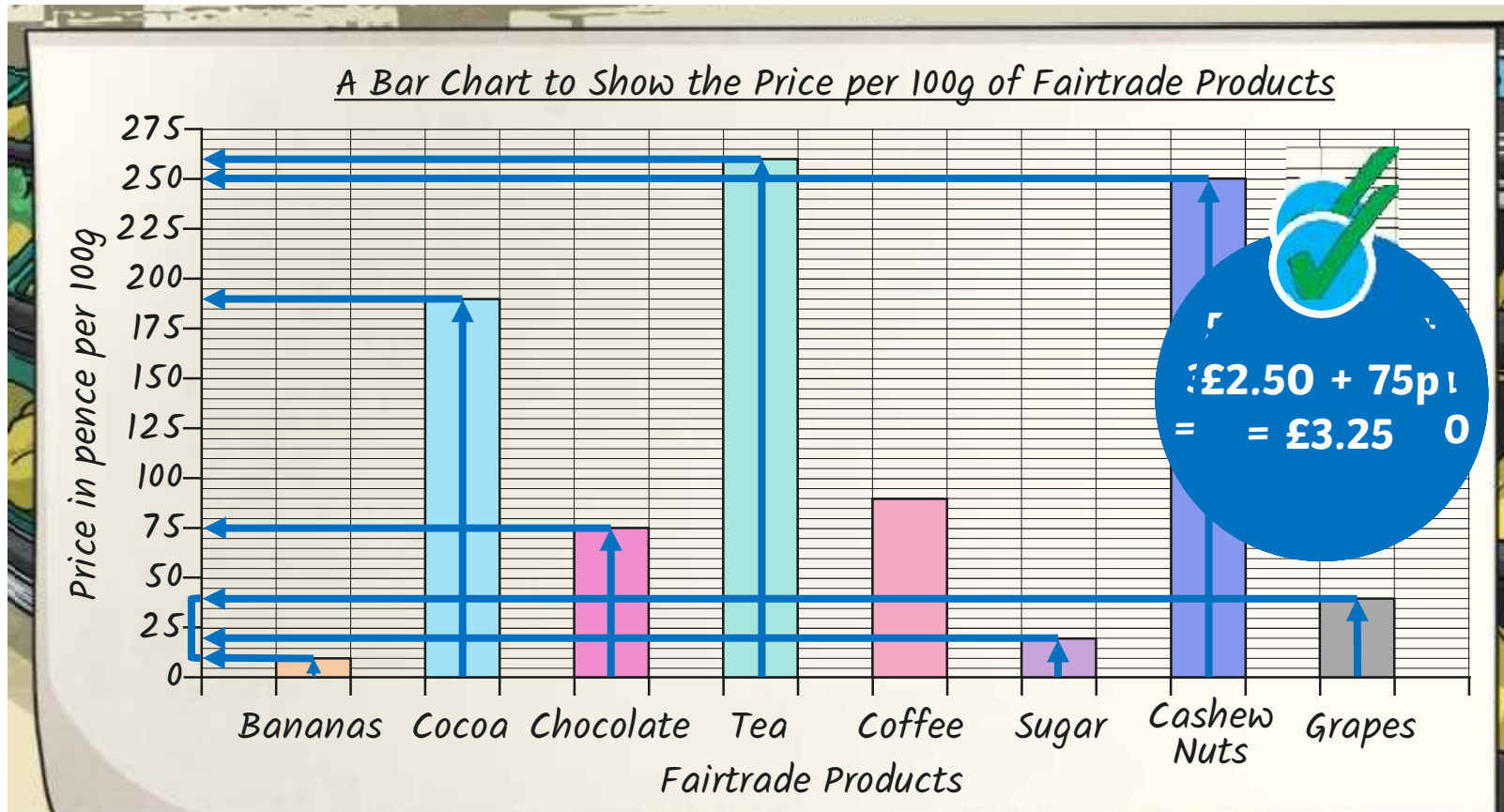
Take a look around any supermarket and you will see many items with a Fairtrade sticker on them.



Fairtrade Supermarket Prices



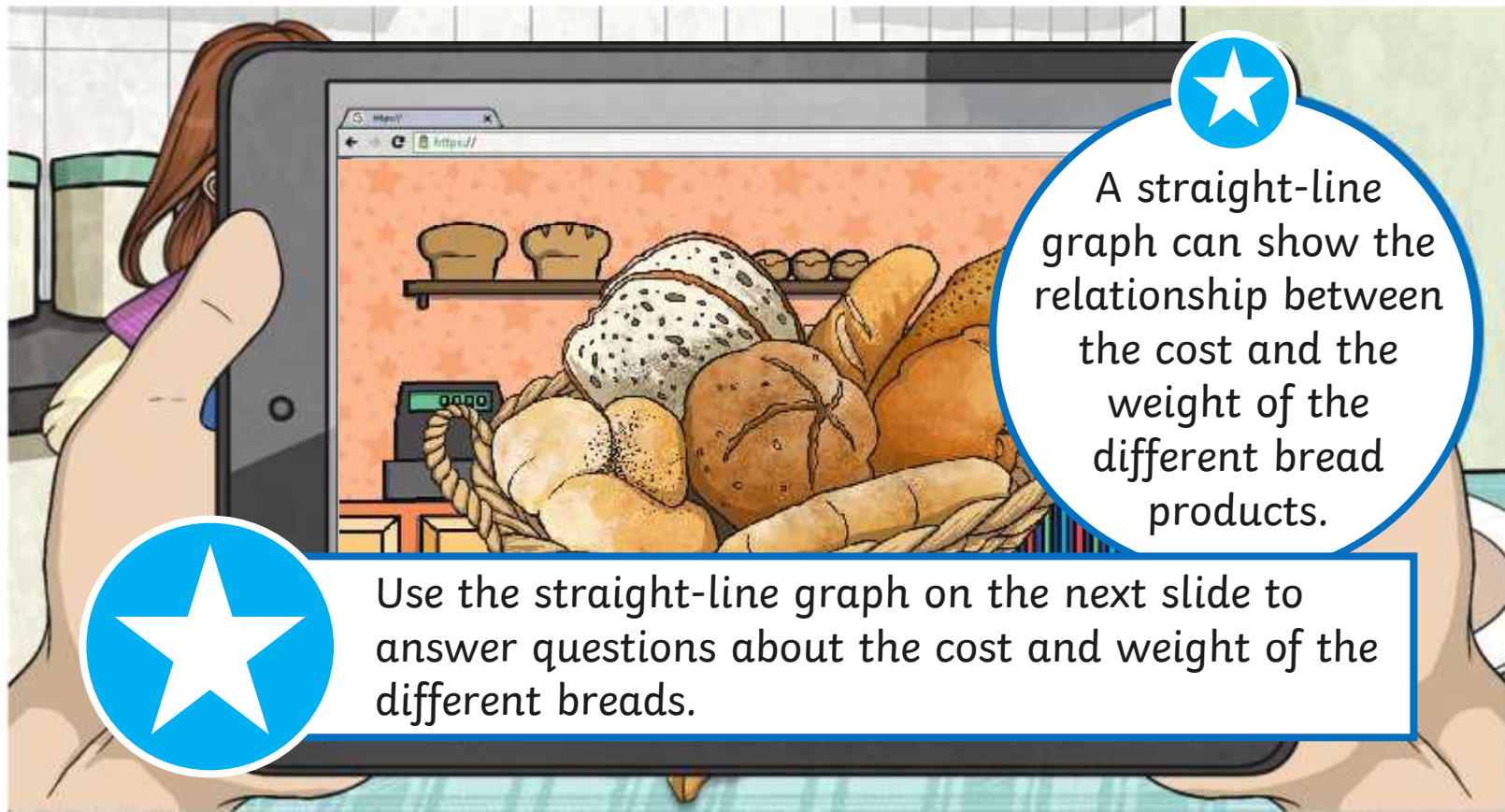
Write up which is the most different in price per 100g of the three items
 What is the most expensive? What is the most expensive for 500g of the product?
 100g of grapes cost £1.00 of the same amount?



Sandwich Designing



In their design and technology lessons, Class 5 are designing and making their own sandwiches.



A straight-line graph can show the relationship between the cost and the weight of the different bread products.

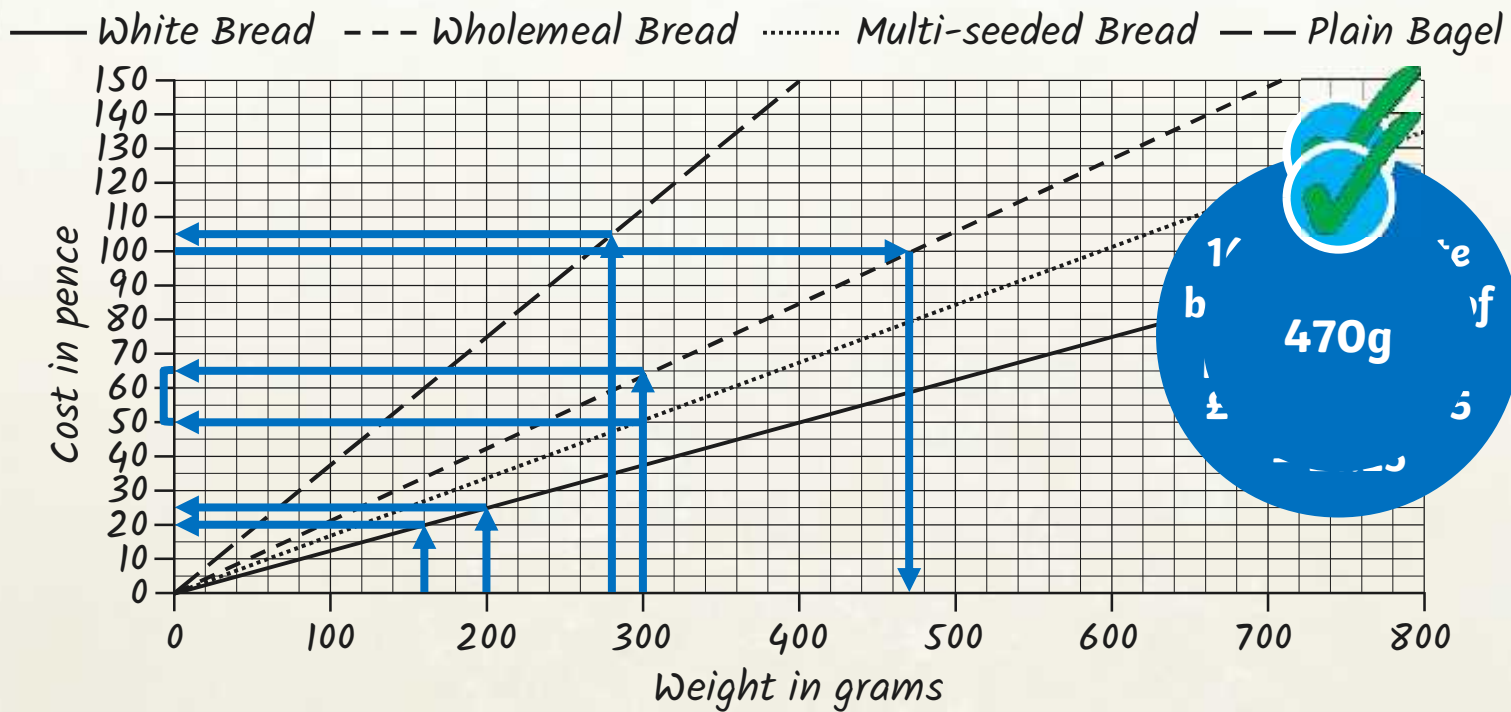
Use the straight-line graph on the next slide to answer questions about the cost and weight of the different breads.

Cost by Weight Straight-Line Graph



How much is the difference between 160g of white bread and 300g of wholemeal bread?
 Approximately how much would you need to buy for £1?
 300g of wholemeal bread or 470g of multi-seeded bread?

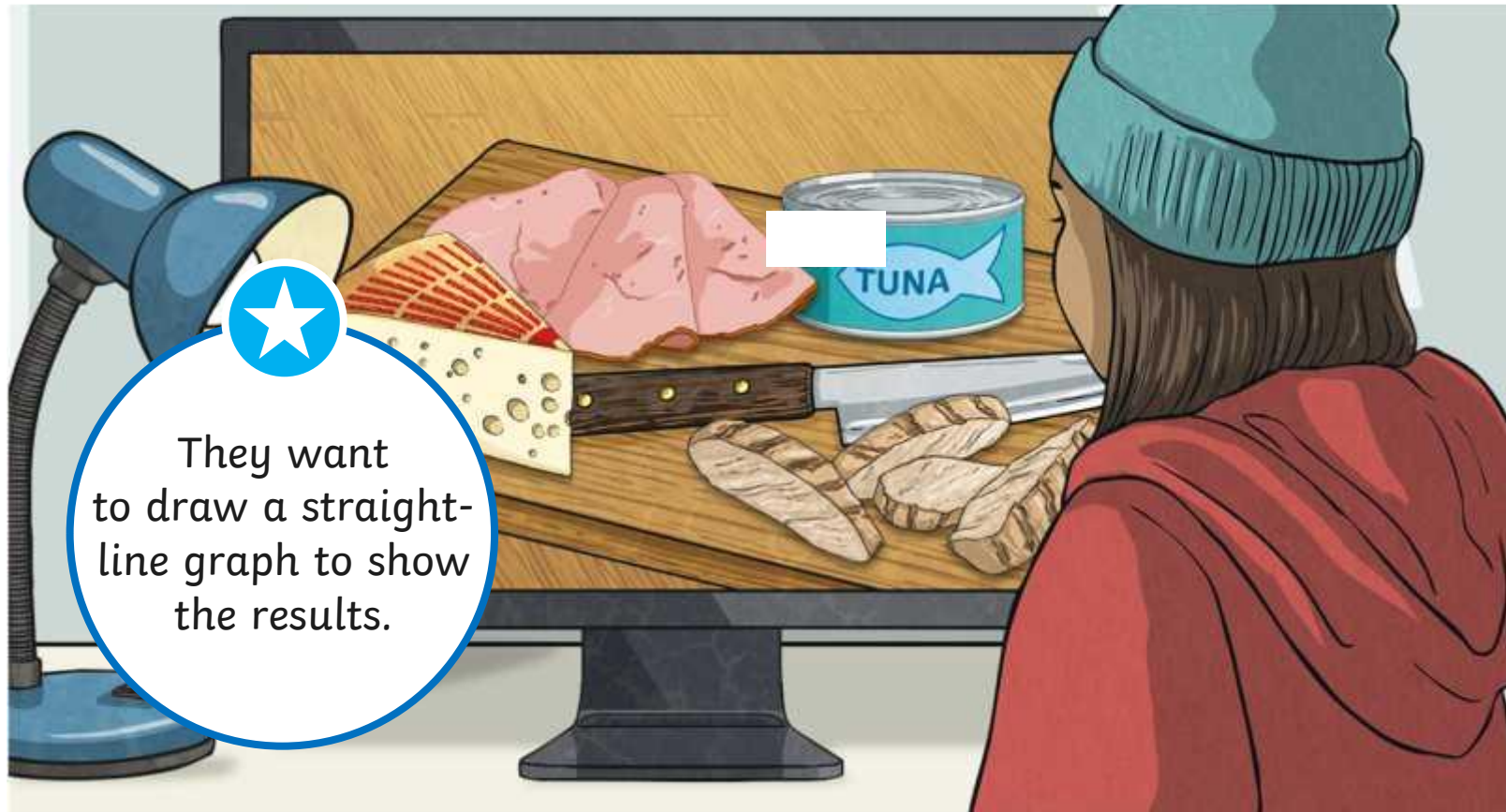
A Straight-Line Graph to Show the Cost of Different Bread Products at the Supermarket Based on Weight



Sandwich Fillings Straight-Line Graph



The children in Class 5 also use the supermarket website to find the price of different sandwich fillings based on their weights.

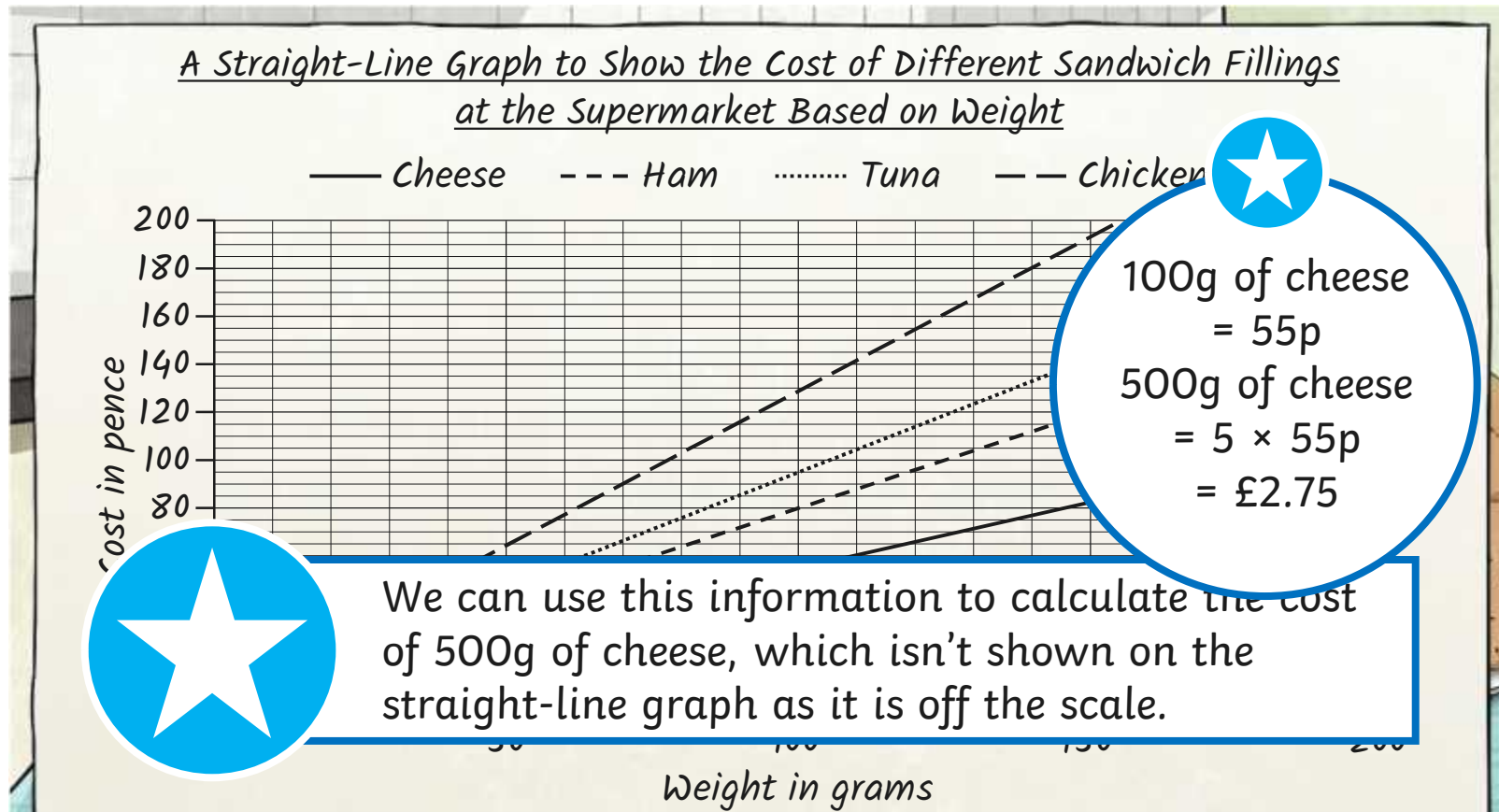


They want to draw a straight-line graph to show the results.

Sandwich Fillings Straight-Line Graph



Write your own question about the price by weight of the different sandwich fillings for a friend to solve using the straight-line graph.
This straight-line graph tells us that 100g of cheese costs 55p.



Sandwich Line Graphs



Use your stunning statistics skills to complete this activity:

Activity sheet titled "Sandwich Line Graphs" with a grid of 14 questions and 6 line graphs. The questions are:

- What is the cost of 20g of white bread?
- What is the cost of 40g of white bread?
- What is the cost of 60g of white bread?
- What is the cost of 80g of white bread?
- What is the cost of 100g of white bread?
- How much would the 100g of wholemeal bread cost?
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The graphs are:

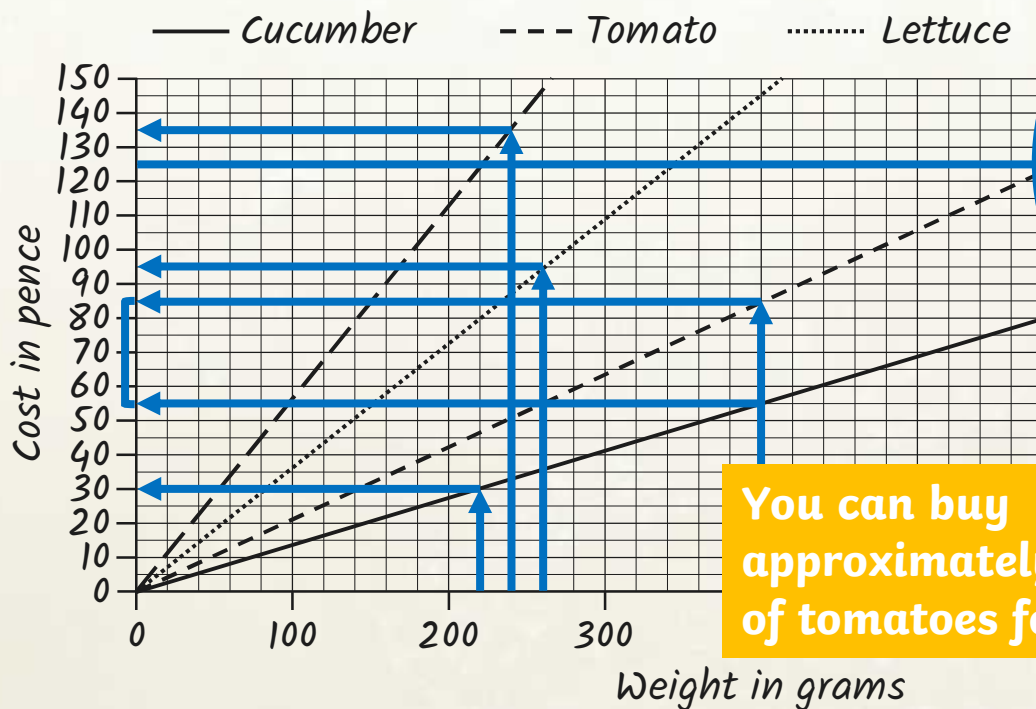
- White Bread:** A line graph showing the cost of white bread in pence against weight in grams. The y-axis ranges from 0 to 80 pence, and the x-axis ranges from 0 to 100g. Three lines represent different brands.
- Wholemeal Bread:** A line graph showing the cost of wholemeal bread in pence against weight in grams. The y-axis ranges from 0 to 80 pence, and the x-axis ranges from 0 to 100g. Three lines represent different brands.
- Wholemeal Bread (Costing 20p):** A line graph showing the cost of wholemeal bread in pence against weight in grams. The y-axis ranges from 0 to 80 pence, and the x-axis ranges from 0 to 100g. Three lines represent different brands, with one line starting at 20p for 0g.
- Wholemeal Bread (Costing 30p):** A line graph showing the cost of wholemeal bread in pence against weight in grams. The y-axis ranges from 0 to 80 pence, and the x-axis ranges from 0 to 100g. Three lines represent different brands, with one line starting at 30p for 0g.
- Wholemeal Bread (Costing 40p):** A line graph showing the cost of wholemeal bread in pence against weight in grams. The y-axis ranges from 0 to 80 pence, and the x-axis ranges from 0 to 100g. Three lines represent different brands, with one line starting at 40p for 0g.
- Wholemeal Bread (Costing 50p):** A line graph showing the cost of wholemeal bread in pence against weight in grams. The y-axis ranges from 0 to 80 pence, and the x-axis ranges from 0 to 100g. Three lines represent different brands, with one line starting at 50p for 0g.

Super Salad True or False



In the final stage of planning their sandwiches, the children in class 5 investigate the cost by weight of different salad products.

A Line Graph to Show the Cost of Different Salad Products at the Supermarket Based on Weight



Use the line graph to decide if the statements about the salad items are true or false.

You can buy approximately 585g of tomatoes for £1.25.

False

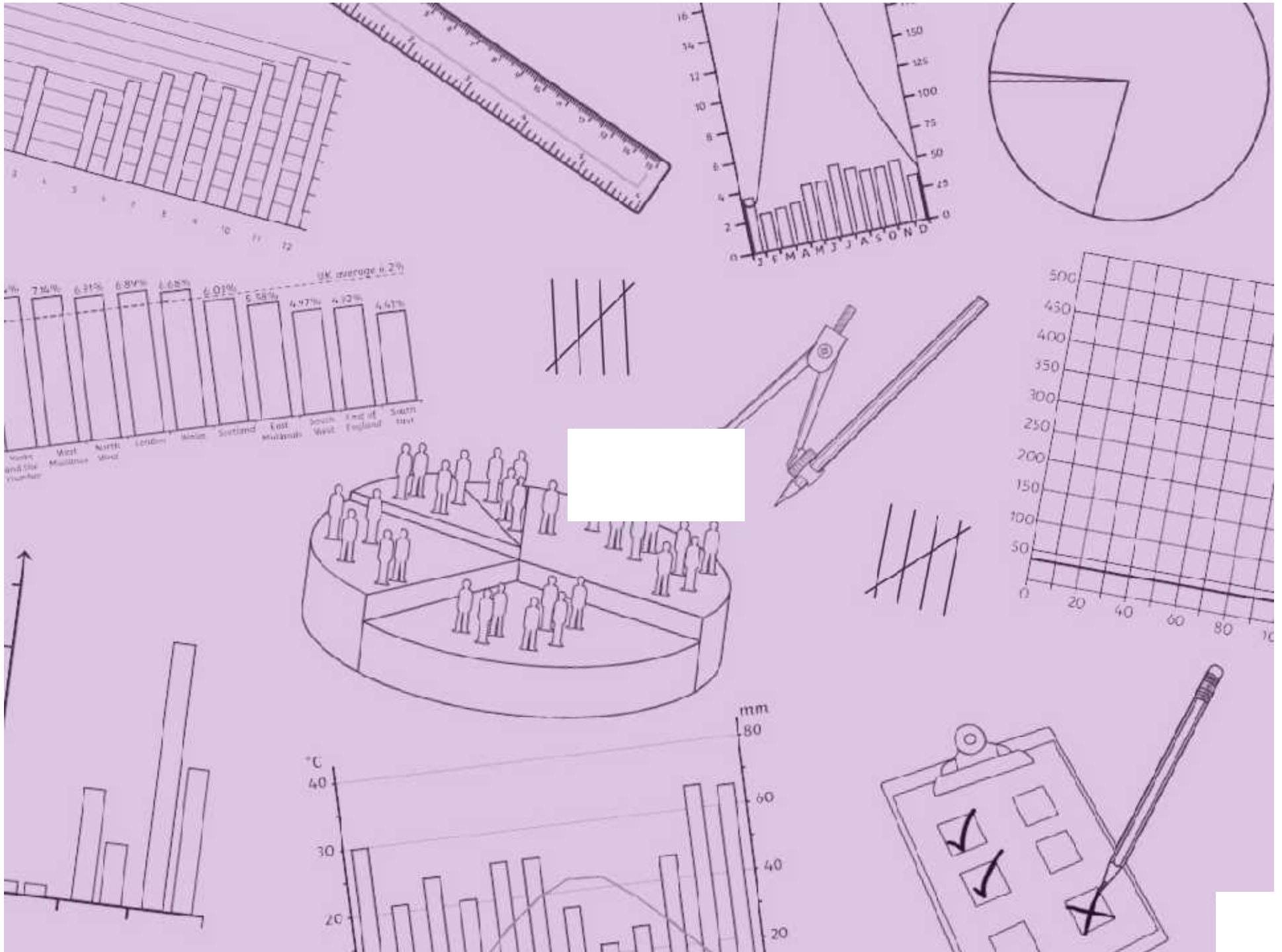
Aim



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Next Steps									
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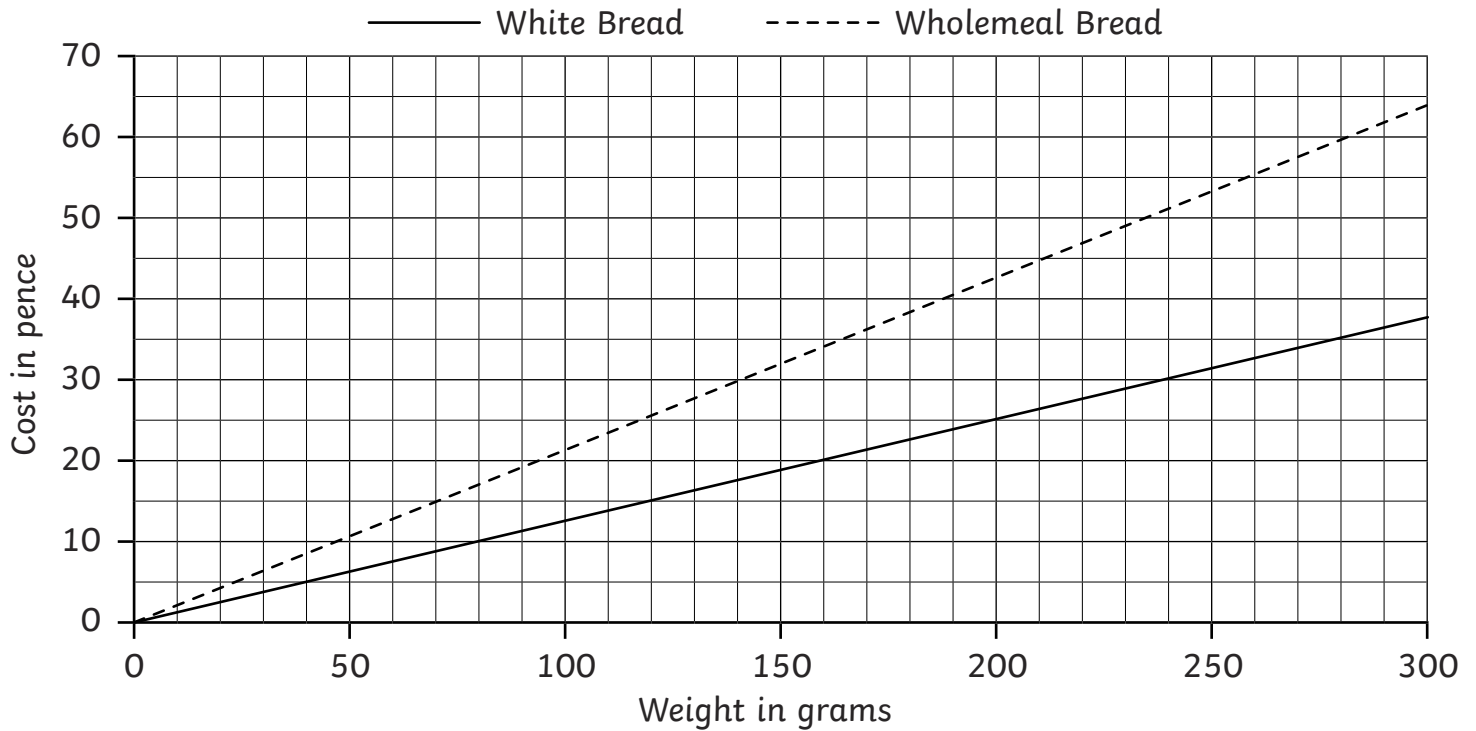
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Sandwich Line Graphs

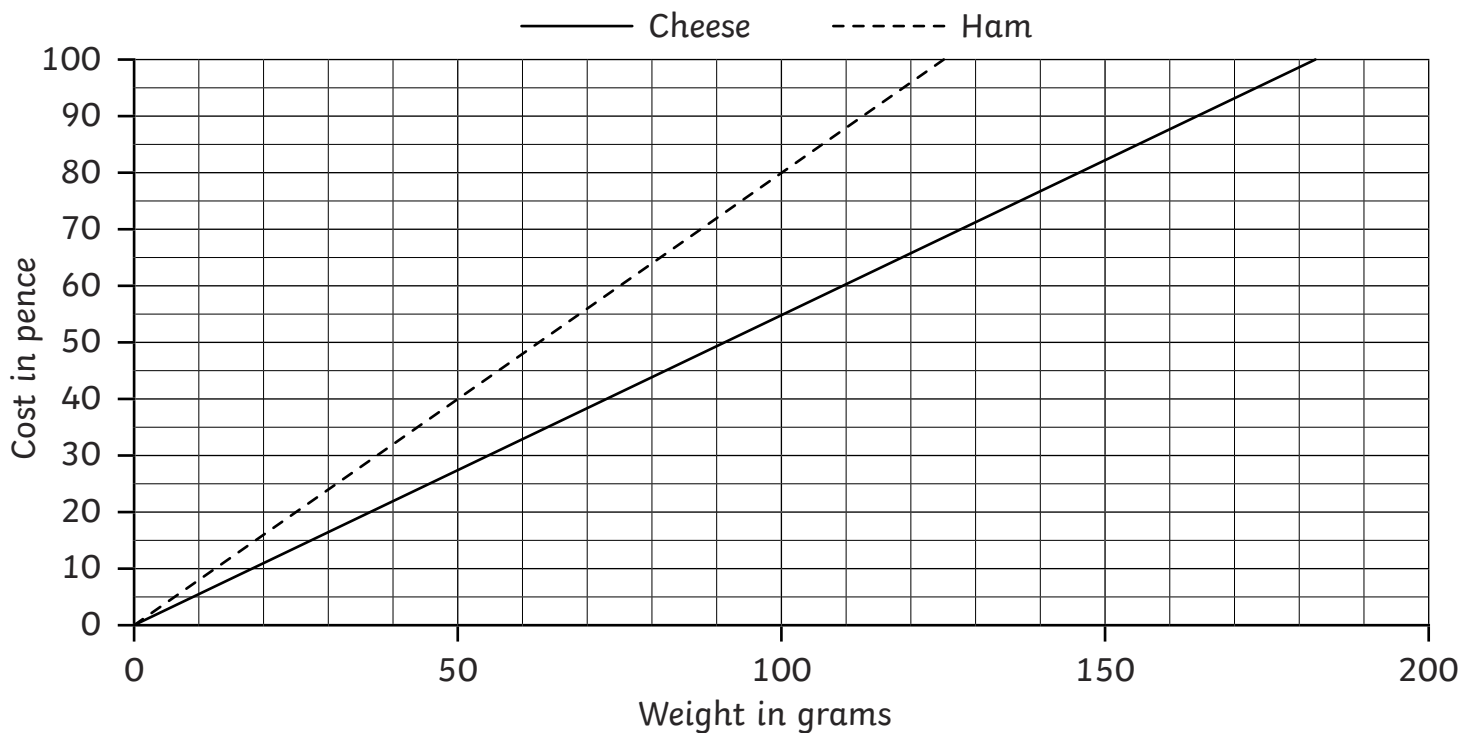
I can answer questions about data presented in straight-line graphs.



Cost by Weight of Sandwich Bread



Cost by Weight of Sandwich Fillings





- 1) What is the cost of 120g of white bread?

- 2) What is the cost of 120g of wholemeal bread?

- 3) How many grams of white bread can be bought for 35p?

- 4) How many grams of wholemeal bread can be bought for 40p?

- 5) What is the cost of 100g of cheese?

- 6) What is the cost of 100g of ham?

- 7) How many grams of cheese can be bought for 60p?

- 8) How many grams of ham can be bought for 40p?

- 9) How much would 80g of white bread and 90g of cheese cost together?

- 10) How much would 160g of white bread and 30g of ham cost together?

- 11) How much would 70g of wholemeal bread and 110g of cheese cost together?

- 12) How much would 140g of wholemeal bread and 50g of ham cost together?



Sandwich Line Graphs **Answers**

Question	Answer
1. What is the cost of 120g of white bread?	<i>15p</i>
2. What is the cost of 120g of wholemeal bread?	<i>25p</i>
3. How many grams of white bread can be bought for 35p?	<i>280g</i>
4. How many grams of wholemeal bread can be bought for 40p?	<i>190g</i>
5. What is the cost of 100g of cheese?	<i>55p</i>
6. What is the cost of 100g of ham?	<i>80p</i>
7. How many grams of cheese can be bought for 60p?	<i>110g</i>
8. How many grams of ham can be bought for 40p?	<i>50g</i>
9. How much would 80g of white bread and 90g of cheese cost together?	<i>60p</i>

10. How much would 160g of white bread and 30g of ham cost together?	<i>45p</i>
11. How much would 70g of wholemeal bread and 110g of cheese cost together?	<i>75p</i>
12. How much would 140g of wholemeal bread and 50g of ham cost together?	<i>70p</i>

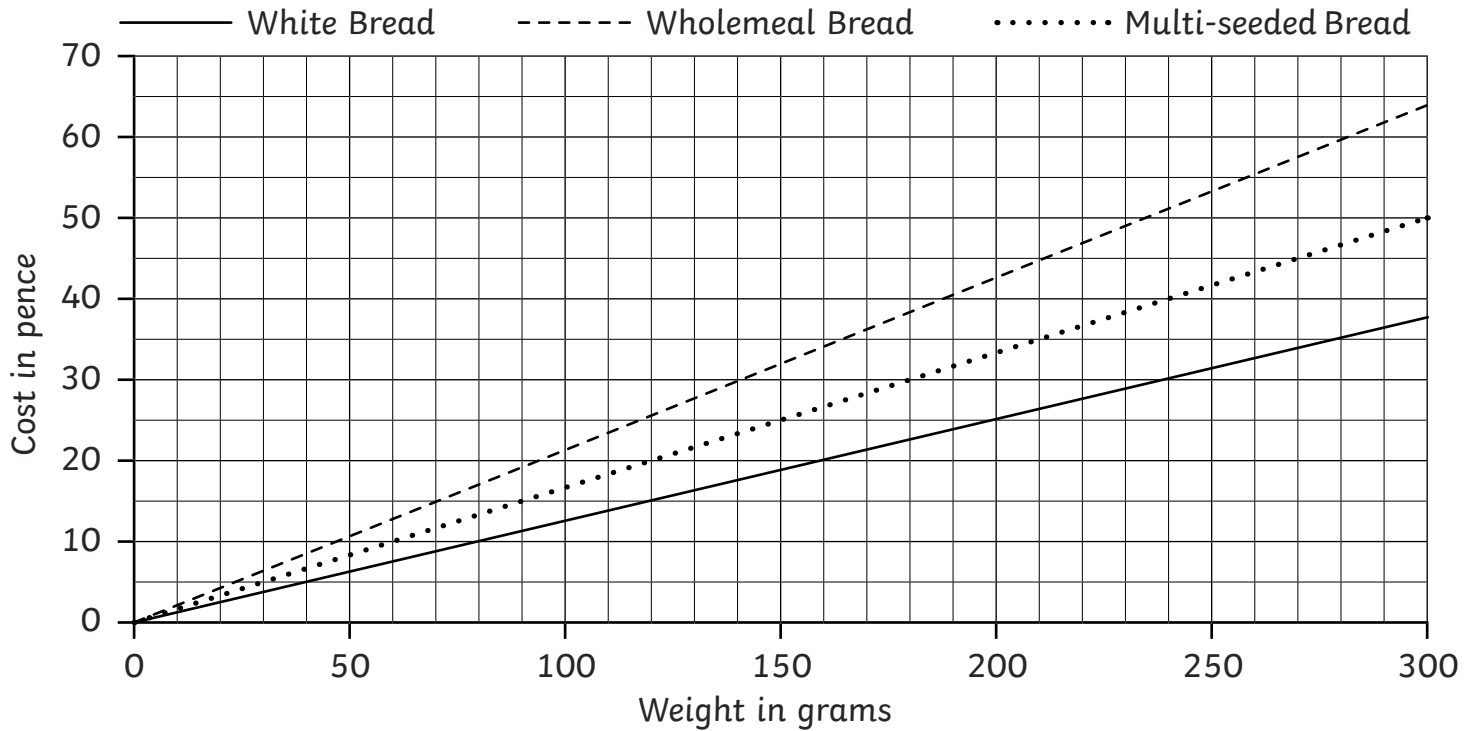


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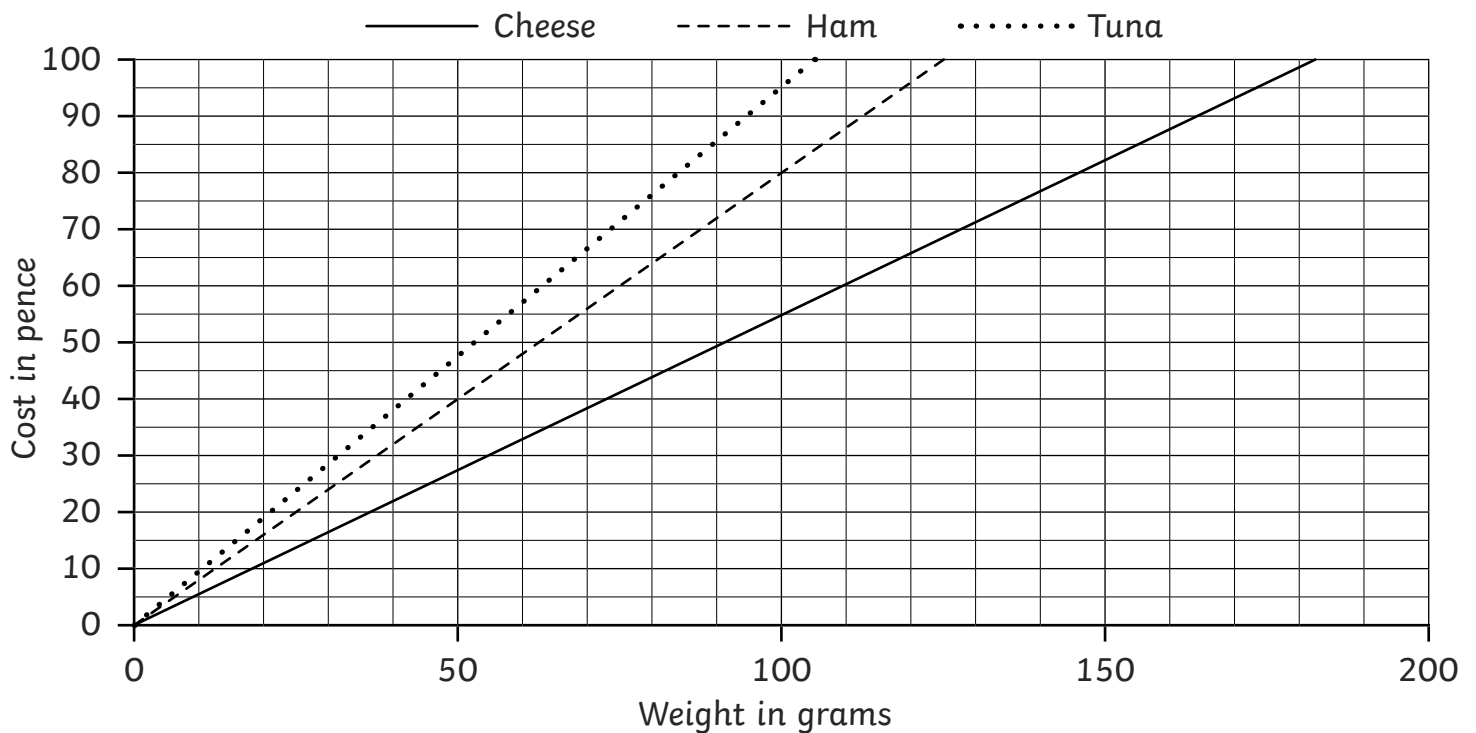
I can answer questions about data presented in straight-line graphs.



Cost by Weight of Sandwich Bread



Cost by Weight of Sandwich Fillings





- 1) What is the cost of 80g of white bread?

- 2) What is the cost of 90g of cheese?

- 3) What is the cost of 120g of multi-seeded bread?

- 4) How many grams of ham can be bought for 40p?

- 5) How many grams of tuna can be bought for 20p?

- 6) How many grams of wholemeal bread can be bought for 40p?

- 7) How much would 120g of white bread and 100g of ham cost together?

- 8) How much would 120g of wholemeal bread and 100g of cheese cost together?

- 9) How much would 120g of multi-seeded bread and 100g of tuna cost together?

- 10) How much would 360g of white bread, 200g of ham and 200g of cheese cost together?

- 11) How much would 360g of wholemeal bread, 200g of tuna and 300g of ham cost together?

- 12) How much would 360g of multi-seeded bread, 300g of cheese and 200g of tuna cost together?



Sandwich Line Graphs Answers

Question	Answer
1. What is the cost of 80g of white bread?	
	10p
2. What is the cost of 90g of cheese?	
	50p
3. What is the cost of 120g of multi-seeded bread?	
	20p
4. How many grams of ham can be bought for 40p?	
	50g
5. How many grams of tuna can be bought for 20p?	
	20g
6. How many grams of wholemeal bread can be bought for 40p?	
	190g
7. How much would 120g of white bread and 100g of ham cost together?	
	95p
8. How much would 120g of wholemeal bread and 100g of cheese cost together?	
	80p

9. How much would 120g of multi-seeded bread and 100g of tuna cost together?	
	£1.15
10. How much would 360g of white bread, 200g of ham and 200g of cheese cost together?	
	£3.15
11. How much would 360g of wholemeal bread, 200g of tuna and 300g of ham cost together?	
	£5.05
12. How much would 360g of multi-seeded bread, 300g of cheese and 200g of tuna cost together?	
	£4.15

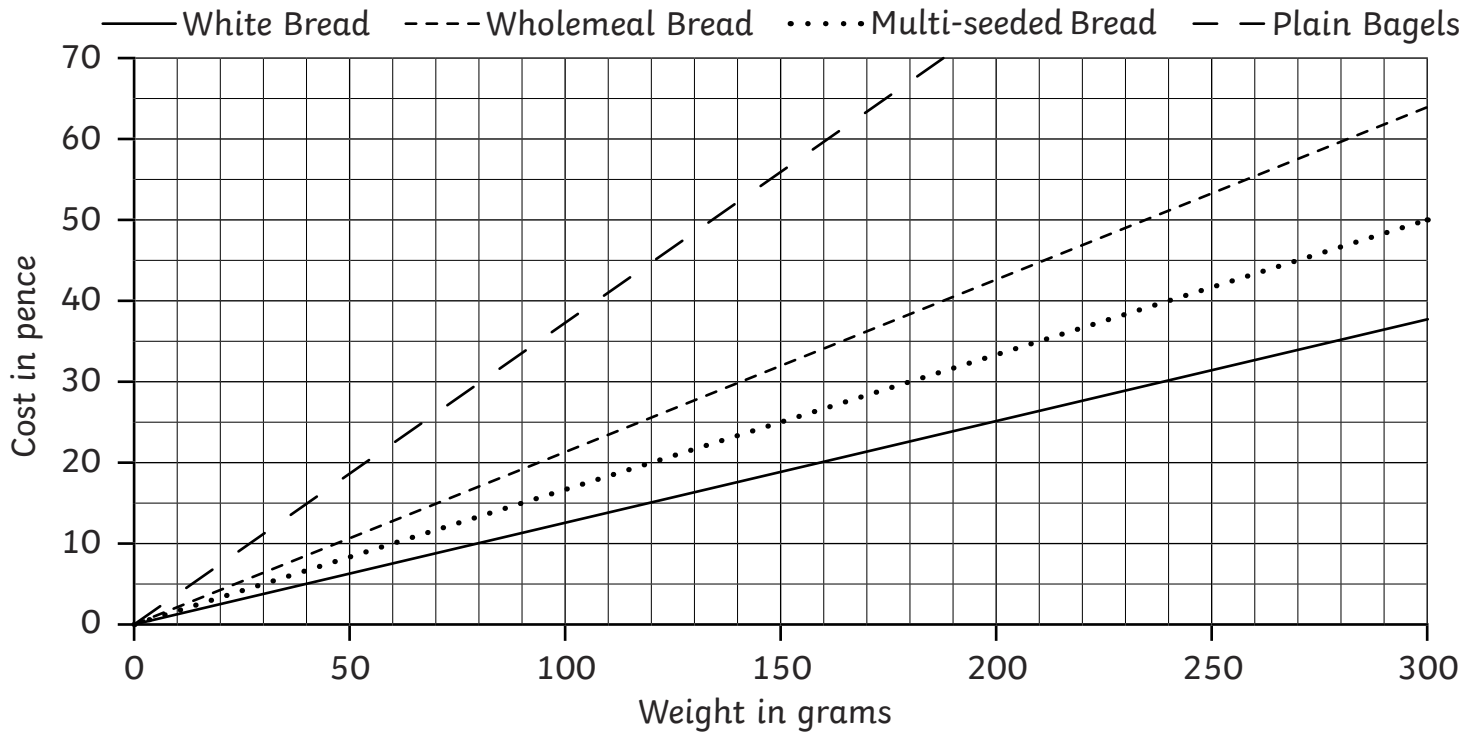


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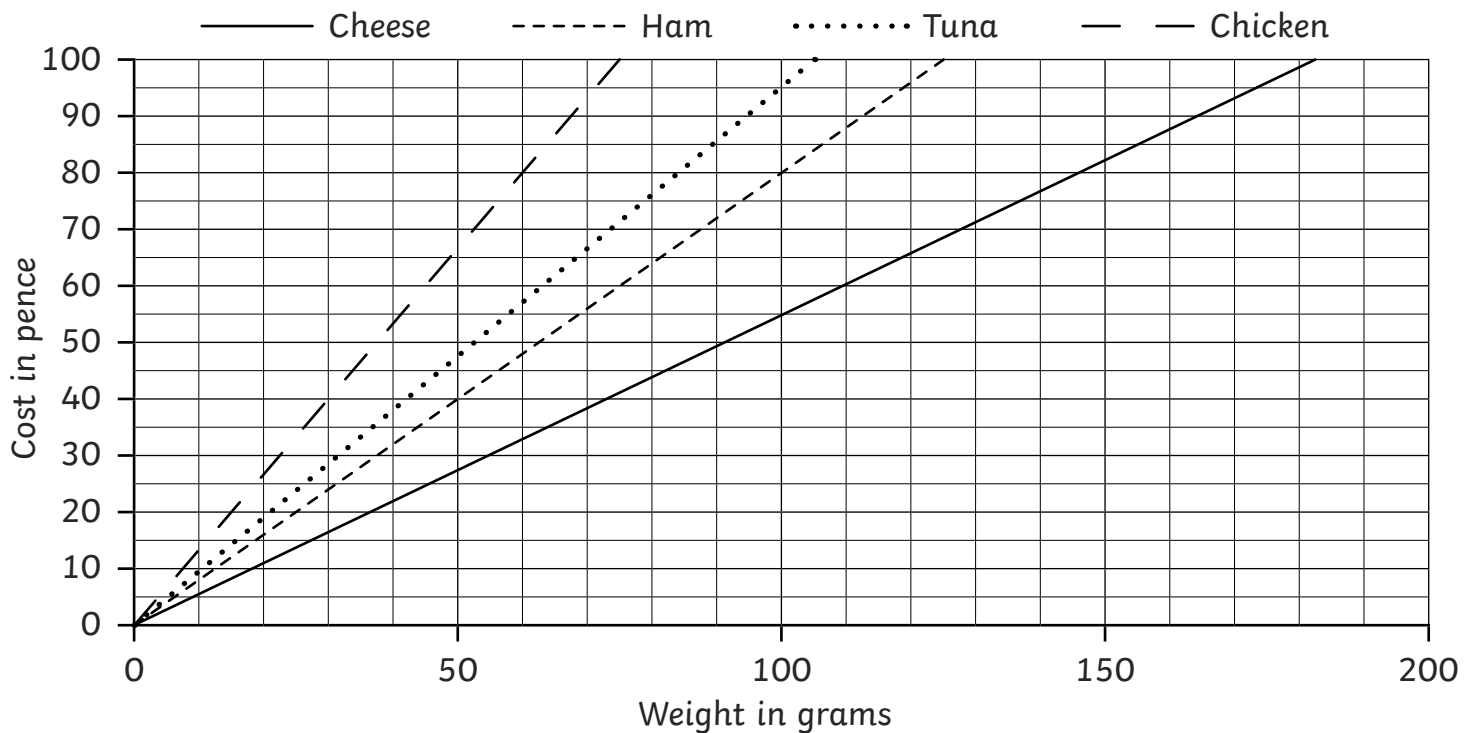
I can answer questions about data presented in straight-line graphs.



Cost by Weight of Sandwich Bread



Cost by Weight of Sandwich Fillings





- 1) What is the cost of 120g of plain bagels?

- 2) What is the cost of 50g of chicken?

- 3) What is the cost of 210g of multi-seeded bread?

- 4) What is the cost of 300g of ham?

- 5) What is the cost of 500g of tuna?

- 6) What is the cost of 420g of wholemeal bread?

- 7) How much would 360g of white bread, 200g of ham and 200g of cheese cost together?

- 8) How much would 360g of wholemeal bread, 300g of chicken and 100g of cheese cost together?

- 9) How much would 360g of multi-seeded bread, 300g of cheese and 200g of tuna cost together?

- 10) How much would 480g of plain bagels, 300g of ham and 150g of chicken cost together?

- 11) How much would 480g of multi-seeded bread, 300g of tuna and 200g of chicken cost together?

- 12) How much would 360g of plain bagels, 150g of ham and 180g of tuna cost together?

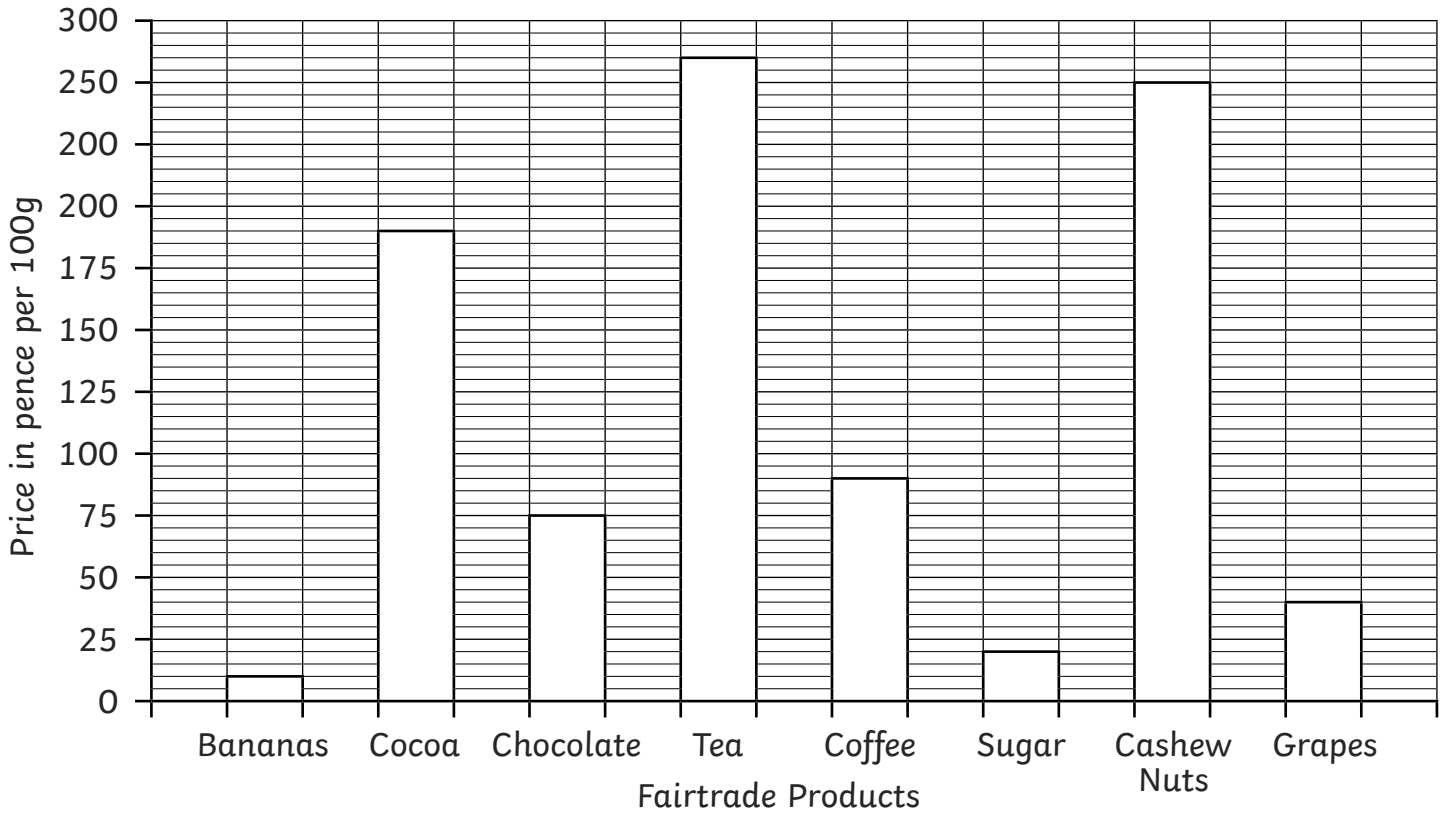


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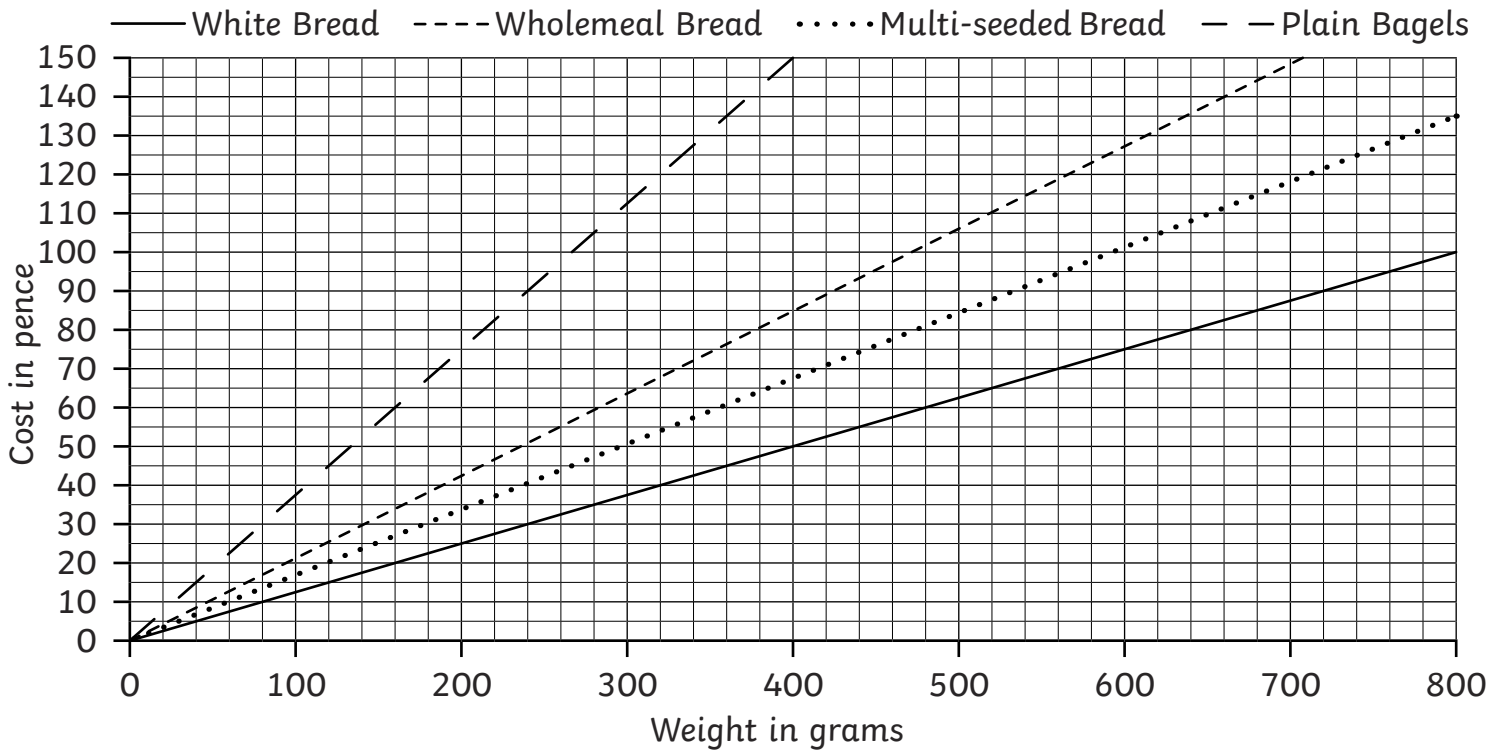
Question	Answer
1. What is the cost of 120g of plain bagels?	45p
2. What is the cost of 50g of chicken?	65p
3. What is the cost of 210g of multi-seeded bread?	35p
4. What is the cost of 300g of ham?	£2.40
5. What is the cost of 500g of tuna?	£4.75
6. What is the cost of 420g of wholemeal bread?	90p
7. How much 360g of white bread, 200g of ham and 200g of cheese cost together?	£3.15
8. How much would 360g of wholemeal bread, 300g of chicken and 100g of cheese cost together?	£5.20
9. How much would 360g of multi-seeded bread, 300g of cheese and 200g of tuna cost together?	£4.15

10. How much would 480g of plain bagels, 300g of ham and 150g of chicken cost together?	£6.15
11. 10. How much would 480g of multi-seeded bread, 300g of tuna and 200g of chicken cost together?	£6.45
12. How much would 360g of plain bagels, 150g of ham and 180g of tuna cost together?	£4.25

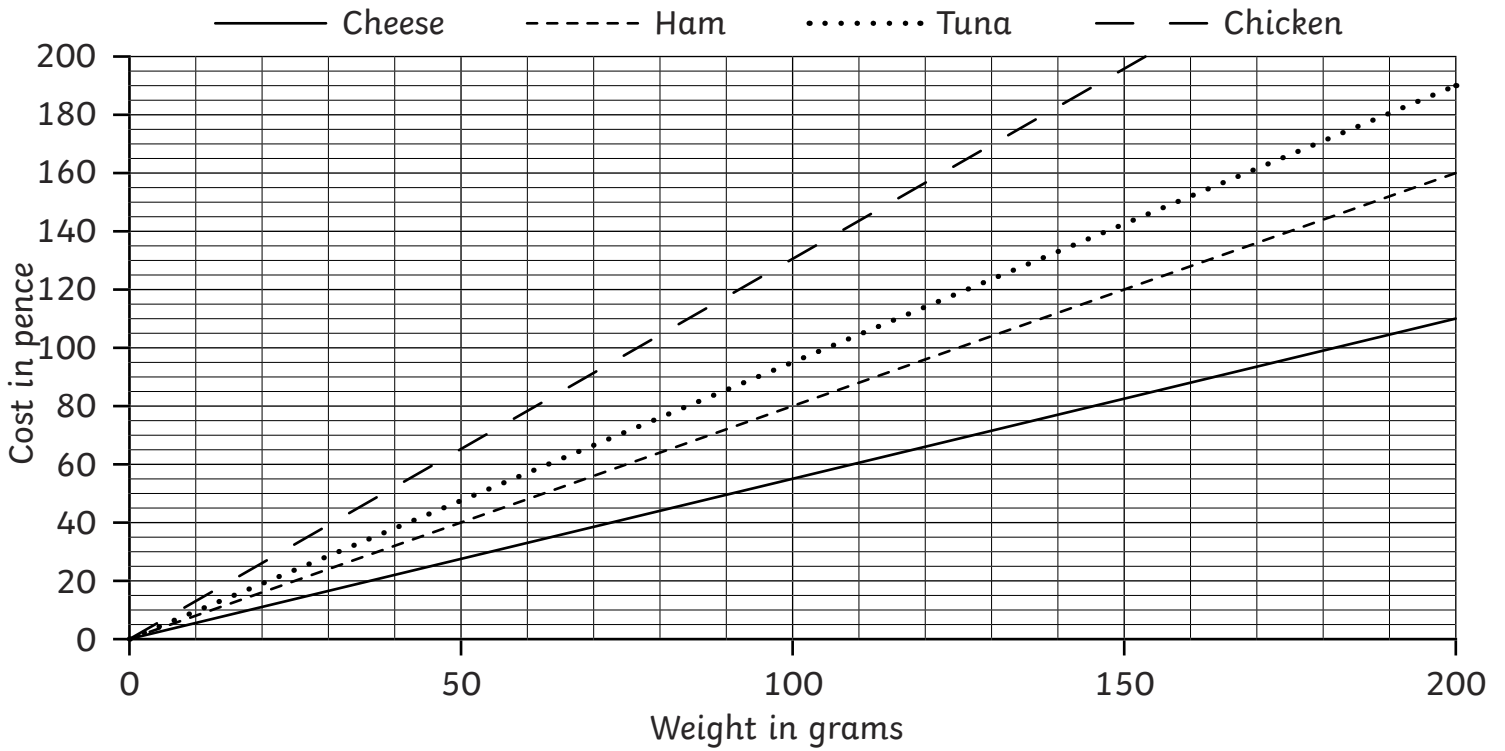
A Bar Chart to Show the Price per 100g of Fairtrade Products



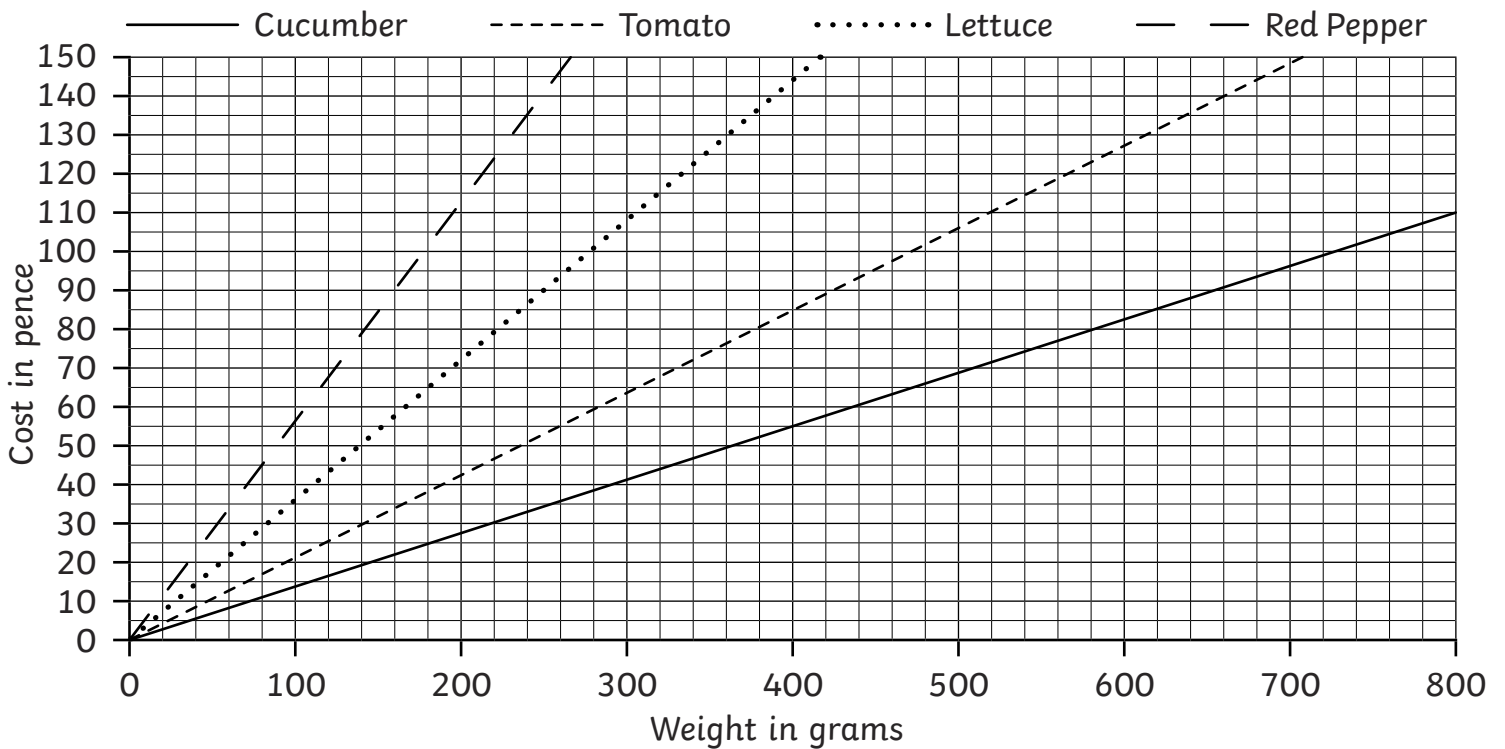
A Straight-Line Graph to Show the Cost of Different Bread Products at the Supermarket Based on Weight



A Straight-Line Graph to Show the Cost of Different Sandwich Fillings at the Supermarket Based on Weight



A Straight-Line Graph to Show the Cost of Different Salad Products at the Supermarket Based on Weight



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