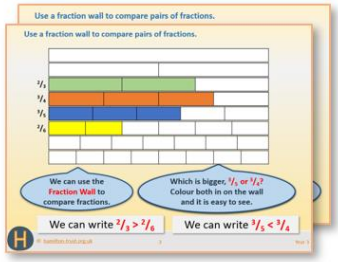
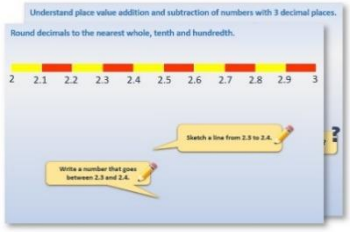
Week 14, Day 1
Graphs

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.



OR start by carefully reading through the **Learning Reminders**.



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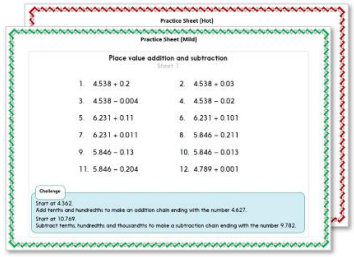
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either Mild (easier) or Hot (harder)!
Check the answers.



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3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**

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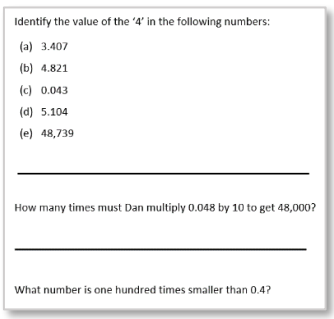
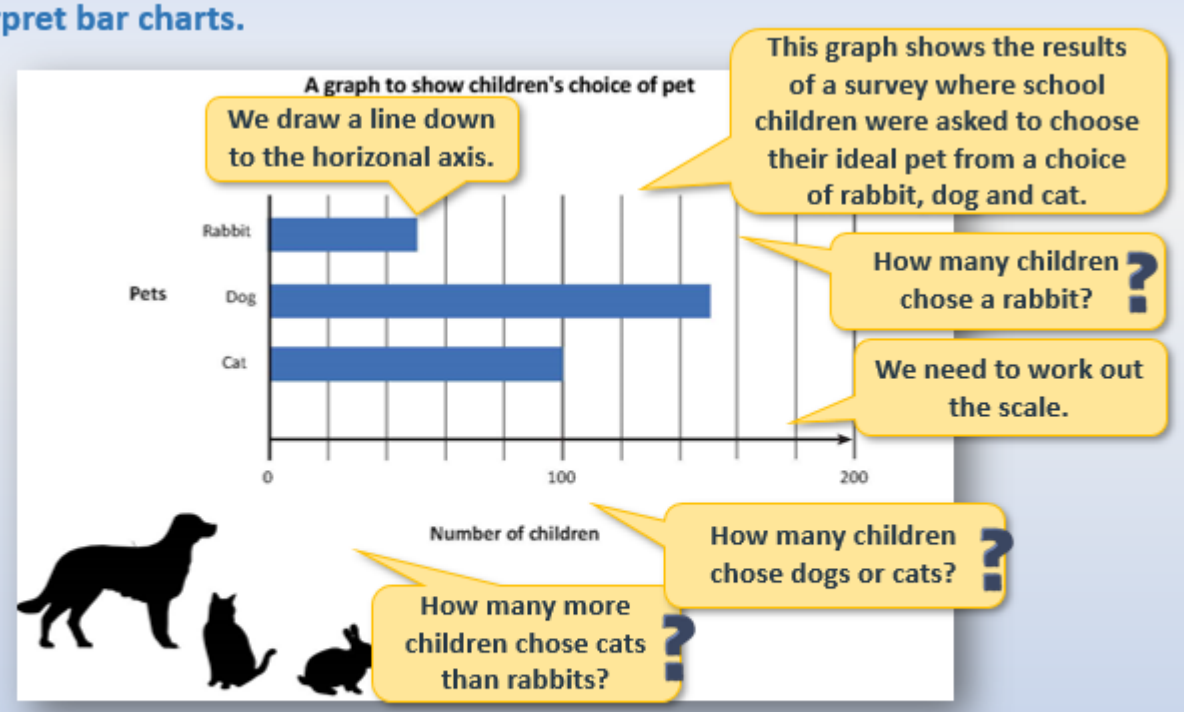
4. Have I mastered the topic? A few questions to **Check your understanding**.
Fold the page to hide the answers!



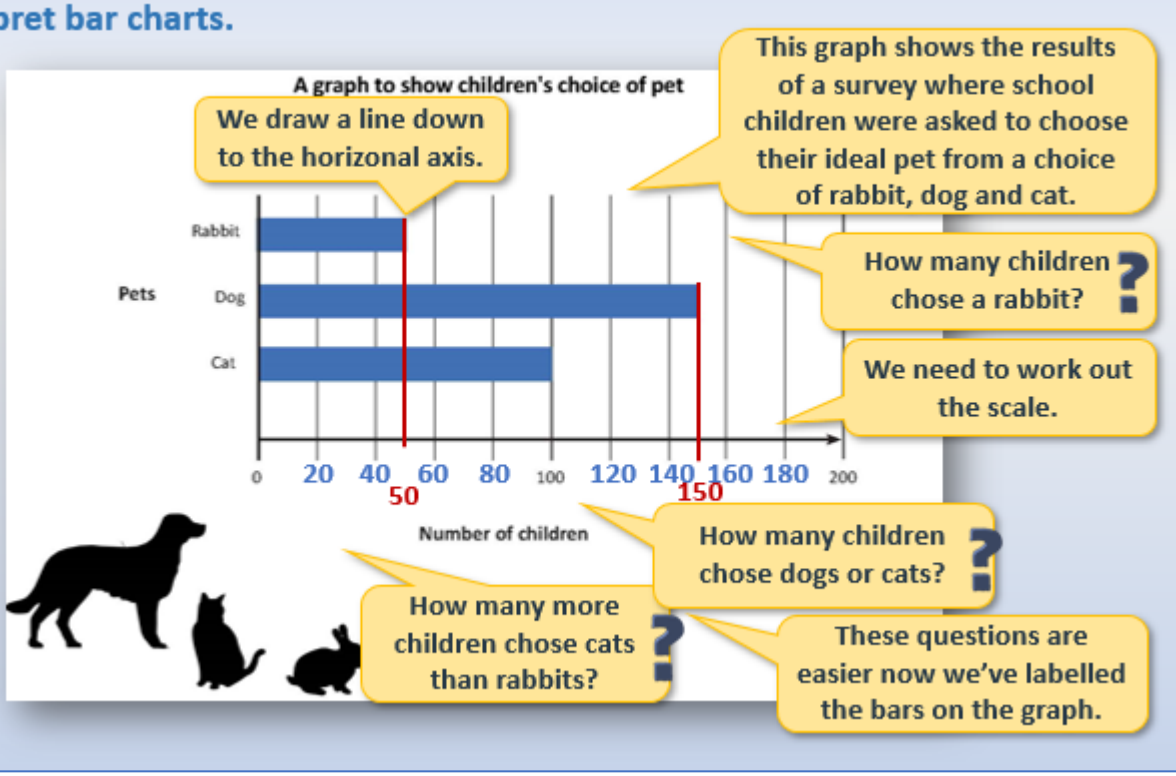
Learning Reminders

Interpret bar charts.

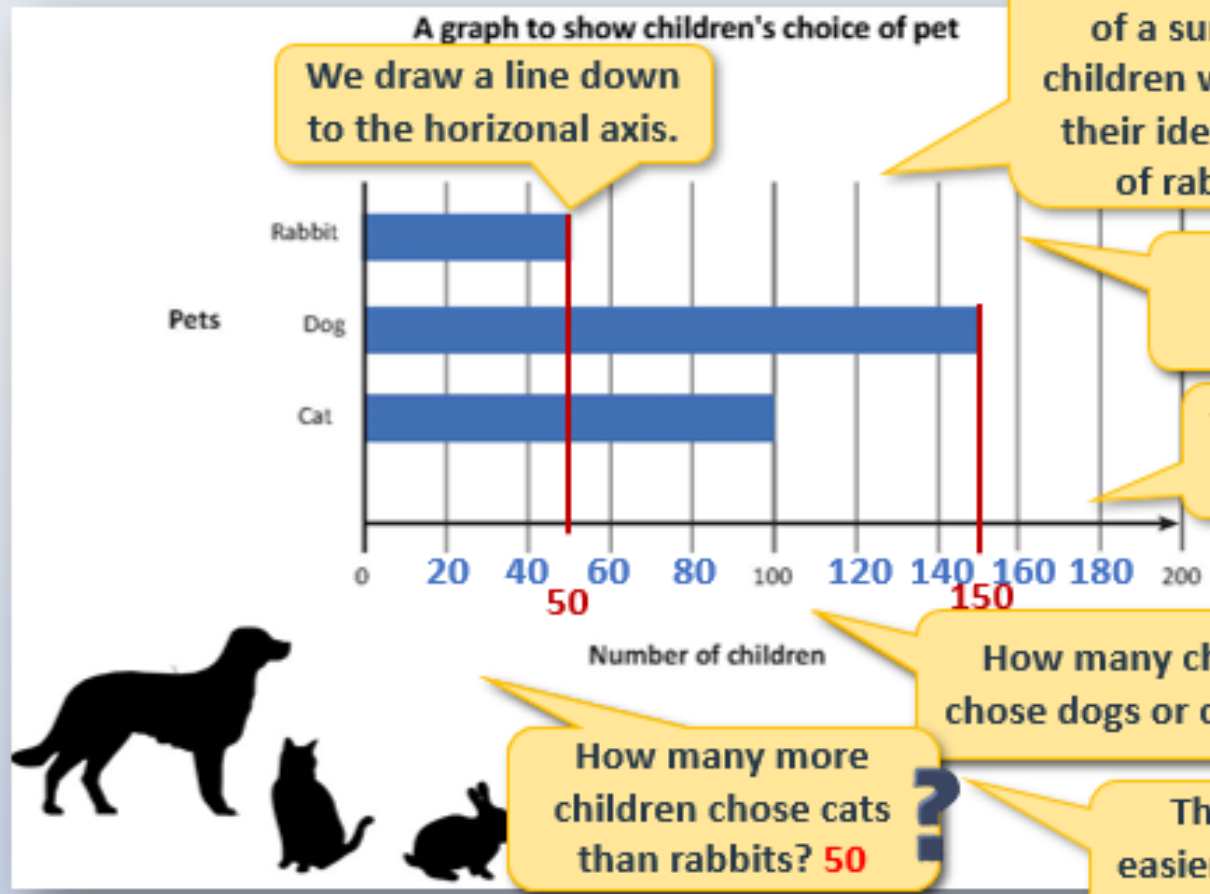


Today's tip is for answering graph questions: Use a ruler to draw a line to the axis to read the number/ value from the scale.

Interpret bar charts.



Interpret bar charts.



We draw a line down to the horizonal axis.

This graph shows the results of a survey where school children were asked to choose their ideal pet from a choice of rabbit, dog and cat.

How many children chose a rabbit? 50

We need to work out the scale.

How many children chose dogs or cats? 250

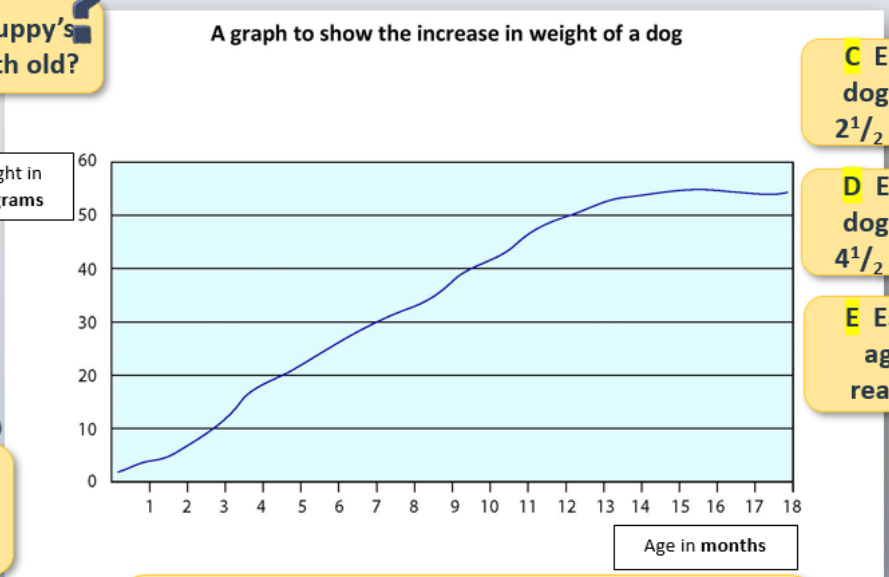
How many more children chose cats than rabbits? 50

These questions are easier now we've labelled the bars on the graph.

Learning Reminders

Interpret line graphs.

A What is the puppy's weight at 1 month old?



C Estimate the dog's weight at $2^1/_2$ months old.

D Estimate the dog's weight at $4^1/_2$ months old.

E Estimate the age the dog reached 40kg.

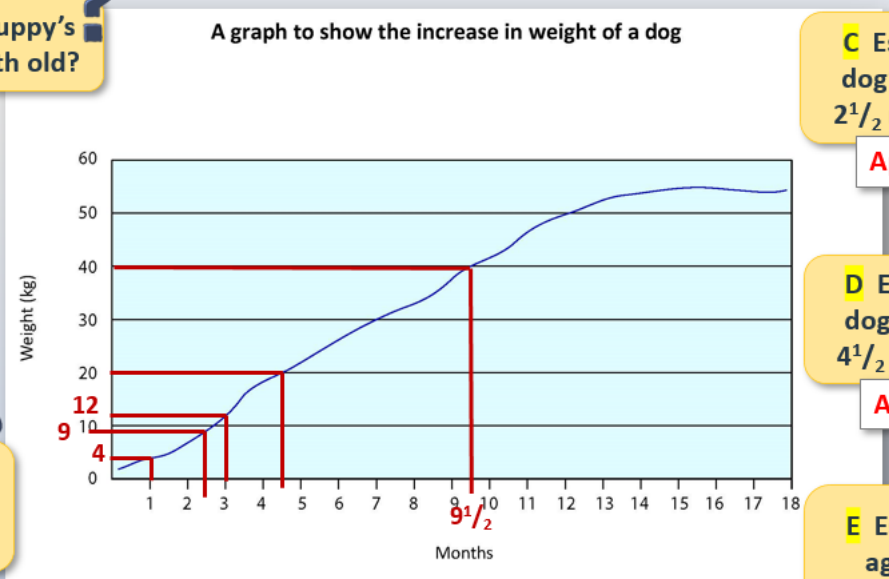
B What is the puppy's weight at 3 months old?

Again it would be helpful to use a ruler to draw lines on the graph - up from the horizontal axis to the line, then across to the vertical axis to read the weight. Or, draw from the vertical axis to the line and down to the horizonal axis to read the age.

Interpret line graphs.

A What is the puppy's weight at 1 month old?

Approx. 4kg



C Estimate the dog's weight at $2^1/_2$ months old.

Approx. 9kg

D Estimate the dog's weight at $4^1/_2$ months old.

Approx. 20kg

B What is the puppy's weight at 3 months old?

Approx. 12kg

E Estimate the age the dog reached 40kg.

Approx. $9^1/_2$ months

Practice Sheet Mild

Interpreting graphs: sheet 1

1. Some children were asked to choose their ideal pet.

	Girls	Boys
Dog	5	9
Cat	8	4
Hamster	6	4
Guinea pig	4	3
Rabbit	5	2

How many more boys than girls chose a dog?

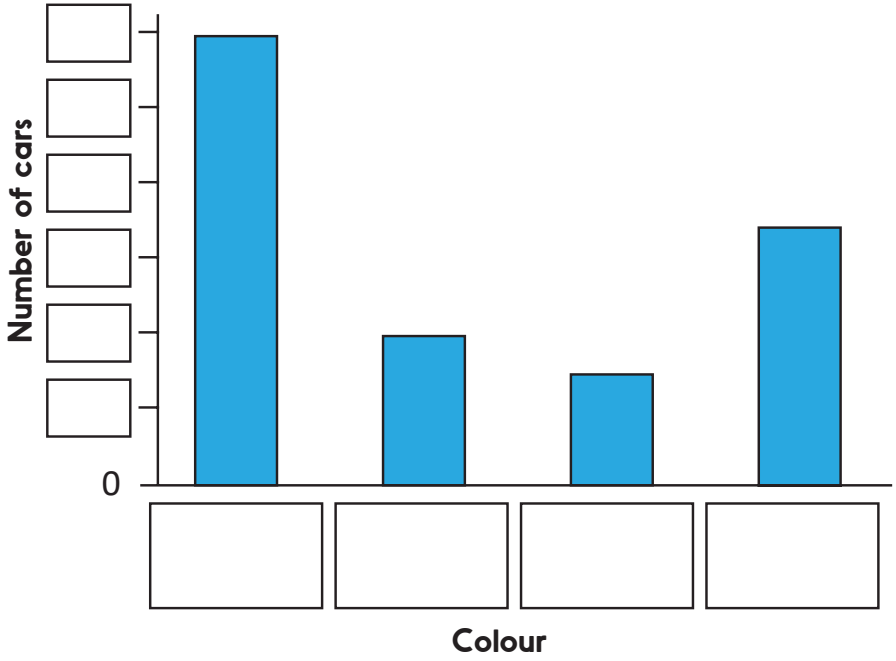
Which pet was chosen by the greatest number of children?

How many children were asked altogether?

2. Sam collected information about the colour of cars which passed the school. Here are his results.

Colour	Number of cars
Green	4
Red	7
Blue	12
Black	3

This bar chart shows the information from the table.
Fill in all the missing labels.



Practice Sheet Mild

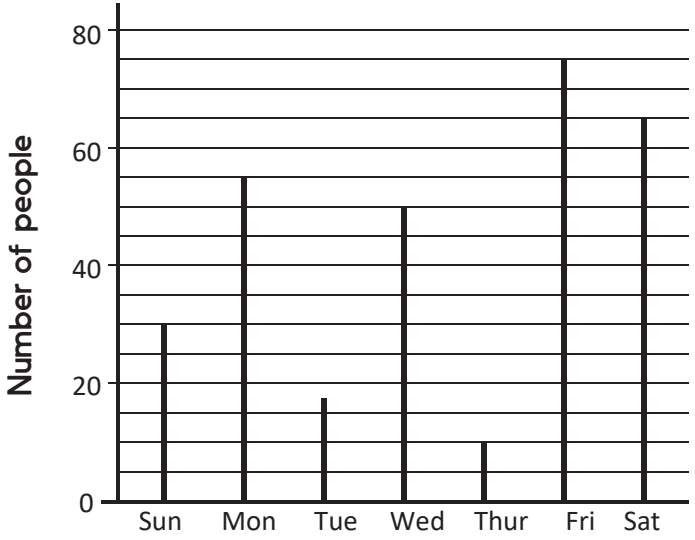
Interpreting graphs: sheet 2

3. This chart shows the number of people in a cinema on different evenings in the week.

The cinema holds 80 people.
How many empty spaces were there on Friday?

Circle all the days when the cinema was less than half full:

Sunday Monday Tuesday
Wednesday Thursday Friday
Saturday



4. A supermarket buys juice in boxes of 100 cartons and then sells them as single cartons.
The number of boxes sold is shown in the pictogram below.

Apple juice	Juice	Juice	Juice	Juice	
Orange juice	Juice	Juice	Juice	Juice	
Grapefruit juice	Juice	Juice			

Estimate how many cartons of apple juice were sold.

Estimate how many more cartons of orange juice were sold than cartons of grapefruit juice.

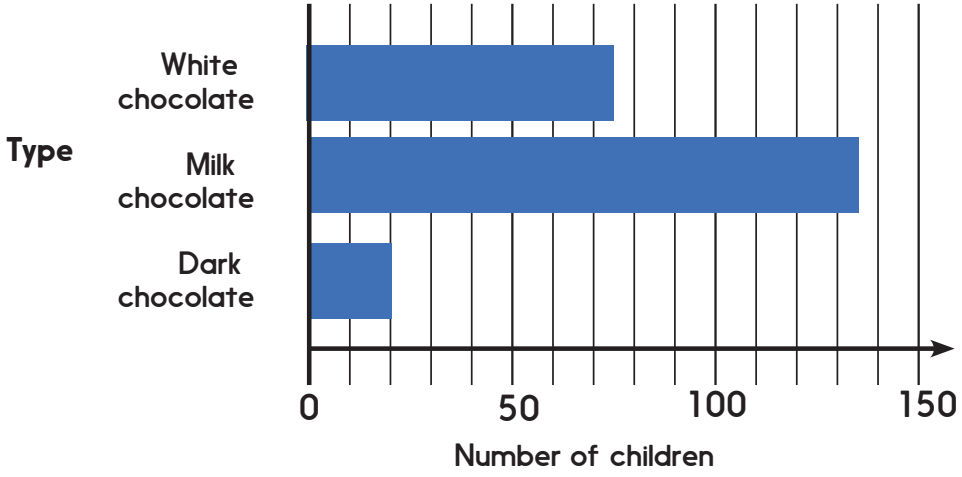
Practice Sheet Mild

Interpreting graphs: sheet 3

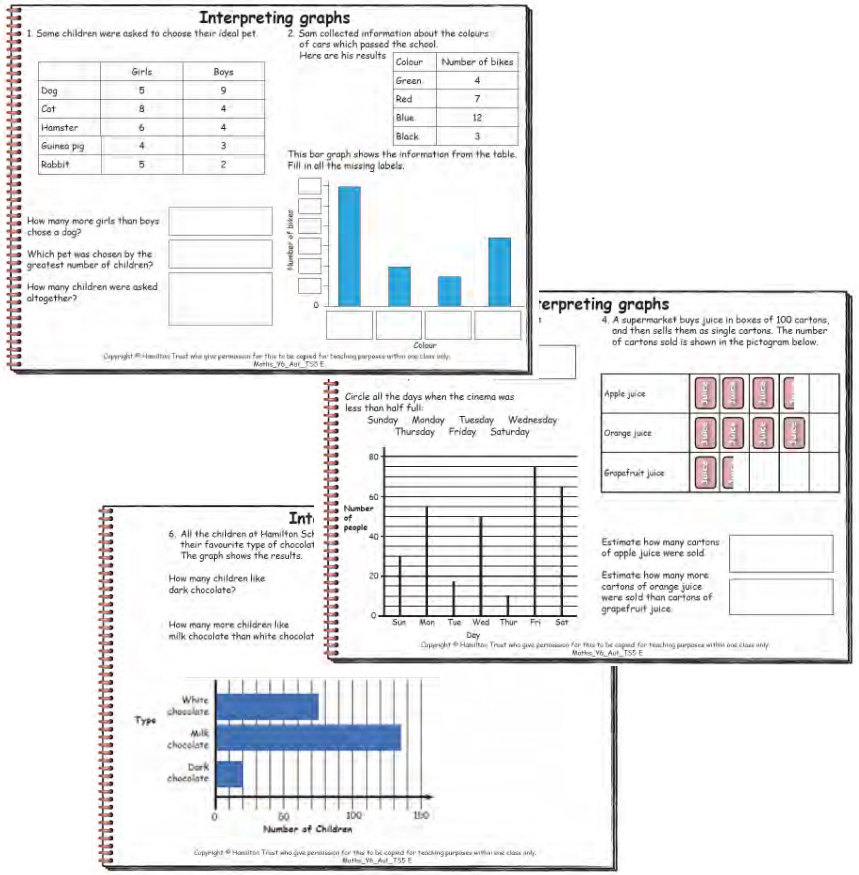
5. All the children at Hamilton School chose their favourite type of chocolate.
The graph shows the results.

How many children like dark chocolate?

How many more children like milk chocolate than white chocolate?



Choose one of the graphs from these three activity sheets and think of two questions to ask about it.
Try them out on your maths partner.
You must know the answers!



Practice Sheet Hot

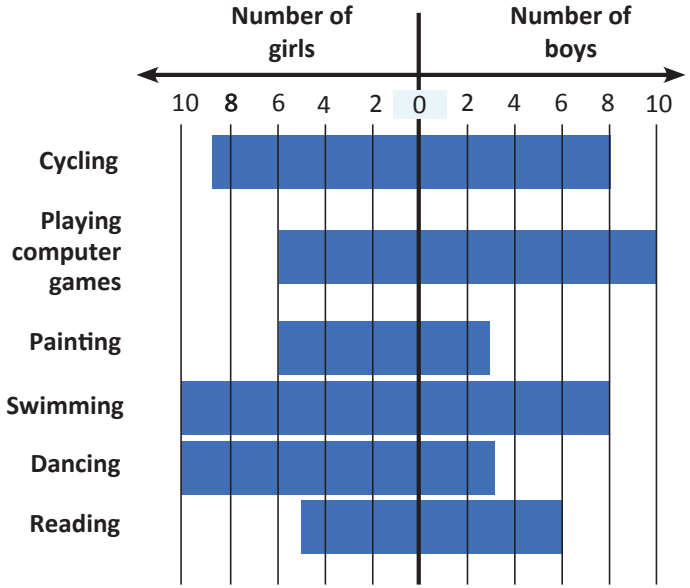
Interpreting graphs: sheet 1

1. Some children chose their favourite hobby.

Which hobby was chosen by most children?

How many more girls than boys chose dancing?

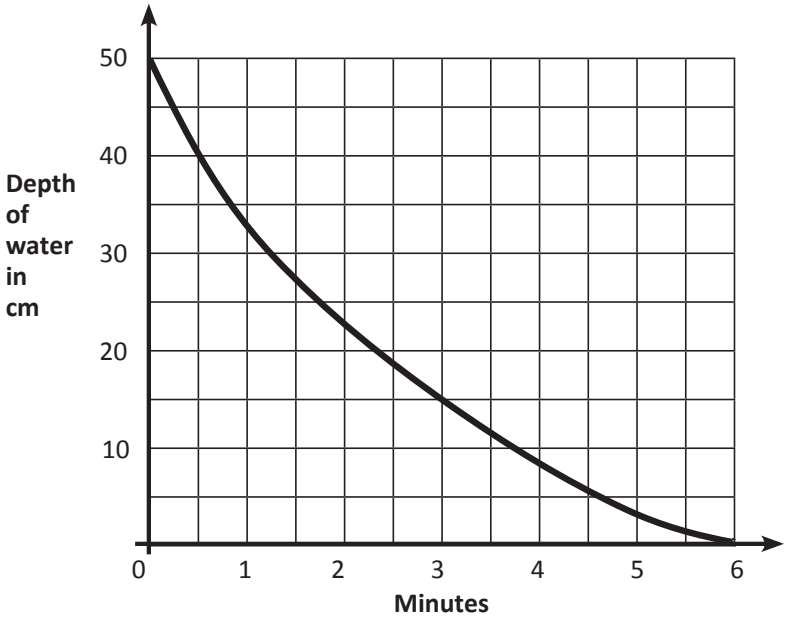
Write all the hobbies that were chosen by more boys than girls.



2. This graph shows the depth of water in a bath as it drains away.

What is the depth of water after 3 minutes?

How long does it take for the level to drop from 50cm to 45cm?



Practice Sheet Hot

Interpreting graphs: sheet 2

3. A supermarket gives tokens for every £10 or more purchase. Customers choose which charity box in which to post them. This pictogram shows how many they gave to each charity (a complete circle equals 100 tokens).

How many more tokens were collected for the Air Ambulance than for Hamilton Pre-school?

Hedgehog rescue are aiming to collect 500 tokens. How many more do they need?

How many tokens have been collected altogether?

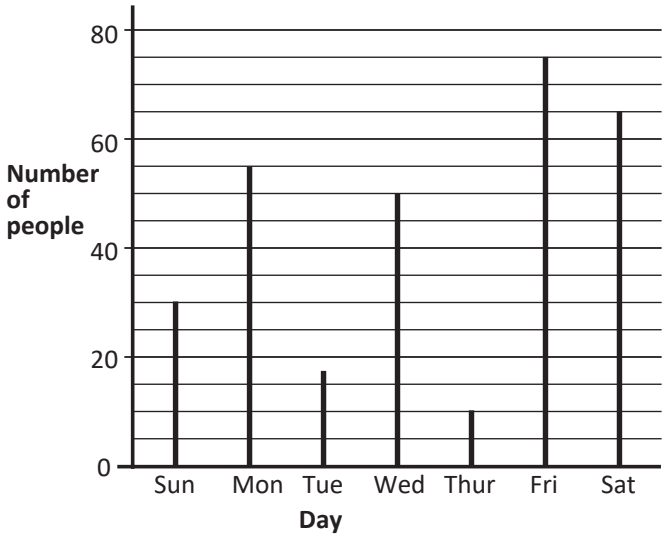
Air Ambulance	⊗	⊗	⊗	◔	
Hedgehog rescue	⊗	⊗	◗		
Hamilton Pre-school	⊗	⊗	⊗		

4. This chart shows the number of people in a cinema on different evenings in the week.

The cinema holds 80 people. How many empty spaces were there on Friday?

Circle all the days when the cinema was less than half full:

Sunday Monday Tuesday Wednesday Thursday Friday Saturday



Practice Sheet Hot

Interpreting graphs: sheet 3

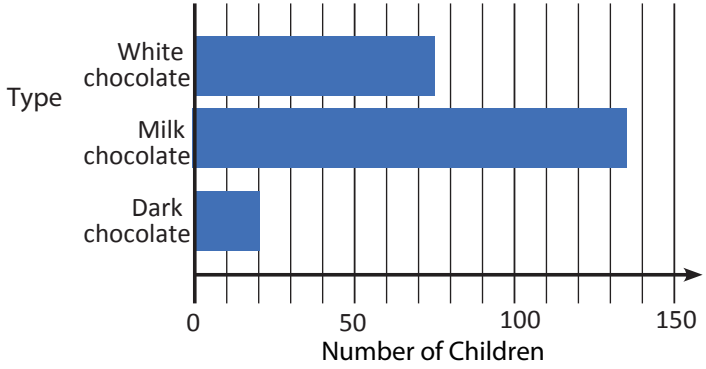
5. All the children at Hamilton School chose their favourite type of chocolate.
The graph shows the results.

How many more children like milk chocolate than white chocolate?

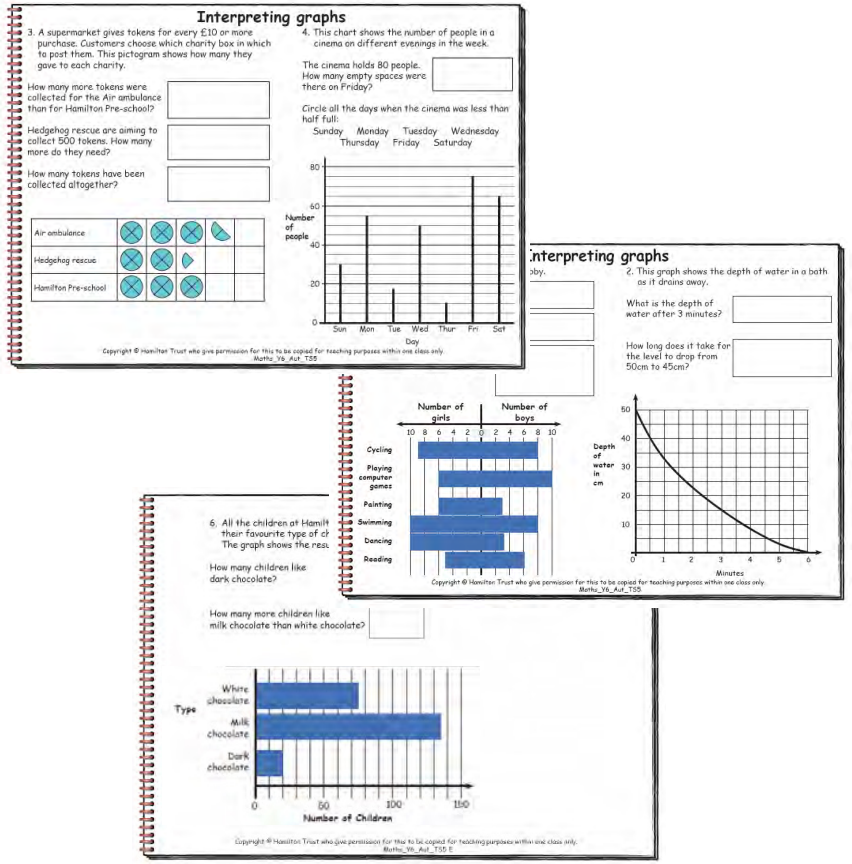
Tim says. 'More than half the children chose milk chocolate.'
Is he correct?

Yes | No

Explain how you can tell from the graph.



Choose one of the graphs from these three activity sheets and think of two questions to ask about it.
Try them out on your maths partner.
You must know the answers!



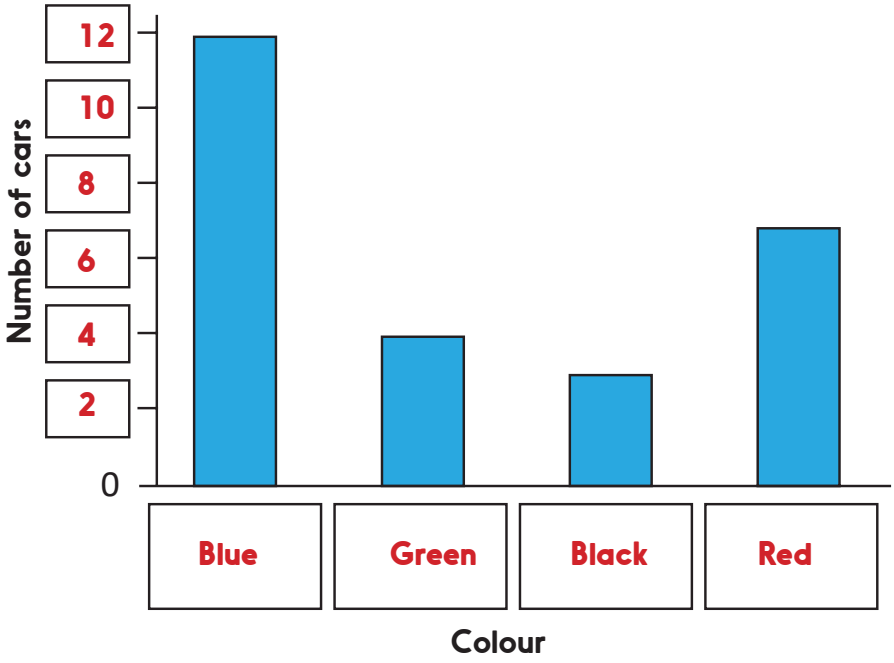
Practice Sheets Answers

Interpreting graphs: sheets 1-3 (mild)

1. How many more boys than girls chose a dog? **4**

   Which pet was chosen by the greatest number of children? **dog**

   How many children were asked altogether? **50**

2. 

3. The cinema holds 80 people.
   How many empty spaces were there on Friday? **5**

   The cinema was less than half full on Sunday, Tuesday and Thursday.

4. Estimate how many cartons of apple juice were sold. **350**

   Estimate how many more cartons of orange juice were sold than cartons of grapefruit juice. **250**

5. How many children like dark chocolate? **20**

   How many more children like milk chocolate than white chocolate? **60**

Practice Sheets Answers

Interpreting graphs: sheets 4-6 (hot)

1. Which hobby was chosen by most children?

   Swimming (18)

   How many more girls than boys chose dancing?

   7 (girls 10, boys 3

   Write all the hobbies that were chosen by more boys than girls?

   Computer games (boys 10, girls 6)
   Reading (boys 6, girls 5)

2. What is the depth of water after 3 minutes?

   15cm

   How long does it take for the level to drop from 50cm to 45cm?

   15 seconds

3. How many more tokens were collected for the Air Ambulance than for Hamilton Pre-school?

   50 (350 - 300)

   Hedgehog rescue are aiming to collect 500 tokens.
   How many more do they need?

   275

   How many tokens have been collected altogether?

   875

4. The cinema holds 80 people.
   How many empty spaces were there on Friday?

   5

   The cinema was less than half full on Sunday, Tuesday and Thursday.

5. How many more children like milk chocolate than white chocolate?

   60

   Tim says. 'More than half the children chose milk chocolate.'
   Is he correct?

   Yes

   Explain how you can tell from the graph.

   75 children like white chocolate
   135 children like milk chocolate
   20 children like dark chocolate
   135 children like milk chocolate out of a total of 230 children. Therefore more than half chose milk chocolate.

A Bit Stuck?
Multiply anything by 6!

1. Fill in the values of the 6 times table.

x axis	Multiplier	0	1	2	3	4	5	6	7	8	9	10	11	12
y axis	x 6 =													

2. Now plot all the data points from your table on the graph *(see next page)*, e.g. (0,0),(1,6), (2,12), etc.

3. Join all your data points using a ruler.
   Give your graph a title.

4. Use your graph to find the following:

   a) 3.5 × 6 b) 7.5 × 6 c) 15 × 6

Challenge

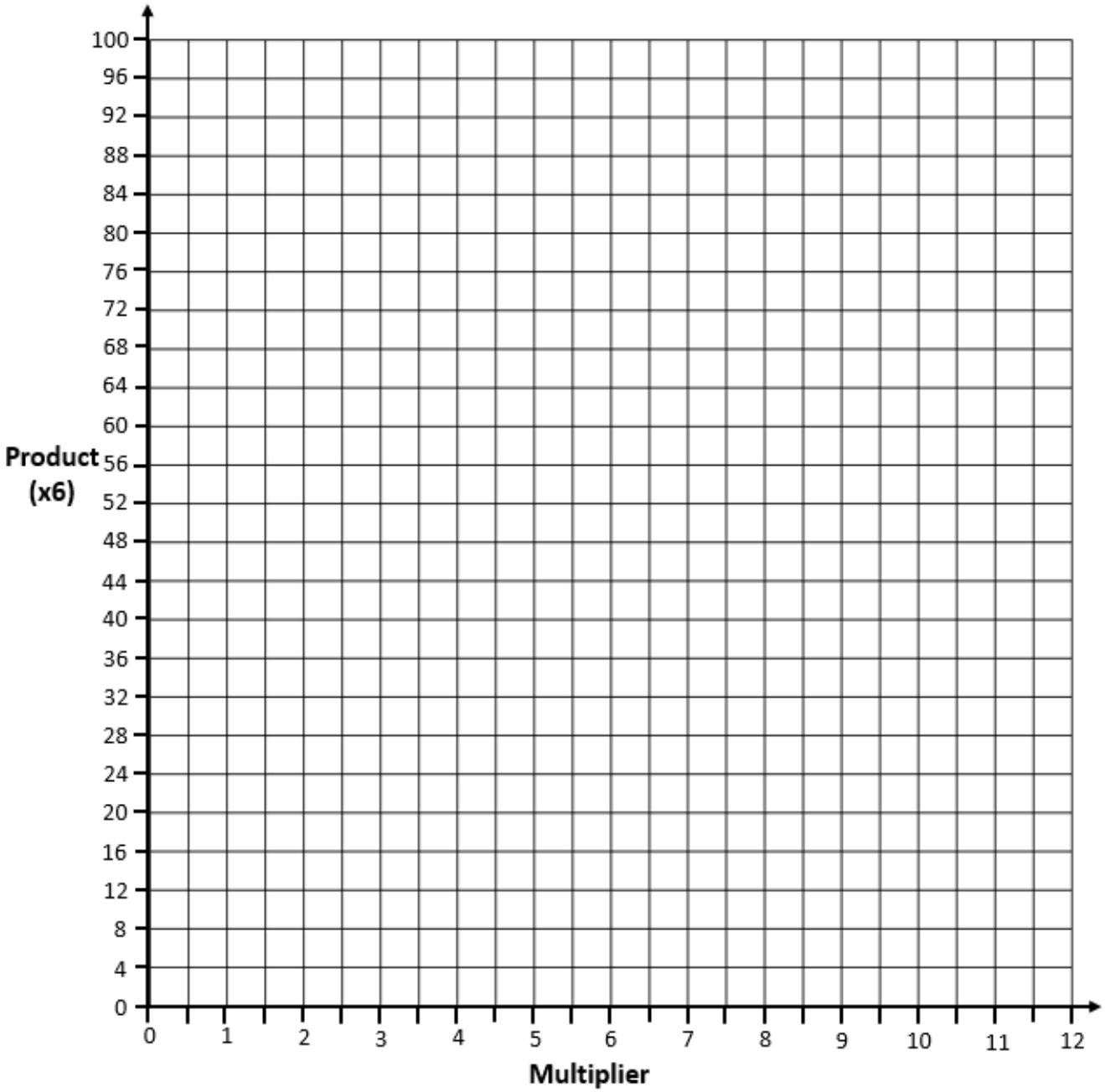
Use your graph to estimate:

- 25 x 6
- 65 x 6
- 37 x 6

A Bit Stuck?

Multiply anything by 6!

Line graph to show values in the 6 times table



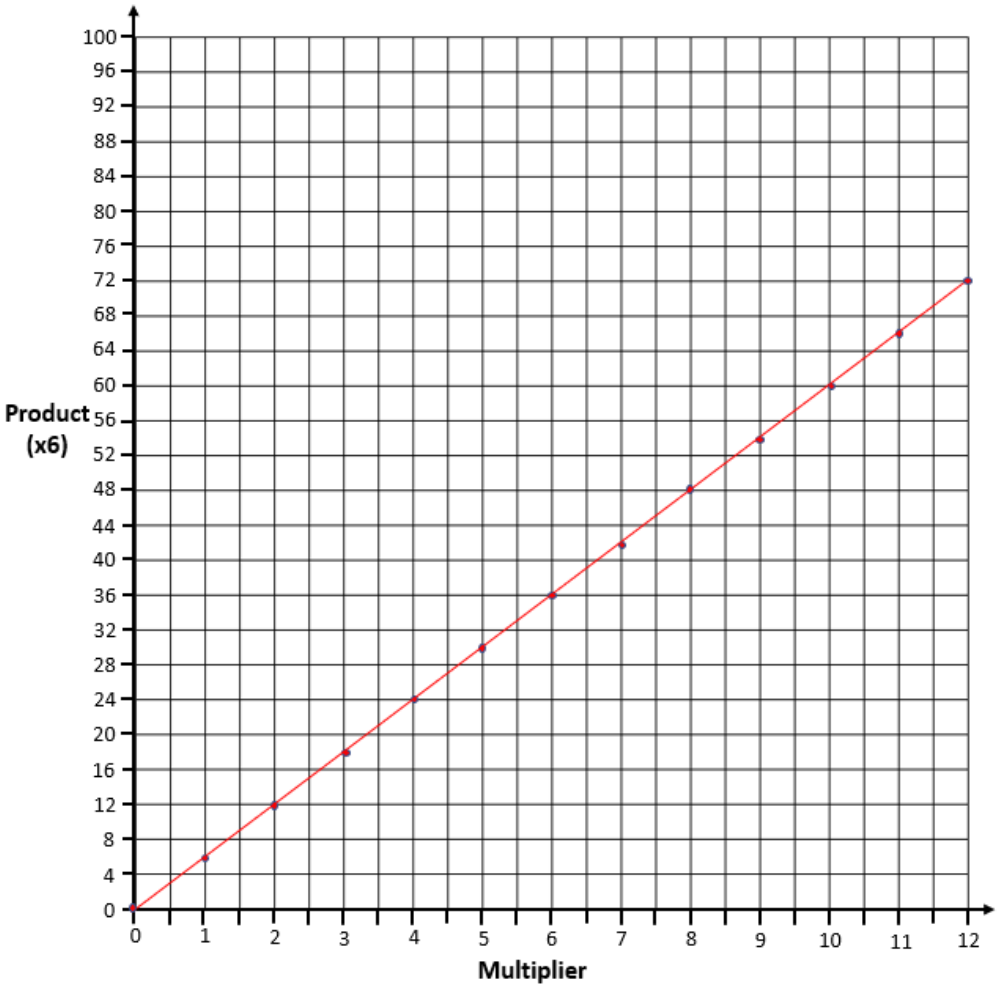
A Bit Stuck?
Answers

Multiply anything by 6!

1.

Multiplier	0	1	2	3	4	5	6	7	8	9	10	11	12
x 6 =	0	6	12	18	24	30	36	42	48	54	60	66	72

2 & 3.



4. estimated from the graph:
   a) 3.5 × 6 = 21 b) 7.5 × 6 = 45 c) 15 × 6 = 90 (estimated by reading 10 x 6 and 5 x 6 from the graph and adding, or doubling 7.5 x 6.

Challenge

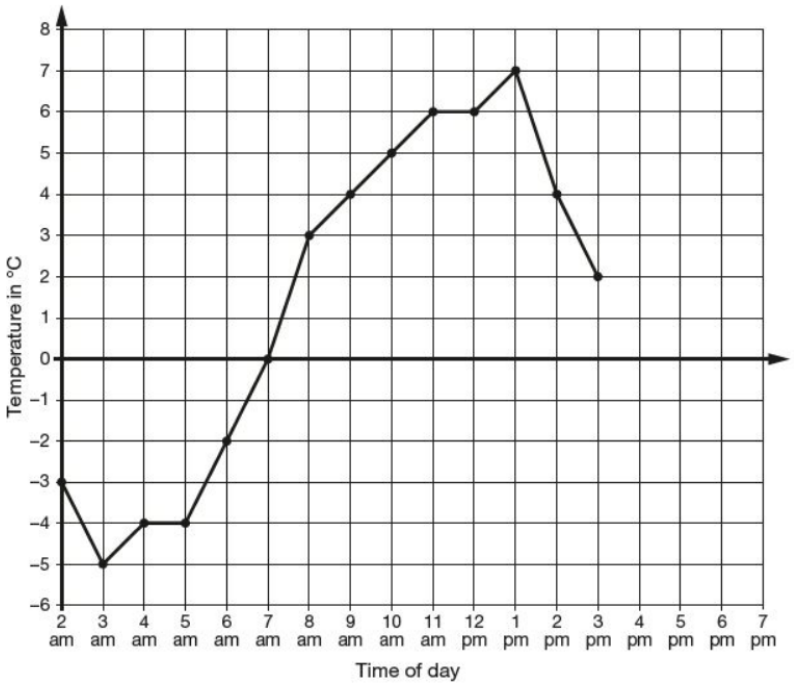
Use your graph to estimate:

- 25 x 6 — Find 5 x 5 x 6 or 10 x 2.5 x 6 = 150
- 65 x 6 — Find 10 x 6.5 x 6 = 390
- 37 x 6 — Find (30 x 6) + (7 x 6)
  = (3 x 10 x 6) + (7 x 6) = 180 + 42 = 222

Check your understanding

Questions

This graph shows the temperature in °C from 2am to 3pm on a winter day:



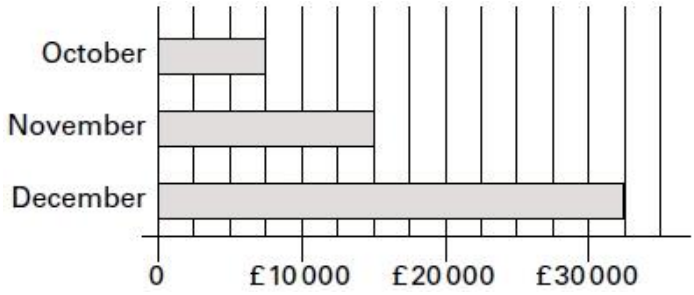
How many degrees warmer was it at 12pm than at 4am?

What is the difference between the minimum and maximum observed temperatures?

At 7pm, the temperature was 10 degrees lower than at 2pm. What was the temperature at 7pm?

[Answer this question after Day 3's learning] What was the mean temperature between 2am and 11am?

This chart shows the amount of money spent in a toy shop in three months:



How much more money was spent in the shop in December than in October?

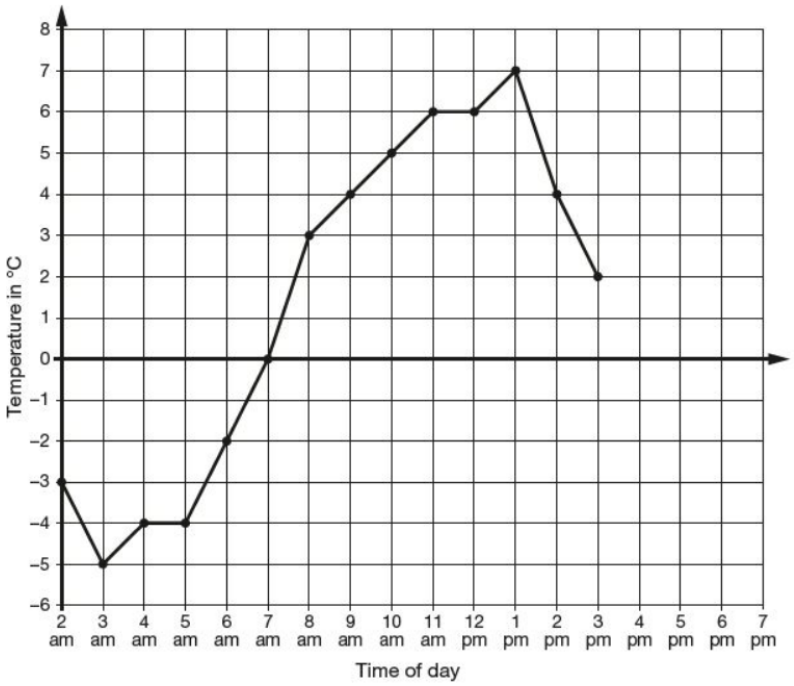
[Answer this question after Day 3's learning] What was the mean amount spent across the three months?

Answers on next page

Check your understanding

Answers

This graph shows the temperature in °C from 2am to 3pm on a winter day:



How many degrees warmer was it at 12pm than at 4am? 10°C (the difference between 6° and -4°).

What is the difference between the minimum and maximum observed temperatures?
12°C (the difference between 7° and -5°).

At 7pm, the temperature was 10 degrees lower than at 2pm. What was the temperature at 7pm?
-6°C.

What was the mean temperature between 2am and 11am? 0°C.
Find the sum of each of the 10 temperatures and divide by 10. The 10 temperatures are respectively: -3°C, -5°C, -4°C, -4°C, -2°C, 0°C, 3°C, 4°C, 5°C and 6°C. The total is 0°C.

This chart shows the amount of money spent in a toy shop in three months:

How much more money was spent in the shop in December than in October?
£25,000 (£32,500 - £7,500).

What was the mean amount spent across the three months?
£18,333.33 (Add £32,500, £15,000 and £7,500 then divide by 3).