

Week 11

This week in a nutshell:

Prior to the questions this week, you may wish to remind students about the points of a compass, as well as the conventions when using bearings.

Again, discuss how previously covered skills may help when completing frequency trees. The work on growth and decay is kept non-technical and can be attempted using previously covered ideas.

Question 1: Using averages

Question 2: Ratio problems

Question 3: Growth and decay

Question 4: Bearings

Question 5: Frequency trees

This week's ideas for class discussion include:

Question 1: **Using averages**

- An average provides one number to summarise a data set. Why might this be useful?

Question 2: **Ratio problems**

- Do you think that any proportion problem can be expressed using ratio? How might we do this?

Question 3: **Growth and decay**

- Can you give me some examples of where growth and decay occur in the real world? Do you think these events obey the same mathematical rules that we have used this week?

Question 4: **Bearings**

- Why do you think an accepted convention for giving directions was developed?

Question 5: **Frequency trees**

- Why is the visual breakdown of sets into categories/subsets useful to us, and to others?

Week 11: Day 1

- 1) Which set has the greater mean?

A: 12, 20, 11, 9

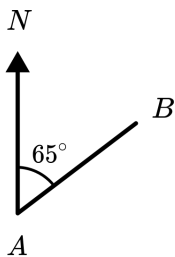
B: 15, 18, 17, 16, 12

- 2) Pink paint is $\frac{1}{4}$ red paint and $\frac{3}{4}$ white paint.
Write down the ratio of red paint:white paint.

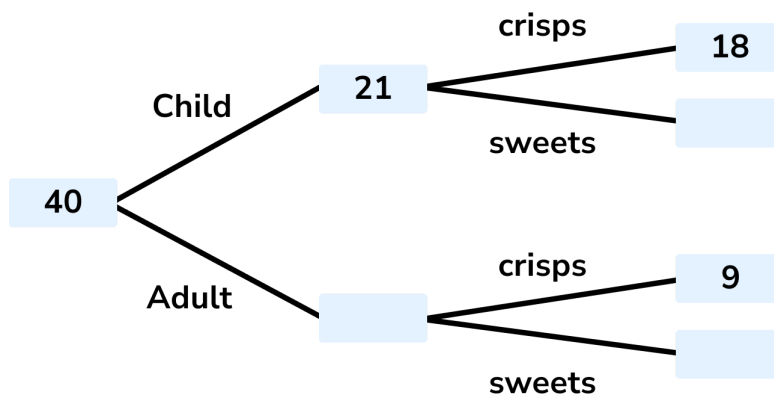
- 3) Continue this sequence:

486, 162, 54, 18, ... , ...

- 4) What is the bearing of B from A ?



- 5) Complete this frequency tree showing snack preferences:



Week 11: Day 1 Answers

- 1) Which set has the greater mean?

A: 12, 20, 11, 9

B: 15, 18, 17, 16, 12 **A: 13, B: 15.6 so B**

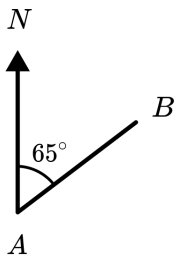
- 2) Pink paint is $\frac{1}{4}$ red paint and $\frac{3}{4}$ white paint.

Write down the ratio of red paint:white paint. **1:3**

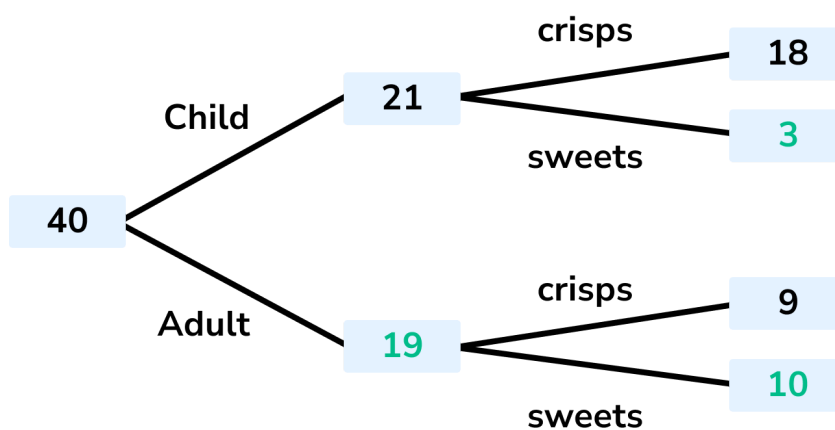
- 3) Continue this sequence:

486, 162, 54, 18, **6**, **2**

- 4) What is the bearing of *B* from *A*? **065°**



- 5) Complete this frequency tree showing snack preferences:



Week 11: Day 2

- 1) Which set has the greater median?

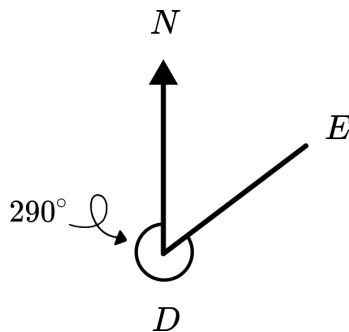
A: 12, 20, 11, 9

B: 15, 18, 17, 16, 12

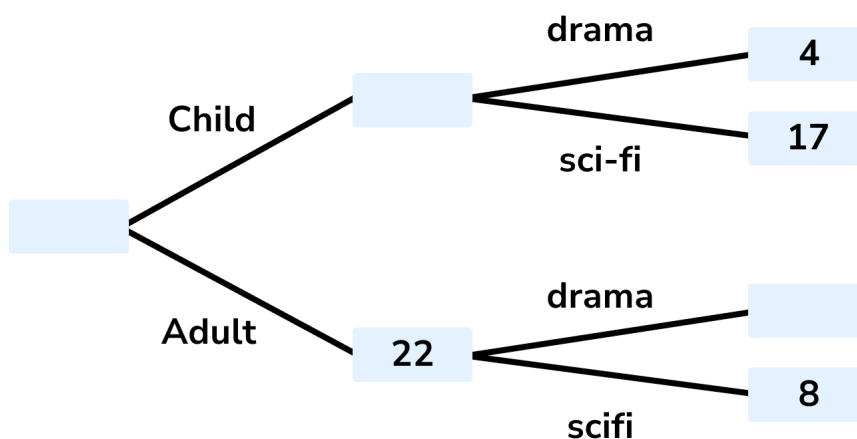
- 2) In a bag, the ratio of red to green to blue beads is 1:2:3. There are 5 red beads. How many blue beads are there?

- 3) On Monday I am given £1. The amount I am given doubles every day. How much am I given on the following Sunday?

- 4) What is the bearing of E from D ?



- 5) Complete the frequency tree showing film preferences:



Week 11: Day 2 Answers

- 1) Which set has the greater median?

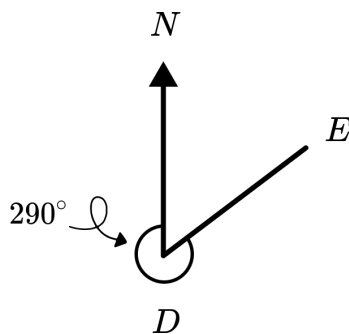
A: 12, 20, 11, 9

B: 15, 18, 17, 16, 12 **A: 11.5, B: 16 so B**

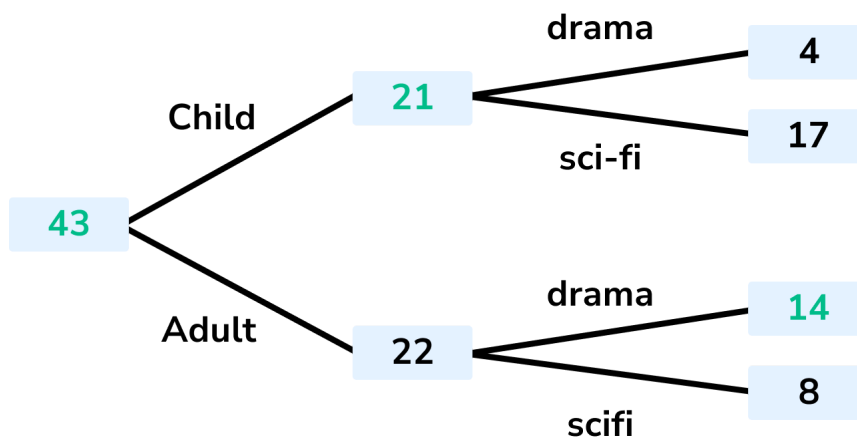
- 2) In a bag, the ratio of red to green to blue beads is 1:2:3. There are 5 red beads. How many blue beads are there? **15**

- 3) On Monday I am given £1. The amount I am given doubles every day. How much am I given on the following Sunday? **£64**

- 4) What is the bearing of *E* from *D*? **070°**



- 5) Complete the frequency tree showing film preferences:



Week 11: Day 3

- 1) Is the median or mean greater for this data?

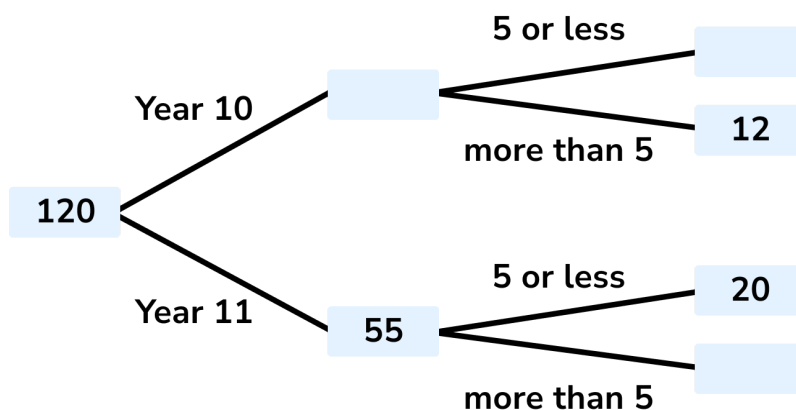
3, 7, 2, 10, 11, 8

- 2) Express the ratio $3\frac{1}{3} : 7\frac{2}{3}$ in its simplest form.

- 3) On Monday I am given £3. The amount I am given doubles every day. How much do I have in total on Friday?

- 4) A ship is sailing in the direction South West. What is this as a bearing?

- 5) Complete this frequency tree showing time spent revising:



Week 11: Day 3 Answers

- 1) Is the median or mean greater for this data?

3, 7, 2, 10, 11, 8

Median = 7.5

Mean = 6.83

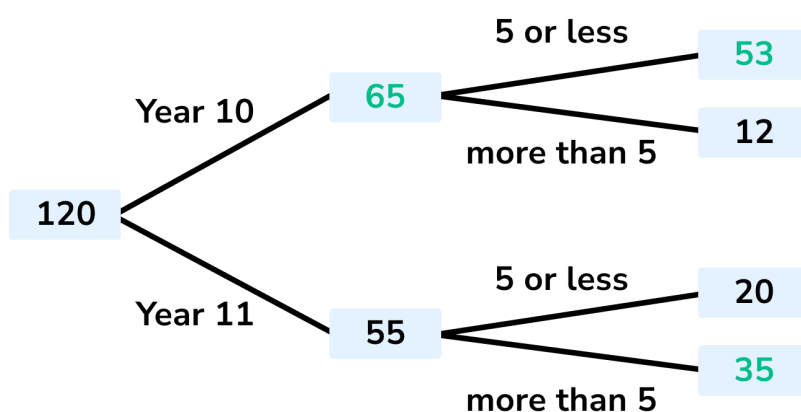
So median

- 2) Express the ratio $3\frac{1}{3} : 7\frac{2}{3}$ in its simplest form. **10:23**

- 3) On Monday I am given £3. The amount I am given doubles every day. How much do I have in total on Friday? **£93**

- 4) A ship is sailing in the direction South West. What is this as a bearing? **225°**

- 5) Complete this frequency tree showing time spent revising:



Week 11: Day 4

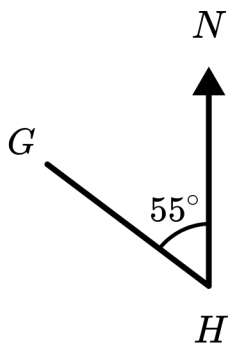
- 1) The median of this data set is 5. Write down a possible value for y .

$y, 5, 12, 8, 4$

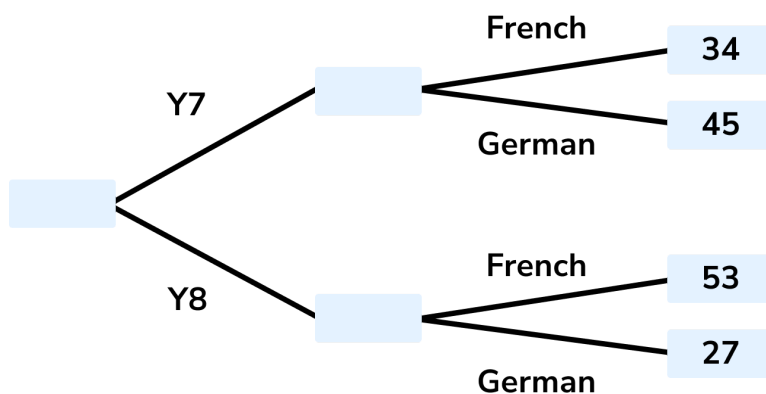
- 2) Two numbers are in the ratio 4 : 5. If the sum of numbers is 81, find the numbers.

- 3) A car decreases in value by 5% each year. It was initially worth £4000, how much is it worth after 3 years?

- 4) What is the bearing of G from H ?



- 5) Complete the frequency tree, which shows language options for years 7 and 8:



Week 11: Day 4 Answers

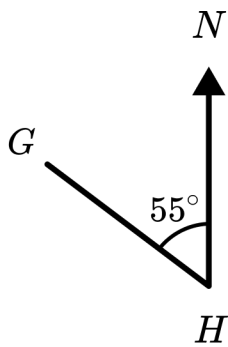
- 1) The median of this data set is 5. Write down a possible value for y .

$y, 5, 12, 8, 4$ Any number less than or equal to 5

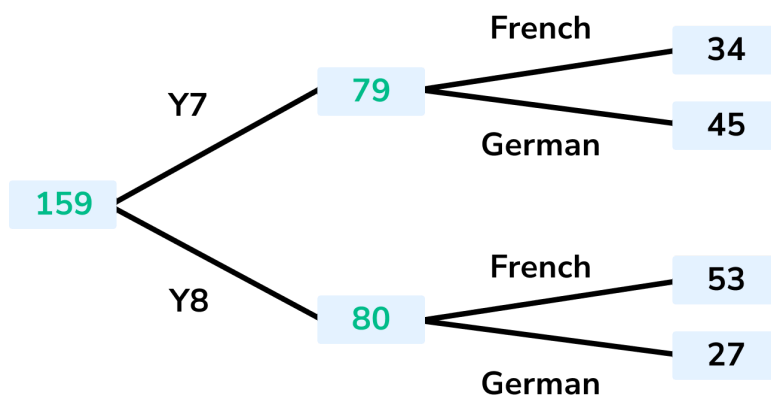
- 2) Two numbers are in the ratio 4 : 5. If the sum of numbers is 81, find the numbers. 36 and 45

- 3) A car decreases in value by 5% each year. It was initially worth £4000, how much is it worth after 3 years? £3429.50

- 4) What is the bearing of G from H ? 305°



- 5) Complete the frequency tree, which shows language options for years 7 and 8:



Week 11: Day 5

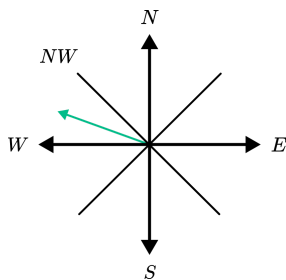
- 1) The mean of a data set is 8. What is the value of x ?

7, 11, 4, 9, x

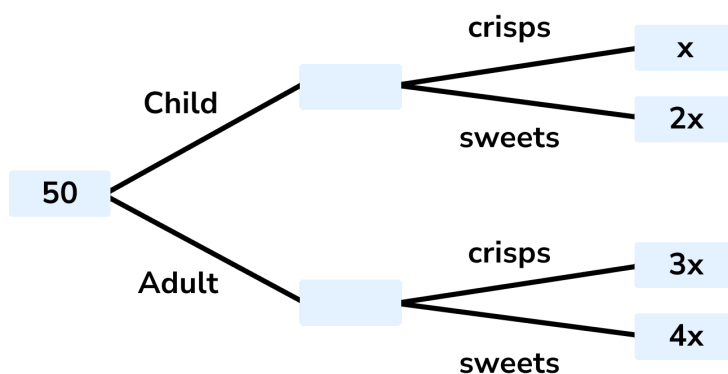
- 2) The angles in a triangle are in the ratio 3:4:5. Work out the size of the smallest angle.

- 3) A colony of bacteria doubles in size every 3 hours. Initially, there are 1000 bacteria. How many bacteria are there after 12 hours?

- 4) *WNW* is halfway between West and North West. Determine the bearing of *WNW*.



- 5) By calculating the value of x , complete the frequency tree.



Week 11: Day 5 Answers

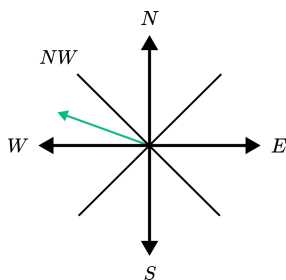
- 1) The mean of a data set is 8. What is the value of x ?

7, 11, 4, 9, x $x = 9$

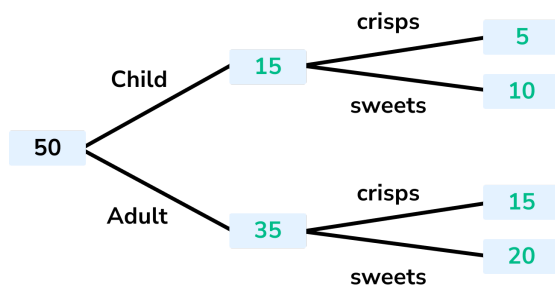
- 2) The angles in a triangle are in the ratio 3:4:5. Work out the size of the smallest angle. 45°

- 3) A colony of bacteria doubles in size every 3 hours. Initially, there are 1000 bacteria. How many bacteria are there after 12 hours? 16 000

- 4) *WNW* is halfway between West and North West. Determine the bearing of *WNW*. 292.5°



- 5) By calculating the value of x , complete the frequency tree.



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