

Janet collected data on holiday destinations for some people from Northern Ireland in July 2021

She grouped the results by the age of each respondent.

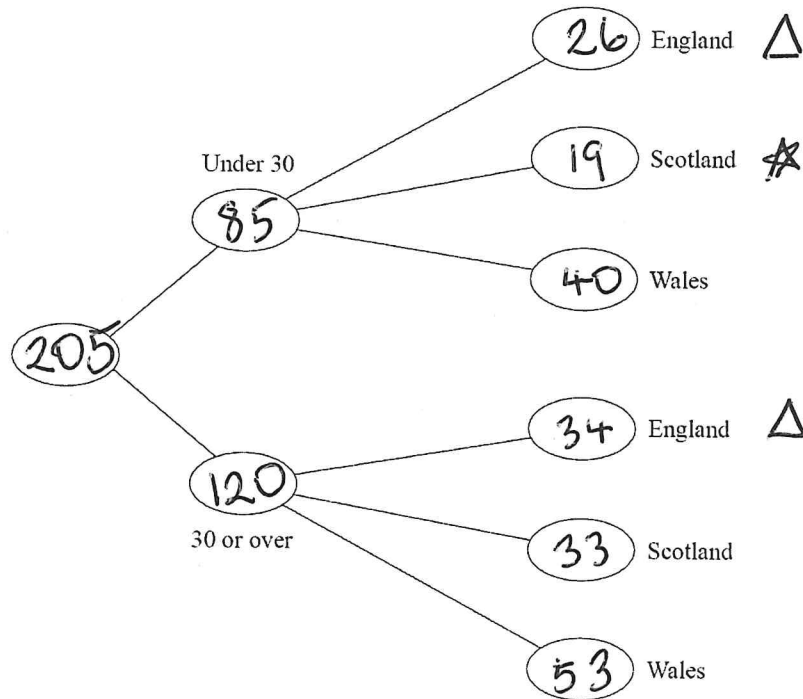
The table below shows her results.

Q1

Holiday destination	Age (years)	
	Under 30	30 or over
England	26	34
Scotland	19	33
Wales	40	53

~~85~~      ~~120~~

(a) Use the information in the two-way table to complete the frequency tree below.



[3]

(b) Using the data opposite, calculate the probability that a person, chosen at random,

(i) was under 30 years old and went on holiday to Scotland;

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19 out of 205

Answer  $\frac{19}{205}$  [2]

(ii) went on holiday to England.

look at Δ

$26 + 34 = 60$

Answer  $\frac{60}{205}$  [2]

One person aged under 30 years old was selected at random.

(c) What is the probability that this person did not go on holiday to Wales?

Now only looking at 85 people

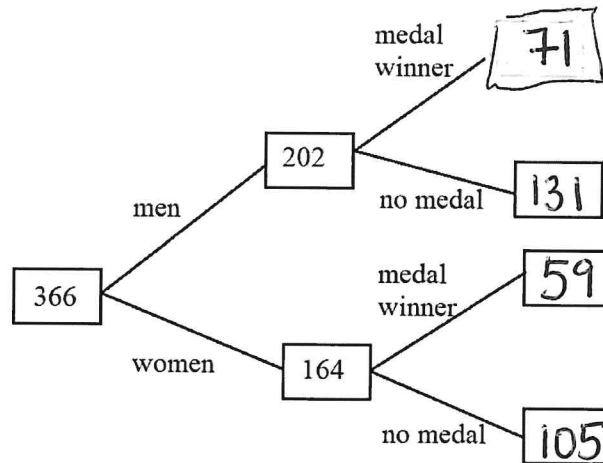
$26 + 19 = 45$

Answer  $\frac{45}{85}$  [2]

Frequency Trees

Q2

The partially completed frequency tree below shows data about the Great Britain and Northern Ireland team (Team GB) at the Rio 2016 Olympics. There were 366 competitors in the team.



Adapted from <http://www.bbc.co.uk/sport/olympics/37132833>

- (a) 71 men and 59 women from Team GB won medals.

Complete the empty boxes in the frequency tree.

[2]

- (b) A man is chosen at random from Team GB.

What is the probability that he is a medal winner? Give your answer as a percentage to the nearest whole number.

202 men

71 out of 202

$$\frac{71}{202} = 0.35148 \quad \text{Answer } \underline{35\%} [2]$$

- (c) A medal winner is chosen at random for Team GB.

What is the probability that the medal winner is a woman? Give your answer as a percentage to the nearest whole number.

Medal winners  $71 + 59 = 130$

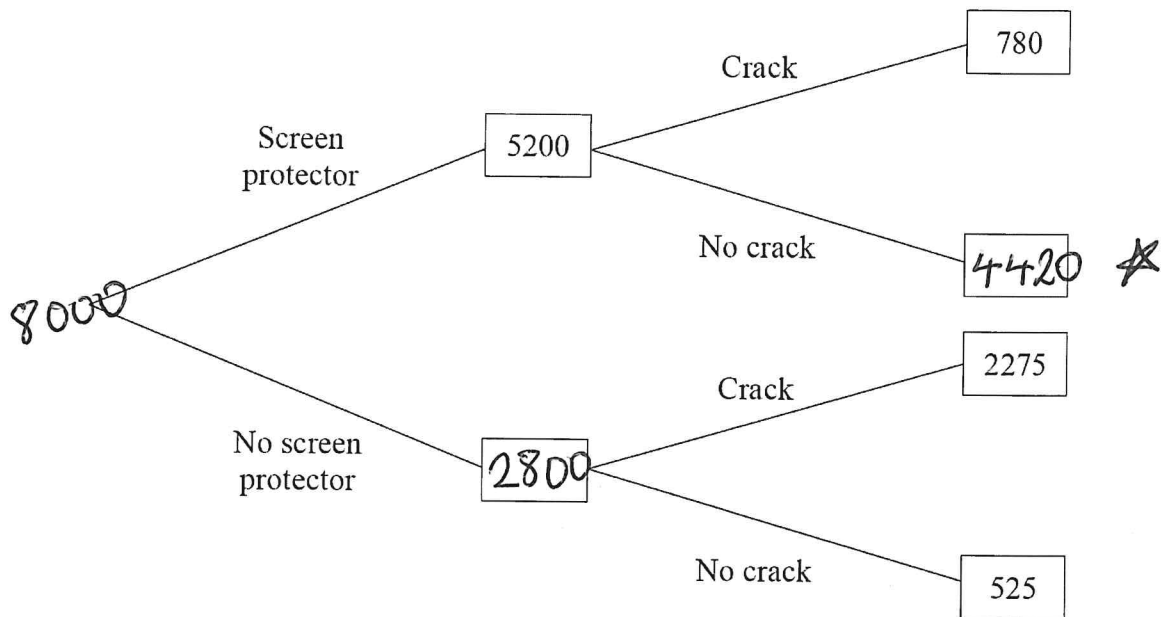
Answer  $\underline{45\%} [3]$

Woman medal winner

$$\frac{59}{130} = 0.4538$$

- 8 The frequency tree diagram below shows the number of mobile phone owners in a small town who applied a screen protector to their phone and whether their screen had cracked after one year.

Q3



- (a) Complete the missing frequencies in the tree diagram. [2]

A mobile phone owner from the town is chosen at random.

- (b) Calculate the probability that this owner applied a screen protector and their screen had not cracked.

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Answer \_\_\_\_\_ [2]

4420 out of 8000

$$\frac{4420}{8000} = \frac{221}{400} = 0.5525$$

Answer  $\frac{221}{400}$  or 0.5525  
or 55.25%

Q4

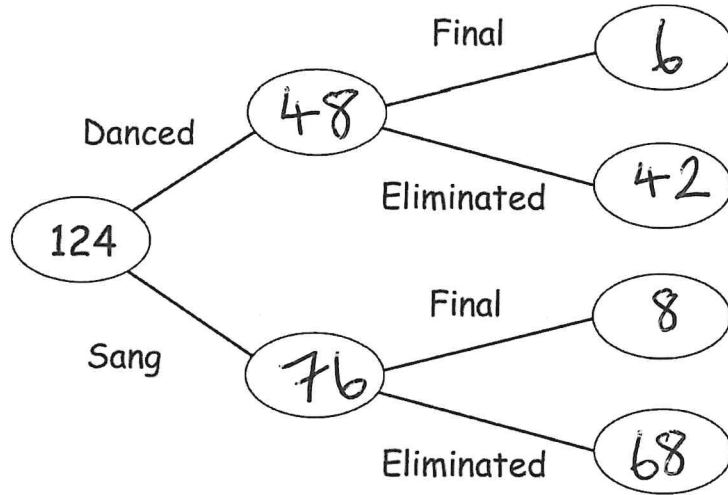
124 people took part in a talent show.  
Each person either sang or danced.

76 of the people were singers.

14 people made it through to the final and the rest were eliminated.

6 dancers made it through to the final.

Complete the frequency tree



Make sure you check that it works for all criteria above

76 singers  $76 + 48 = 124$  ✓

14 made to final  $6 + 8 = 14$  ✓

6 dancers made to final ✓

## Q5

Corinne asked 300 people if they were more likely to vote for the Purple Party or the Yellow Party.

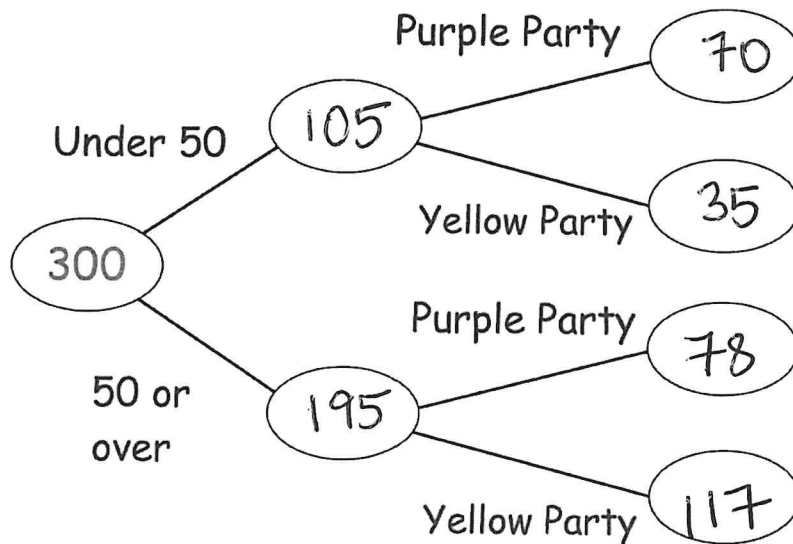
195 people were 50 years or over and the rest were under 50 years old. 105 under 50 years

$\frac{2}{3}$  of the people under 50 years old would vote for the Purple Party.

$$\frac{2}{3} \text{ of } 105 = 70 \text{ purple}$$

$\frac{3}{5}$  of the people who were 50 year or over would vote for the Yellow Party.

$$\frac{3}{5} \text{ of } 195 = 117 \text{ yellow}$$



Which party did most people say that they were mostly likely to vote for?

$$\text{Purple party} = 70 + 78 = 148$$

$$\text{Yellow party} = 35 + 117 = 152$$

Ans Yellow Party  
most votes.