

Frequency trees

Read a frequency tree, find a missing frequency, and convert a frequency to a probability or proportion.



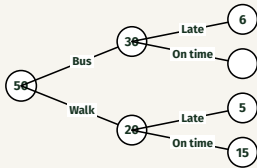
Name _____

Date _____

Show your method

A frequency tree's parent count always equals the sum of its two child counts. To find a probability, divide a frequency by the grand total; to find a proportion within one branch (e.g. "of those who..."), divide by that branch's total instead.

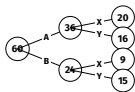
Worked example 50 students travel to school by Bus or Walk. Of those who Bus, 6 are Late. Find the missing frequency for 'Bus, On time', then find $P(\text{Bus and on time})$ of all 50.



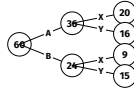
$$\text{Bus total} = 30. \text{ Late} = 6, \text{ so On time} = 30 - 6 = 24.$$

$$P(\text{Bus and on time}) = \frac{24}{50} = \frac{12}{25}$$

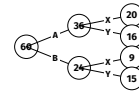
1. 60 people were surveyed. How many are in category A?



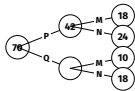
2. Using the same tree, how many are in A AND X?



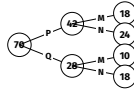
3. Using the same tree, how many are in total in category X (both branches)?



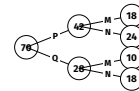
4. 70 people were tested. Find the missing frequency for branch Q.



5. Using the completed tree, find $P(M \text{ and } Q)$ as a fraction of the 70 total.



6. Of those in branch Q, what proportion are in M?



7. A frequency tree's grand total is 90. One first-stage branch is 54. Find the other first-stage branch's frequency.

8. A branch total is 45, and 27 of those are in the 'Yes' sub-branch. What fraction are 'Yes'?

9. Explain what a frequency tree's grand total (the root number) represents.

Frequency trees (continued)

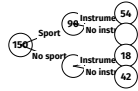


Complete a two-blank tree and compare conditional proportions across branches.

Name _____

Date _____

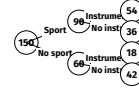
10. Complete the tree: find BOTH missing frequencies.



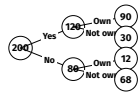
11. Using the completed tree, find $P(\text{no sport and no instrument})$ of all 150.



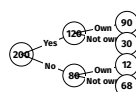
12. Of the students who play sport, what proportion also play an instrument?



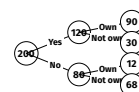
13. Find the TOTAL who 'Own' across both branches.



14. Using the same tree, find $P(\text{said Yes and Owns})$ of all 200.



15. Given that a person said 'No', find the probability they Own.



16. From Q13's tree, find $P(\text{Own} | \text{Yes})$ and $P(\text{Own} | \text{No})$. Which group is more likely to own?

17. Explain the difference between a frequency and a probability on a frequency tree.

18. A first-stage branch has a frequency of 63, which is 35% of the grand total. Find the grand total.
