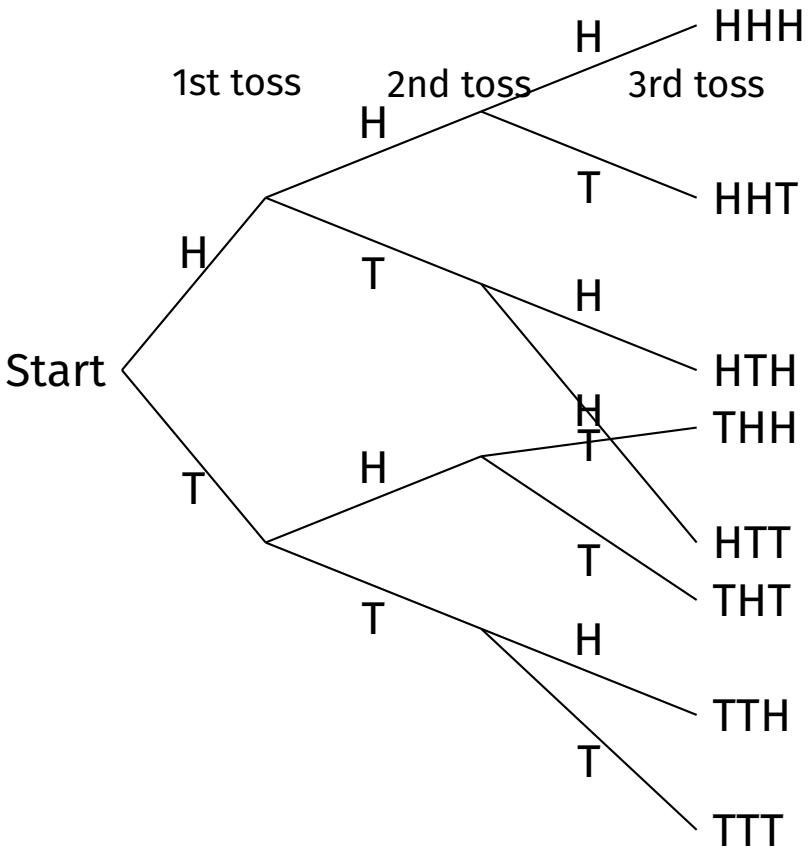
Excellence

1. Use this tree for Questions 1–4.



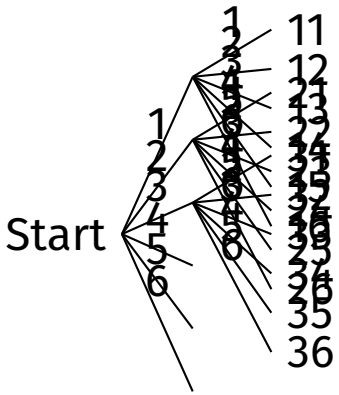
2. Is the probability of at least one head equal to $\frac{1}{2}$? Explain.

3. Use the tree to find the probability of getting exactly two heads.

4. Use the tree to find the probability of getting at least one tail.

5. A student says HTH and THH are the same because both have two heads and one tail. Are they correct? Explain using tree paths.

6. Use this partial two-dice tree to help find the probability that the total is 7.



7. Use the tree to find the probability that both numbers are greater than 4.

8. A spinner has equal sectors labelled A, B, and C. It is spun twice. What is the probability of getting exactly one A?

9. A spinner has equal sectors labelled 1, 2, 3, and 4. It is spun twice. What is the probability that both spins are even?

10. A bag has 3 red and 2 blue counters. A counter is picked, replaced, then picked again. What is the probability of getting one red and one blue in any order?

11. A bag has 3 red and 2 blue counters. A counter is picked, replaced, then picked again. What is the probability of getting two counters of the same colour?

12. Which is greater: the probability of exactly one head in three coin tosses or the probability of a total of 7 in two die rolls? Show enough working to justify.

13. Which is smaller: the probability of two blues from a bag with 3 red and 2 blue counters, with replacement, or the probability of two heads in two coin tosses? Explain.

14. Fill in the blank: when a fair coin is tossed three times, the probability of HHH is $\frac{\square}{8}$.

15. Fill in the blank: when a fair die is rolled twice, the probability of getting doubles is $\frac{\square}{36}$.

16. Which does not belong: outcome, branch, sample space, perimeter? Explain.

17. Explain why a full tree diagram helps avoid missing combined outcomes.