Worked answers | Probability

Systematic lists, arrays, tables and trees

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. List all ordered two-letter codes using X and Y, allowing repeats. [1 mark]

Hold the first letter fixed while changing the second.

Answer: XX, XY, YX, YY.

2. A meal has 3 main choices and 2 drinks. How many complete meals can be formed? [2 marks]

A 3 by 2 array has six cells.

Answer: 6

3. List the ordered outcomes with sum 4 when two dice are rolled. [2 marks]

Try first-die results in order.

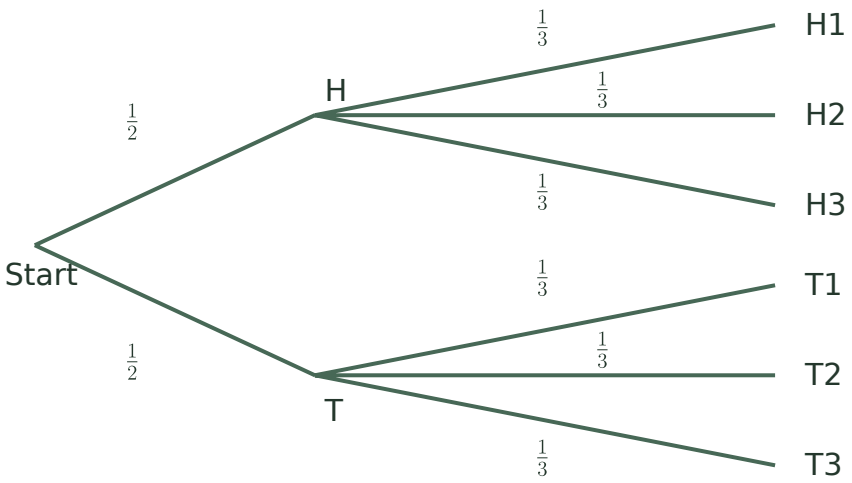
Answer: $(1,3)$, $(2,2)$, $(3,1)$.

4. For two fair independent dice, find $P(\text{sum } 4)$. [2 marks]

Three of 36 outcomes are favourable.

Answer: $\frac{1}{12}$

5. Use the displayed tree to find $P(\text{H then } 3)$. [2 marks]



Multiply the branch probabilities: $\frac{1}{2} \times \frac{1}{3}$.

Answer: $\frac{1}{6}$

6. For a code A, B or C followed by 0 or 1, explain why A0, B1, C0 is incomplete. [3 marks]

Each letter needs both digits.

There should be six codes.

Answer: A1, B0 and C1 are missing.