

Probability Overview – www.m4ths.com

(1) There are 100 people in an office. 40 are men and the rest are women. Of the women $\frac{1}{4}$ like sport and the rest don't. Of the men 8 like sport and the rest don't.

- Draw a frequency tree (not tree diagram) to represent the information.
- One person is chosen at random. Find the probability that they are a woman who doesn't like sport.
- A man is chosen at random. Find the probability he doesn't like sport.

(2) Spinner A has 3 sections with different numbers on. The sections are 3, 4 and 5.

Spinner B has 4 sections with different numbers on. The sections are 2, 5, 6 and 7.

When the two spinners are spun the numbers are multiplied.

(a) Copy and complete the sample space below:

x	3	4	5
2			
5			
6			
7			

(b) Using the sample space, find the probability of the score being (i) even, (ii) greater than 6, (iii) a square number and (iv) a prime number.

(3) Fred is carrying out an experiment. He sees 18 red cars, 42 silver cars and 21 black cars. Find the relative frequency of each colour.

(4) Jane plays darts. She can either win or lose. The probability of her winning is 0.3. If she plays 400 games, how many games would you expect her to lose?

(5) The table below shows the different colours on a spinner and their probabilities.

Colour	Red	Blue	Green	Yellow	Orange
Probability	0.2	0.1	0.3	N	N

- Is the spinner fair or biased? You must explain your answer.
- Find the value of N.
- The spinner is spun 600 times, how many times would you expect the spinner to land on Yellow?

(6) There are 8 balls in a bag. 5 are red and the rest are blue. One ball is taken at random, its colour noted and then replaced. Another ball is taken at random, its colour noted and replaced.

- Explain why the two events are independent
- Draw a tree diagram to represent the information
- Find the probability of the two balls being chosen being (i) Both red (ii) Both the same colour (iii) At least one being blue.

(7) There are 9 balls in a bag. 2 are red and the rest are blue. One ball is taken at random, its colour noted and NOT replaced. Another ball is taken at random, its colour noted NOT replaced.

- Explain why the two events are not independent.
- Draw a tree diagram to represent the information
- Find the probability of the two balls being chosen being (i) Both red (ii) Both the same colour (iii) At least one being blue.

(8) Freda is taken her theory and practical driving test. The two events are independent. The probability of Freda passing her theory test is 0.4 and the probability of her passing the practical is 0.2

(a) Find the probability that Freda (i) passes both tests (ii) only one test (iii) at least one test.

(9) Fred is taken his theory and practical driving test. The probability of Freda passing her theory test is 0.4. If he passes the theory, the probability of passing the practical is 0.8. If he fails the theory the probability of her passing the practical is 0.3.

- Find the probability that Freda (i) passes both tests (ii) only one test (iii) at least one test.
- Explain why this is an example of conditional probability.