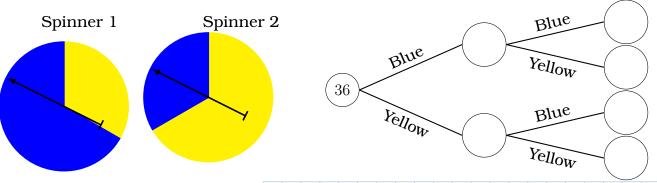
## 3.6 Lesson 6 Probability Tree diagrams

## Exercise 12

The spinners are spun together.

polypad link https://polypad.org/c7MCnrZR2Lf6A Spinner 1 Spinner 2



- 1. List all of the possible outcomes
- 2. We spin both spinners 36 times.
  - a) Estimate the number of blue outcomes for spinner 1.
  - b) For a blue spinner 1, estimate the number of blue outcomes for spinner 2.
  - c) Estimate the probability of both spinners at blue.

Probability trees are a handy tool to calculate probabilities of outcomes made of a **sequence of events** (2 or more) :

- A path on the tree leads to a final outcome.
- $\bullet$  All final outcomes are mutually exclusive.

Spinner 1

- The probability of a final outcome is the product of probabilities along branches.
- Probabilities on branches from the same node add up to 1.

Spinner 2

Yellow

Blue  $B_1 \text{ then } B_2 \qquad P(B_1B_2) = \frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$   $Yellow \qquad B_1 \text{ then } Y_2$   $Y_1 \text{ then } B_2$ 

 $Y_1$  then  $Y_2$ 

Final outcome

Total probability

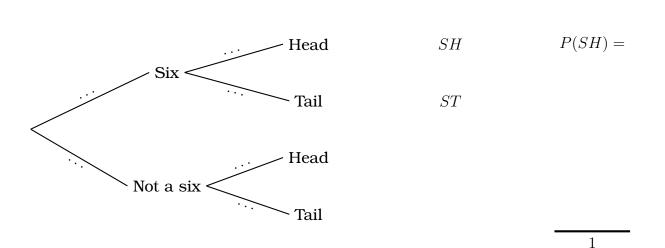
20 3 Probability

**Exercise 13** A game offers a prize if when you throw a die you get a six and when you flip a coin you get a Head. The probability tree below shows the possible outcomes when you play:

Final outcome

Total probability

Total probability



Spinner 2

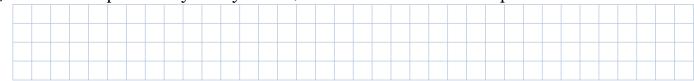
a) Complete the tree to show the probabilities of all four outcomes.

Spinner 1

Spinner 1

b) What is the probability that you win, that is throw a six and flip a Head?

Spinner 2



**Exercise 14** Applicant for a job have to pass two tough test papers. 70% of the people fail the first paper test.

Final outcome

Pass  $P_1P_2$   $P(P_1P_2) =$ Pass  $P_1F_2$ Fail  $P_1F_2$ Fail  $P_1F_2$ 

- a) Complete the tree to show the probabilities of all four outcomes.
- b) What is the probability that the applicant pass both tests and gets a job.