Edexcel - Foundation

Probability

2022 GCSE Advance Information

Sparx Topics & Key Questions

We are always looking for ways to support maths teachers and students. In order to help you and your year 11s this year we've pulled together a list of key questions which may be useful to practise with your students based on the exam board topic lists.

These 23 key questions are all taken from our library of over 45,000 high-quality questions in Sparx Maths. If you are a Sparx Maths School then your students can use the Topic Codes provided to search the full content library directly within the independent learning section of Sparx Maths to help target their revision.

Please note this is not an exhaustive topic guide it is simply designed to help you pull together some key questions to use to check for understanding in lessons, starters, or as worksheets with your learners.

Probability	Topics	Sparx Topic Codes
Probability	Probability scale	U803, U408, U510
	Probability	U803, U408, U510, U683, U166, U580
	Frequency tree	U280
	Tree diagram	U558, U729
	Combined events	U104

Probability - Probability scale

Using probability phrases U803

Elisha has a bag containing **five red balls** and **one white ball**.

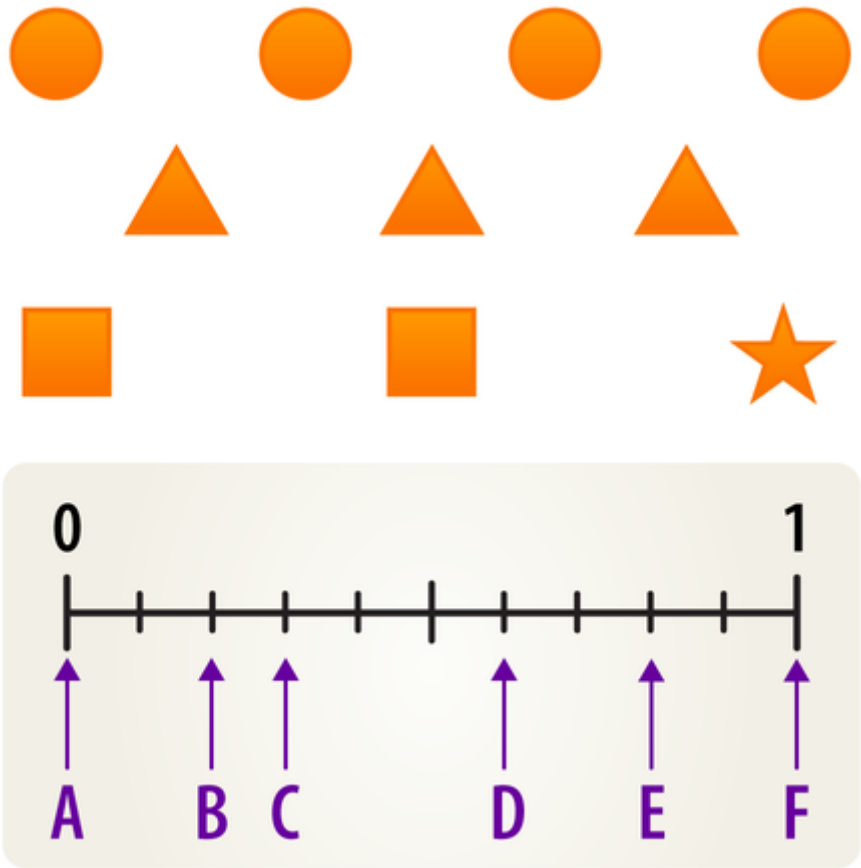
Elisha is going to pick a ball at random.

How many **more white** balls should Elisha put in the bag so that it is **just as likely** that she will pick a red ball as a white ball?

Writing probabilities as fractions U408

a) A shape is picked at random from the shapes shown below. Work out the probability that the shape is a **triangle**.
Give your answer as a fraction in its simplest form.

b) Which letter represents this probability on the probability scale?



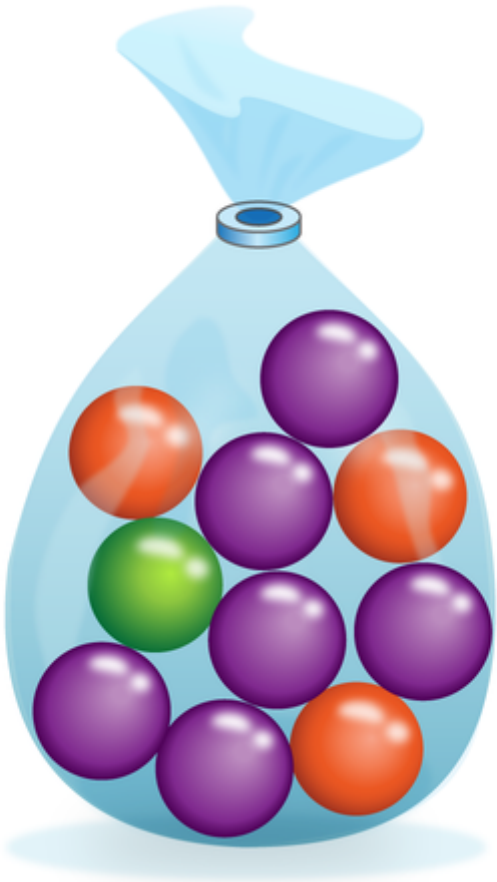
Put these probabilities in order from least likely to most likely.

$\frac{9}{10}$, $\frac{4}{5}$, $\frac{7}{10}$

Writing probabilities as fractions, decimals and percentages **U510**

There are 10 marbles in the bag below.
3 of the marbles are red, 6 are purple and 1 is green.

A marble is picked at random from the bag. Work out the probability that the marble is red, $P(\text{red})$, as
a) a decimal.
b) a percentage.



Kieran enters four events in an athletics competition. The probability of him winning each of the events is shown below.

Order the probabilities from least likely to most likely.

100 m	Long jump	Discus	Hurdles
			
0.46	$\frac{2}{5}$	23%	$\frac{3}{10}$

Probability - Probability

Using probability phrases U803

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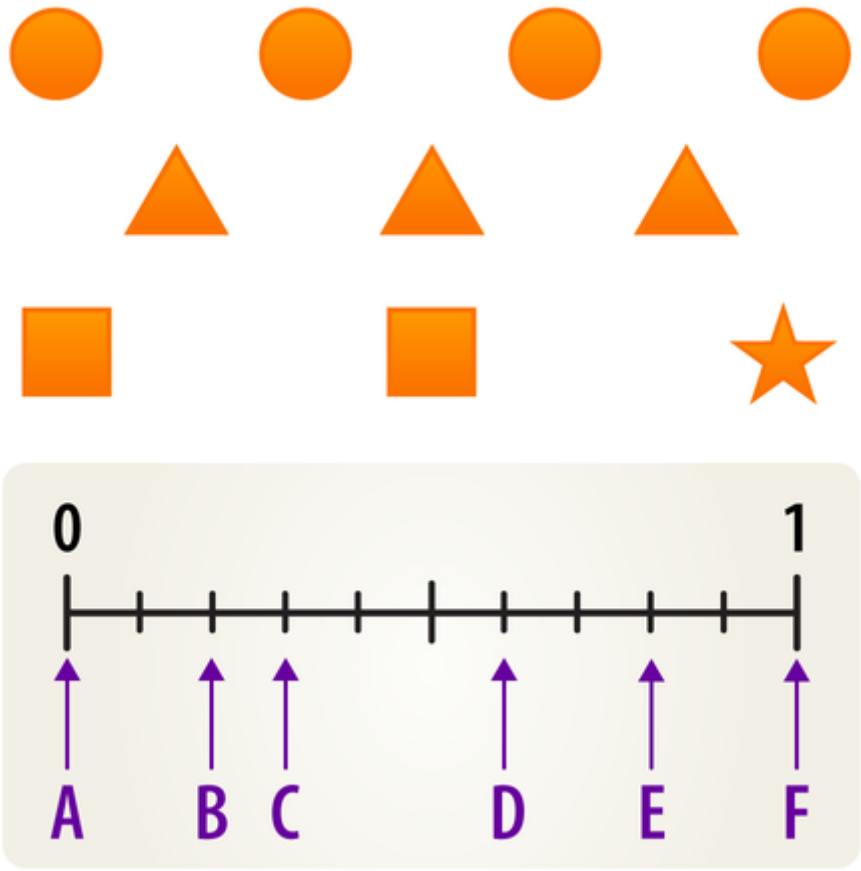

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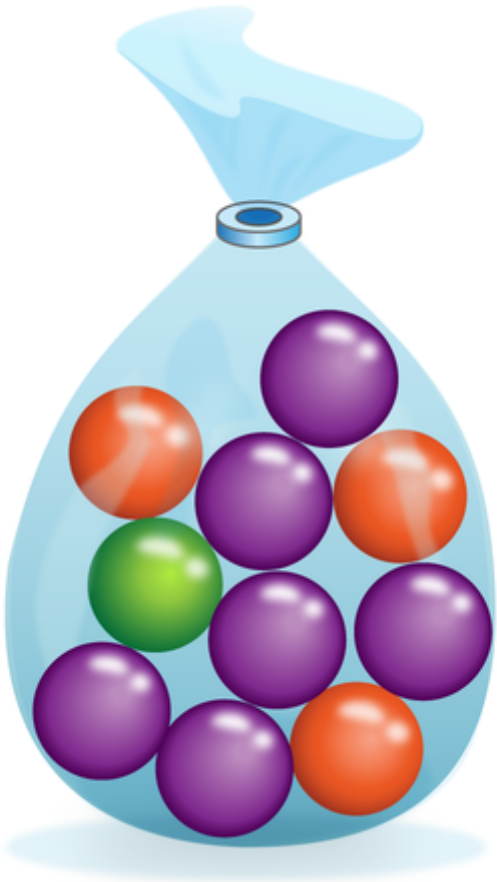

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Probabilities of mutually exclusive events U683

The probability that a bus arrives early at a bus stop is $\frac{4}{7}$.
The probability that it arrives on time is $\frac{3}{14}$.

Calculate the probability that the bus arrives early **or** on time.
Give your answer as a fraction in its simplest form.

I have a bag containing only purple cubes and red cubes.

If the probability of randomly choosing a purple cube is $\frac{5}{6}$, what is the probability of randomly choosing a red cube?

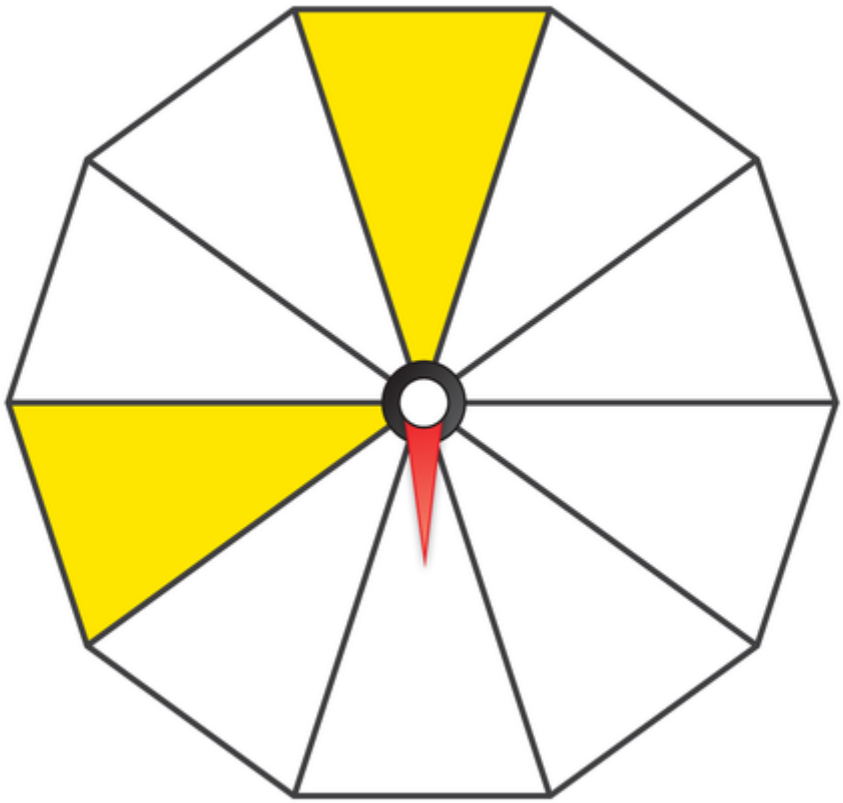
Give your answer as a fraction in its simplest form.

Expected results from repeated experiments **U166**

Sophia spins the fair spinner shown below.

a) What is the probability that the spinner will land on a **shaded** section? Give your answer as a fraction in its simplest form.

b) How many times would you expect the spinner to land on a **shaded** section if it were spun 40 times?



A factory is producing skirts. The manager says that the probability that a skirt has a fault is 11%.

If the factory makes 300 skirts in a day, how many do you expect to be faulty?

Experimental probabilities **U580**

Brandon spun a spinner a total of 1000 times and recorded the number of times it had landed on green after different numbers of spins. His results are shown below.

Work out the best estimate for the probability of the spinner landing on green.
Give your answer as a fraction in its simplest form.

Number of spins	10	50	100	500	1000
Frequency of green	7	18	27	149	291

William had a six-sided dice numbered from 1 to 6. He rolled it a total of 50 times. It landed on an even number 23 times.

a) Work out the relative frequency of the dice landing on an even number. Give your answer as a decimal.

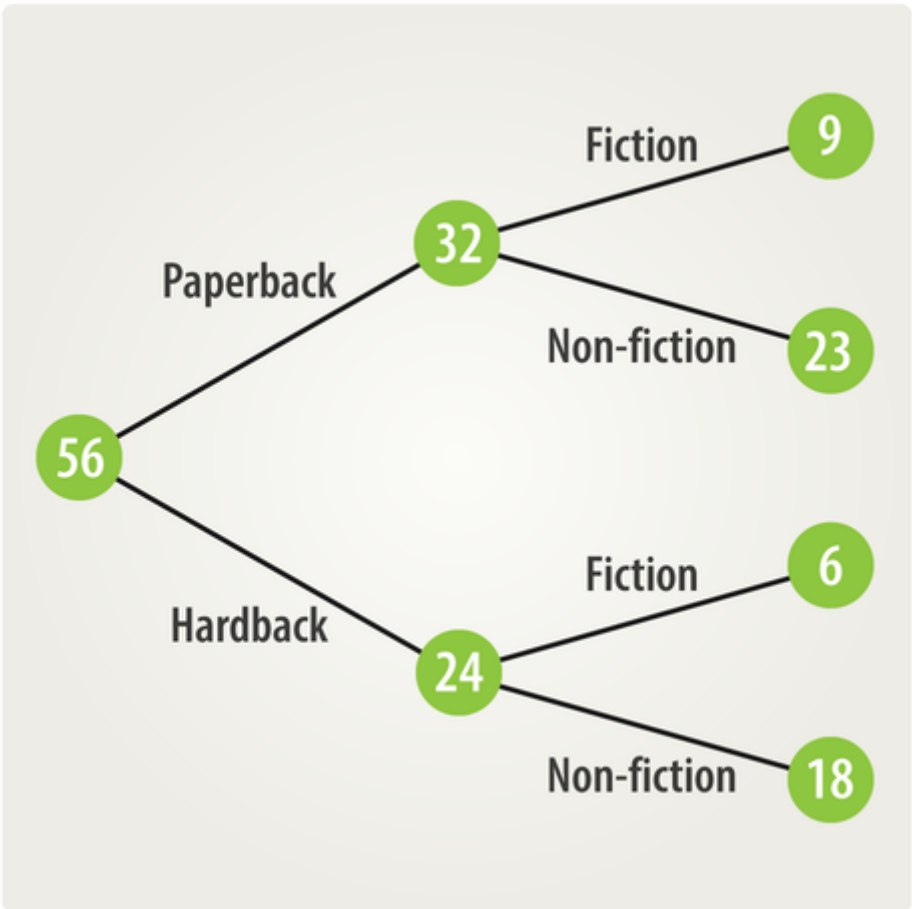
b) If the dice were fair, what would the theoretical probability of it landing on an even number be? Give your answer as a decimal.

c) Is the dice definitely biased or definitely not biased, or is it impossible to tell? Write a sentence to explain your answer.

Probability - Frequency tree

Frequency trees U280

The frequency tree below shows information about the books on a bookshelf.
How many of the books are non-fiction?



A garage has 60 vehicles for sale, which are all either new or second-hand.

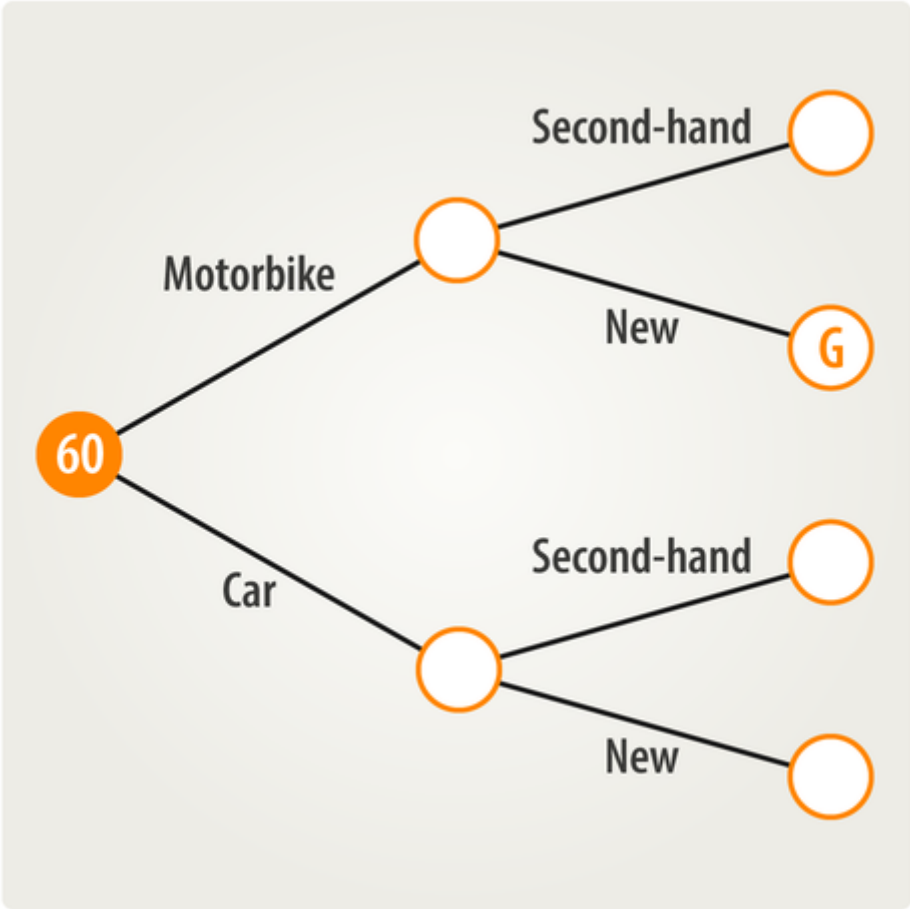
28 of the vehicles are motorbikes and the rest are cars.

Of the motorbikes, 7 are second-hand.

3 of the cars are new.

a) By copying and completing the frequency tree below to show this information, work out the value that should replace G in the frequency tree.

b) In total, how many of the vehicles are second-hand?



Probability - Tree diagram

Tree diagrams for independent events U558

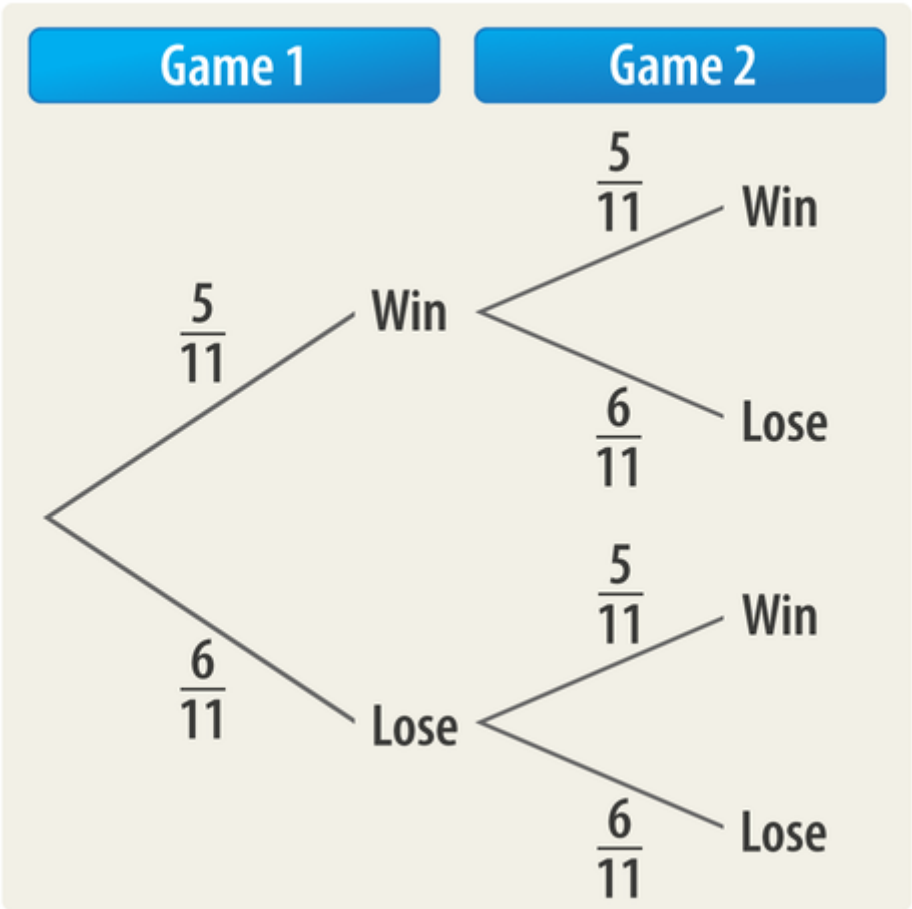
Box A contains only green and yellow counters.
Box B contains only green, yellow and pink counters.
Martina picks one counter from box A and one counter from box B.

Draw a tree diagram to show all the possible outcomes for the counters she picks.

How many possible ways are there for Martina to pick **exactly one yellow** counter?

Yasmin plays two games.

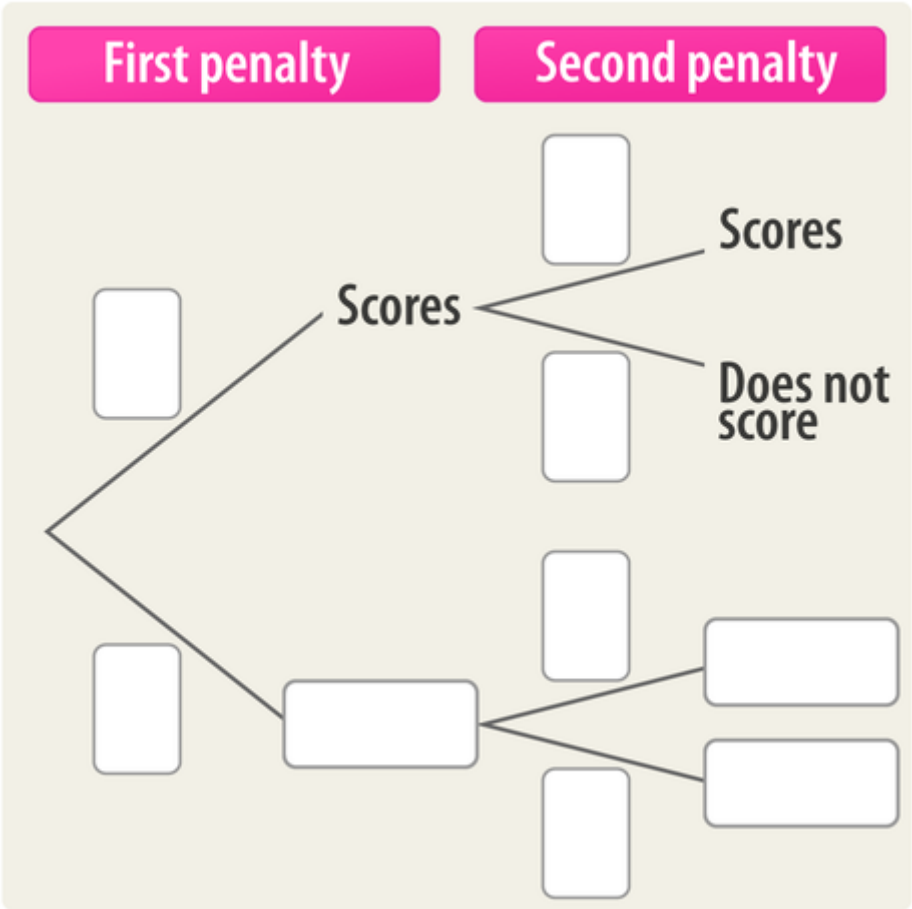
What is the probability that she wins **exactly one** of the games?
Give your answer as a fraction in its simplest form.



The probability that Matthew scores when taking a penalty is $\frac{4}{5}$.

a) Copy and complete the tree diagram below to show all the possible outcomes of Matthew taking two penalties.

b) What is the probability that he **does not score** the first penalty but **scores** the second penalty?
Give your answer as a fraction in its simplest form.

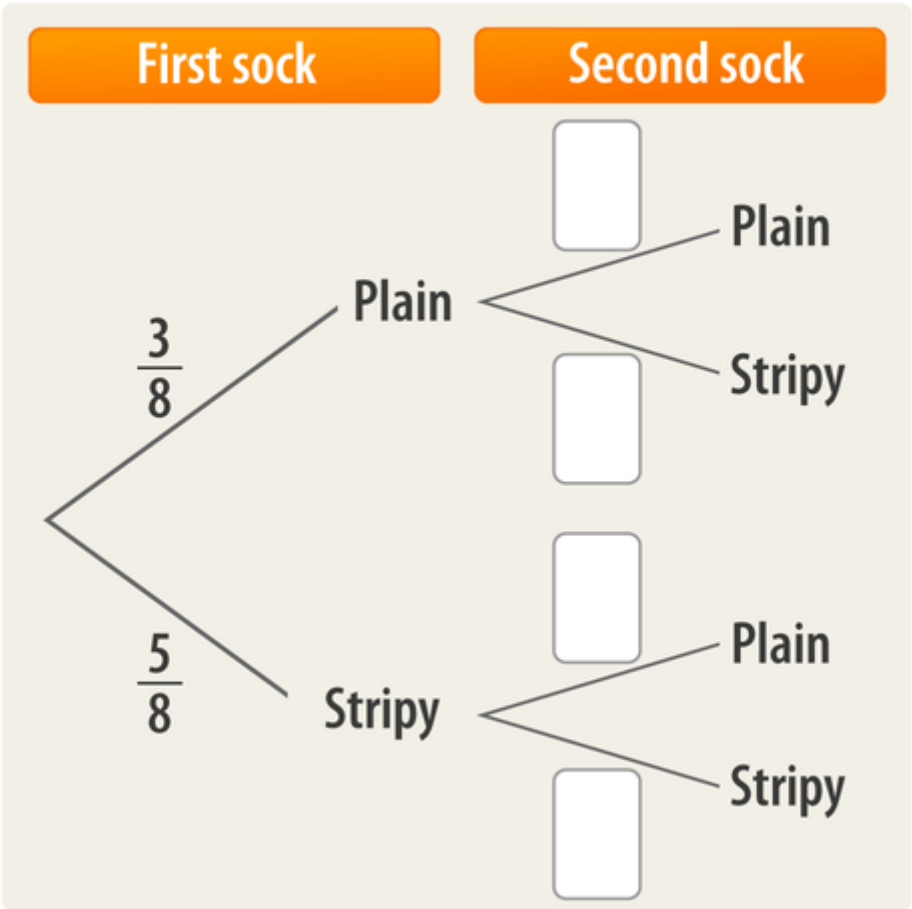


Tree diagrams for dependent events U729

Roxanne has 3 plain and 5 stripy socks.
She chooses a sock at random, puts it on, then chooses a second sock at random.

Copy and complete the tree diagram.

What is the probability that Roxanne chooses **two stripy** socks?
Give your answer as a fraction in its simplest form.



Probability - Combined events

Sample space diagrams U104

The two fair spinners shown below are spun and their results are added together. Draw a sample space diagram to show all the possible totals.

What is the probability of scoring a total of 10?
Give your answer as a fraction in its simplest form.