

8300

GCSE MATHEMATICS

Foundation tier – Questions by Topic

Probability

Probabilities of mutually exclusive events

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments

Information

- The marks for questions are shown in brackets

Advice

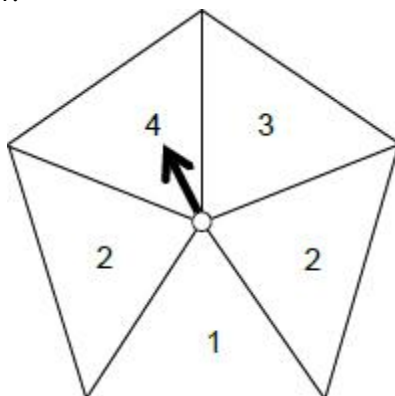
- In all calculations, show clearly how you work out your answer

For questions 1 to 5 you must **NOT** use a calculator.



Q1.

Here is a fair five sided spinner.



- (a) Write down the probability of scoring an even number with one spin.
- (b) Work out the probability of scoring a **total** of 8 with two spins.

(1)

(3)

(Total 4 marks)

Q2.

A bag contains 20 counters.

19 blue

1 yellow

Two counters are taken out at random.

- (a) If the two counters are the **same** colour, what is the probability the next counter taken at random is yellow?
- (b) If the two counters are **different** colours, what is the probability the next counter taken at random is yellow?

(1)

(1)

(Total 2 marks)

Q3.

Anna plays a game with an ordinary, fair dice.

If she rolls 1 she wins.

If she rolls 2 or 3 she loses.

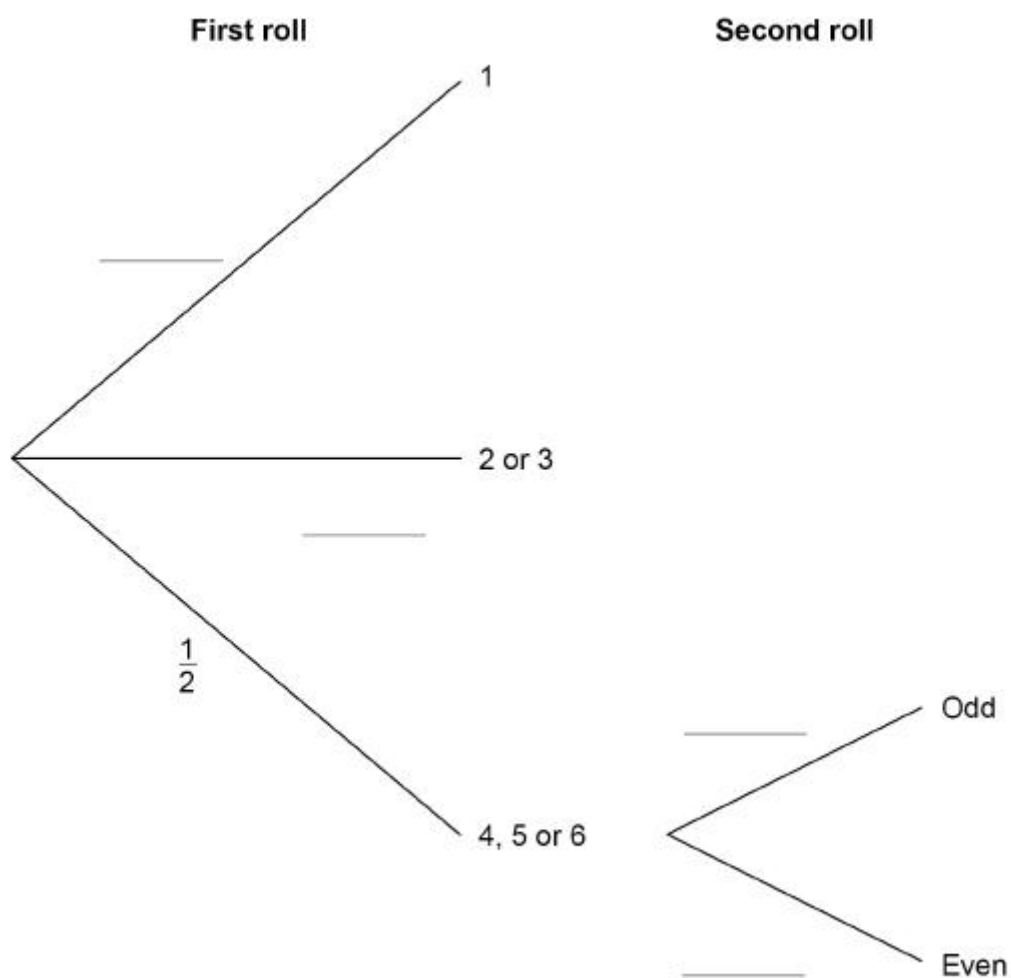
If she rolls 4, 5 or 6 she rolls again.

When she has to roll again,

if she rolls an odd number she wins

if she rolls an even number she loses.

- (a) Complete the tree diagram with the four missing probabilities.



(2)

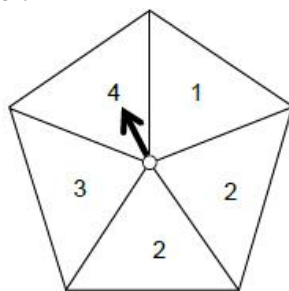
- (b) Is Anna more likely to win or to lose?
You **must** work out the probability that she wins.

(4)

(Total 6 marks)

Q4.

Joanne has a fair five-sided spinner.



(a) Write down the probability of scoring a 4 with one spin.

(1)

(b) Work out the probability of scoring a **total** of 4 with two spins.

(3)

(Total 4 marks)

Q5.

A bag contains 20 counters.

10 of the counters are red, 8 are blue and 2 are yellow.

Three counters are taken out at random.

(a) If all three of these counters are the **same** colour, what is the probability that the next counter taken out at random is yellow?

(1)

(b) If all three of these counters are **different** colours, what is the probability that the next counter taken out at random is yellow?

(1)

(Total 2 mark)

For the rest of the questions, you may use a calculator.



Q6.

A spinner has ten sections, each labelled A, B, C or D.

	A	B	C	D
Probability	0.1	0.5	0.2	0.3

Give **one** reason why there **must** be a mistake in the table.

(Total 1 mark)

Q7.

An experiment has four outcomes.

Outcome	A	B	C	D
Probability	0.1		0.2	0.3

Work out the probability of outcome **B**.

(Total 2 marks)

Q8.

The four possible outcomes of an experiment are A , B , C and D .

$$P(A) = 0.16$$

$$P(B) = 3P(A)$$

$$P(C) = P(D)$$

Work out $P(D)$

(Total 3 marks)

Q9.

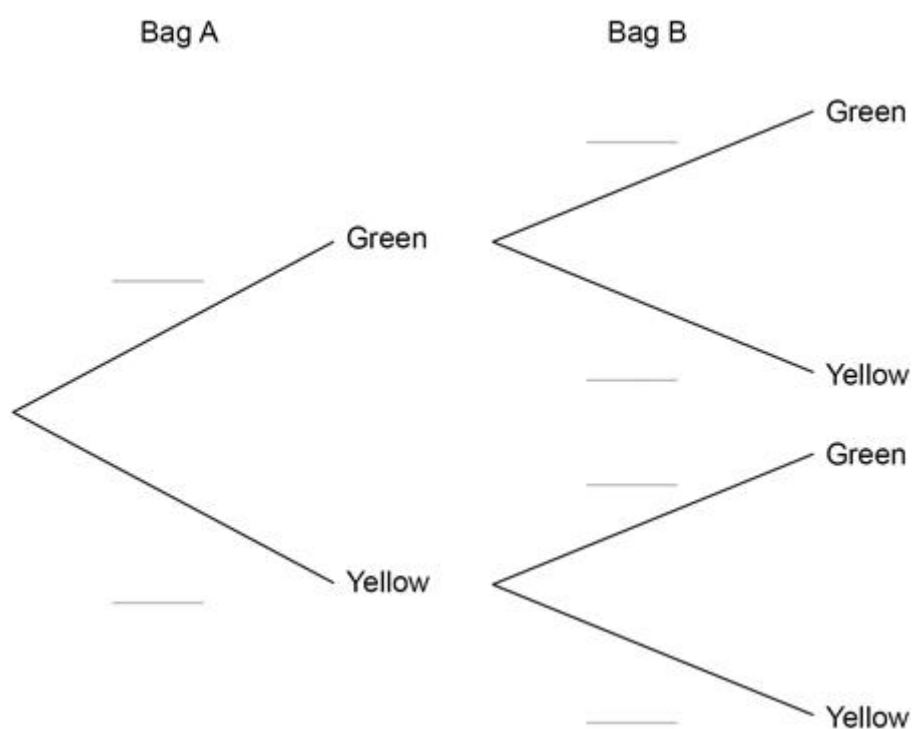
Two bags contain only green discs and yellow discs.

Bag A contains 1 green disc and 4 yellow discs.

Bag B contains 3 green discs and 7 yellow discs.

One disc is picked at random from each bag.

(a) Complete the tree diagram with the correct probabilities.



(2)

(b) Work out the probability that **both** discs are green.

(2)

(Total 4 marks)

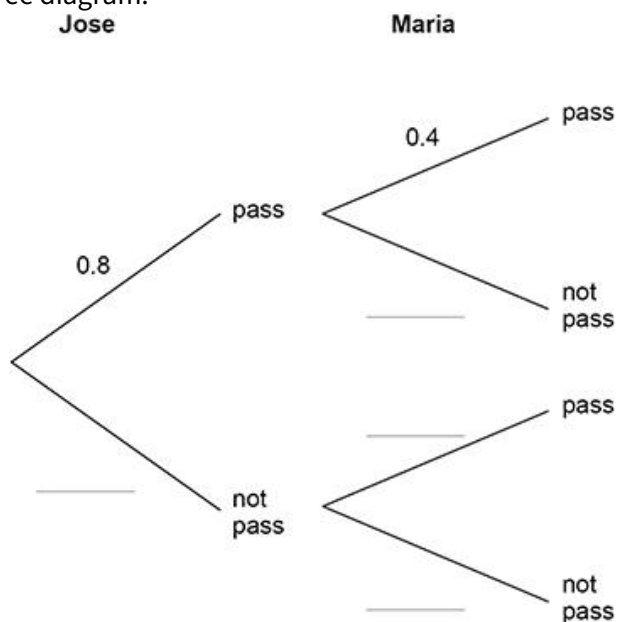
Q10.

Jose and Maria each take a test.

The probability that Jose passes is 0.8

The probability that Maria passes is 0.4

- (a) Complete the tree diagram.



- (b) Work out the probability that they **both** pass.

(2)

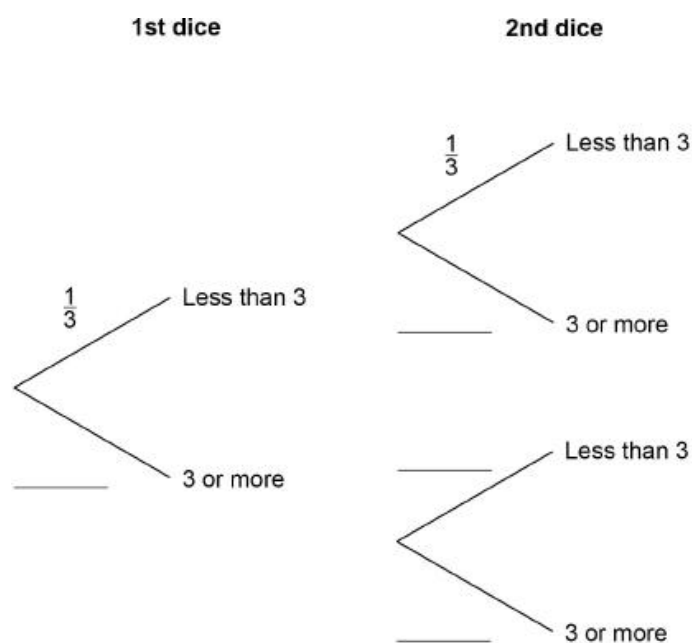
(1)

(Total 3 marks)

Q11.

Two ordinary fair dice are rolled.

- (a) Complete the tree diagram.



- (b) Work out the probability that **both** dice land on a number less than 3

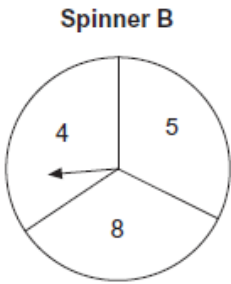
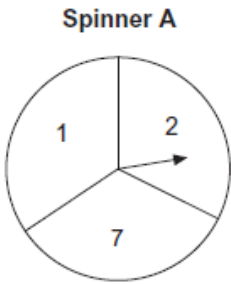
(1)

(1)

(Total 2 marks)

Q12.

(a) Here are two fair spinners.



In a game, both spinners are spun and the **higher** number is the final score.
For example, if 2 and 4 are spun the score is 4
Complete the table to show the possible scores when both spinners are spun.

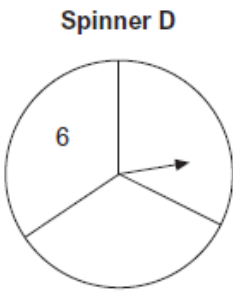
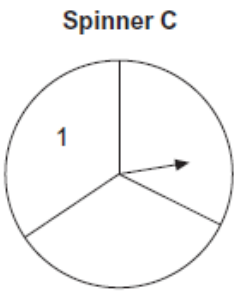
		Spinner A		
		1	2	7
Spinner B	4		4	
	5			
	8			

(2)

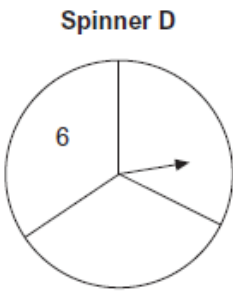
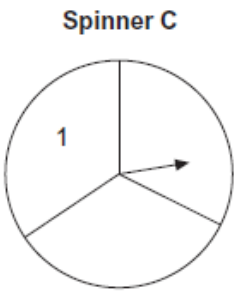
(b) The same game is played with spinners C and D.
Using spinners C and D the probability of each score is shown below.

Score	1	2	3	4	5	6
Probability	0	0	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{2}{9}$	$\frac{3}{9}$

Complete the numbers on spinners C and D.
Practise on these spinners.



Put your final answer on these spinners.



(2)

(Total 4 marks)