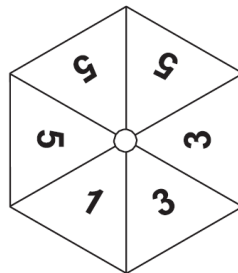


Probability 1

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR and Pearson-Edexcel.

Name:	
Total Marks:	

1. An unbiased spinner is shown below.



(a) Write a number to make each sentence true.

(i) It is evens that the spinner will land on number

[1]

(ii) There is a probability of that the spinner will land on number

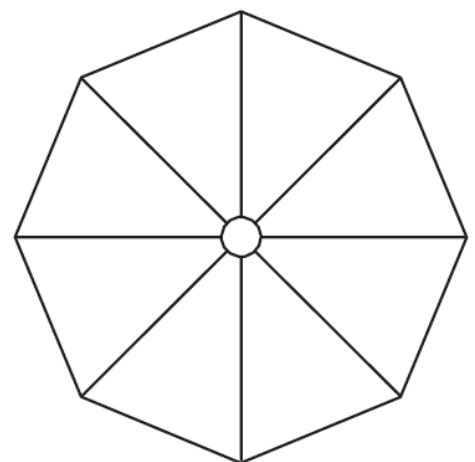
[1]

(iii) It is impossible that the spinner will land on number

[1]

(b) The spinner **shown** has the following properties.

- There are eight equal sections, each showing one number.
- There are three different numbers on the spinner.
- The probability of the spinner landing on an even number is greater than the probability of it landing on an odd number.
- It is more likely that the spinner will land on a 6 than either of the other numbers.



Complete the spinner to show one possible arrangement of numbers.

[3]

2. A tin contains four different types of sweet.

A sweet is taken from the tin at random.

The table below shows some of the probabilities of taking each type of sweet.

Sweet	Toffee	Fudge	Jelly	Mint
Probability	0.4	0.2		0.3

(a) Complete the table.

[2]

(b) What is the probability that a toffee or a mint is taken from the tin?

(b) [2]

3. Abi, Ben and Carl each drop a number of identical drawing pins, and count how many land with the pin upwards. The table shows some of their results.

	Number of pins dropped	Number landing 'pin up'
Abi	10	4
Ben	30	9
Carl	100	35

(a) Abi says

As a drawing pin can only land with its pin up or with its pin down, the probability of a drawing pin landing 'pin up' is $\frac{1}{2}$

Criticise her statement.

[1]

(b) Carl's results give the best estimate of the probability of a drawing pin landing 'pin up'.

Explain why.

[1]

(c) Two pins are dropped.

Estimate the probability that both pins land 'pin up'.

(c) [2]

4. Three friends, Ann (A), Bob (B) and Carol (C), go on holiday together.

(a) They book a row of three seats on the plane.

When they arrive at the plane they sit in a random order.

(i) List all the different orders they could sit on the three seats.

The first one has been done for you.

Seat 1	Seat 2	Seat 3
A	B	C

[2]

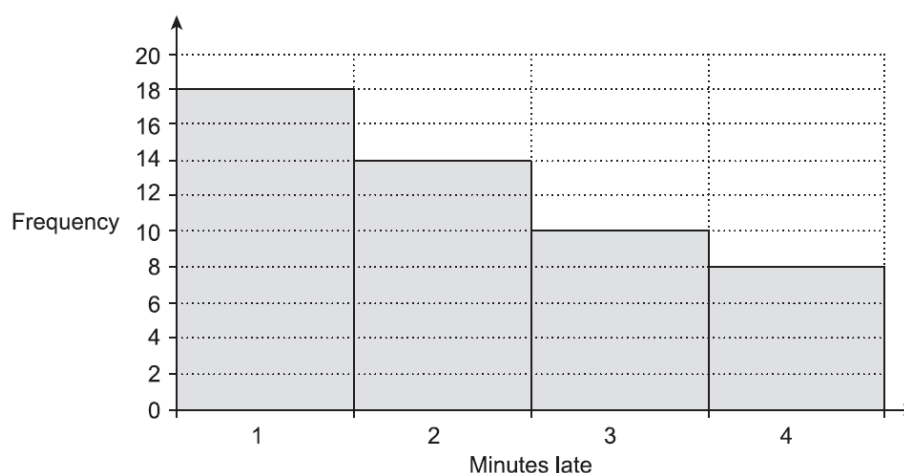
(ii) What is the probability that Ann and Carol sit next to each other?

(ii) [1]

(iii) What is the probability that Bob sits in seat 1 with Ann next to him?

(iii) [1]

5. This frequency diagram summarises the number of minutes Astrid's train was late over the last 50 days.



- (a) Use information from this diagram to estimate the probability that her train will be 4 minutes late tomorrow.

(a) [2]

- (b) Explain whether your answer to part (a) gives a reliable probability.

[1]

6. Jason is playing a game.

He has two sets of cards.

One set has three red cards, numbered 1, 2 and 3.

The other set has four green cards, numbered 4, 5, 6 and 8.

Jason chooses a red card and a green card at random.

He works out his score by adding the numbers on the two cards together.

- (a) Complete the table to show all the possible scores.

	3	.....	.....	.....	.....
Red card	2	.....	.....	.....	10
	1	5	.....	.....	.....
		4	5	6	8
		Green card			

[2]

- (b) Work out the probability that Jason gets

(i) a score of 10,

(i) [1]

(ii) a score of 9 or more.

(ii) [1]

7. (a) Ken has a bag containing counters.

2 are white, 3 are black and 4 are red.

He takes one of these counters at random.

What is the probability that the counter is white?

(b) Abi has a bag containing black counters and white counters.

The ratio of black to white counters is 1 : 2.

Abi takes one of these counters at random.

What is the probability that it is black?

..... [1]

(c) Jemma has a bag containing 24 balls.

(i) The probability that a ball taken from the bag at random is green is $\frac{1}{3}$

How many of the 24 balls are green?

(i) [2]

(ii) 12 of the 24 balls are blue.

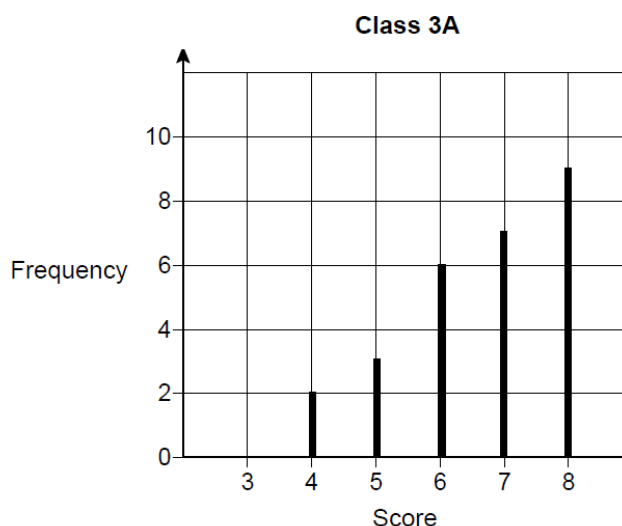
Jemma takes a ball from the bag at random and then puts it back.

She then takes a ball again at random.

What is the probability that both balls are blue?

(ii) [2]

8. The diagram shows information about the scores of Class 3A in a spelling test.



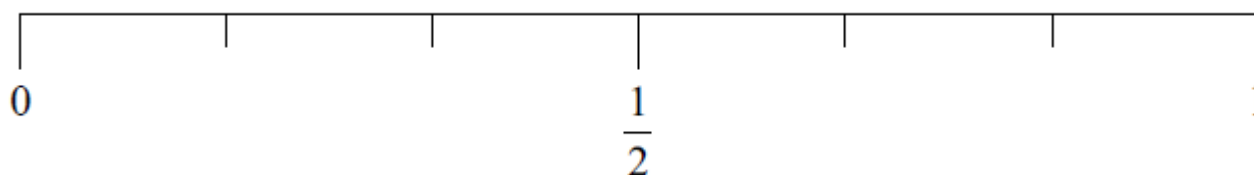
A student is chosen at random from Class 3A.

Work out the probability that the student's score was the mode for the class.

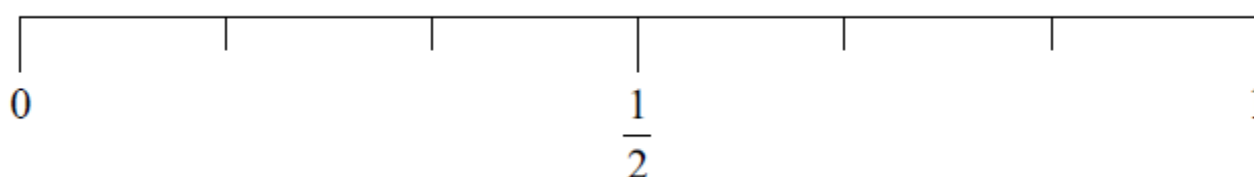
[3]

9. Greg rolls a fair ordinary dice once.

(i) On the probability scale, mark with a cross (×) the probability that the dice will land on an odd number.



(ii) On the probability scale, mark with a cross (×) the probability that the dice will land on a number less than 5



[2]

10. There are 3 red beads and 1 blue bead in a jar.

A bead is taken at random from the jar.

What is the probability that the bead is blue?

..... [1]

11. There are some boys and girls in a classroom.

The probability of picking at random a boy is $\frac{1}{3}$

What is the probability of picking a girl?

..... [1]

12. There are 25 boys and 32 girls in a club.

$\frac{2}{5}$ of the boys and

$\frac{1}{2}$ of the girls walk to the club.

The club leader picks at random a child from the children who walk to the club.

Work out the probability that this child is a boy.

..... [3]

13. In a box there are three types of chocolates.

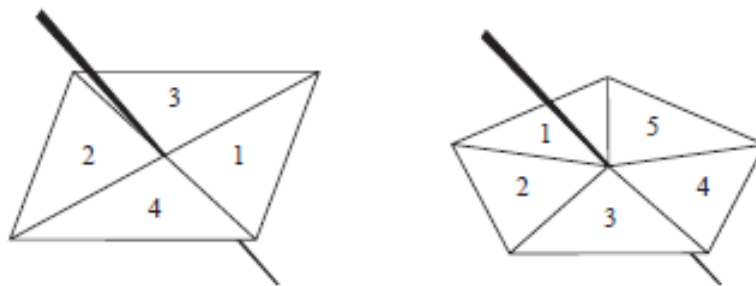
There are 6 plain chocolates,
8 milk chocolates
and 10 white chocolates.

Ben takes at random a chocolate from the box.

(a) Write down the probability that Ben takes a plain chocolate.

..... [2]

14. The spinners are fair.



Jeff is going to spin each spinner once.

Each spinner will land on a number.

Jeff will get his score by adding these two numbers together.

(a) Complete the possibility space diagram for each possible score.

		5-sided spinner				
		1	2	3	4	5
4-sided spinner	1	2	3	4	5	6
	2	3				
	3	4				
	4	5				

[2]

Jeff spins each spinner once.

(b) Find the probability that Jeff gets

(i) a score of 3

(ii) a score of 5 or more.

[2]

15. There are only blue counters, green counters, red counters and yellow counters in a bag.

George is going to take at random a counter from the bag.

The table shows each of the probabilities that George will take a blue counter or a green counter or a yellow counter.

Colour	blue	green	red	yellow
Probability	0.5	0.2		0.25

(a) Work out the probability that George will take a red counter.

..... [1]

There are 120 counters in the bag.

(b) Work out the number of green counters in the bag.

..... [2]

16. A coin is rolled onto a grid of squares.

It lands randomly on the grid.

To win, the coin must land completely within one of the squares.

Meera and John each roll the coin a number of times and record their results.

	Number of wins	Number of losses
Meera	6	44
John	28	72

(a) Work out two different estimates for the probability of winning.

Answer _____ and _____

(b) Which of your estimates is the better estimate for the probability of winning?

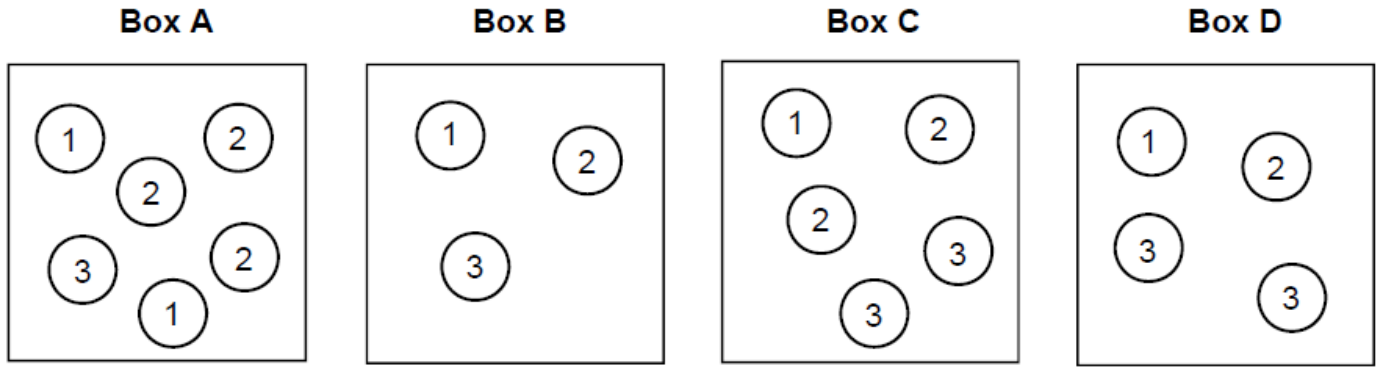
Give a reason for your answer.

Answer:

Reason:

[1]

17. Boxes A, B, C and D contain balls with numbers on them.



A ball is picked at random from each box.

(a) Which box gives the greatest chance of picking a 3?

You must show your working.

Box _____ [2]

(b) Which two boxes give the same chance of picking a 1?

Box _____ and Box _____ [1]

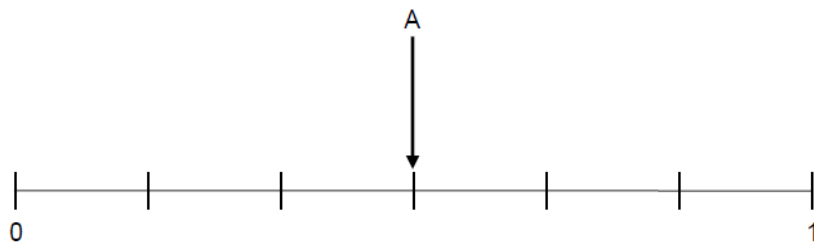
18. Here are three events for an ordinary fair dice.

A Roll an odd number

B Roll a number greater than 6

C Roll an even number less than 3

Draw and label arrows to show the probabilities of events B and C on the probability scale.



[2]

19. There are 25 counters in a bag.

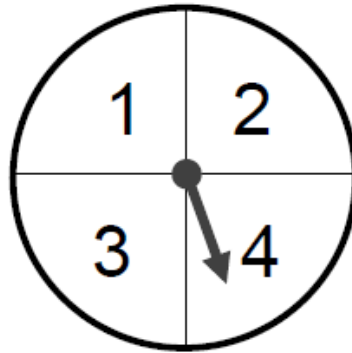
12 are red, 5 are green and the rest are white.

A counter is chosen at random.

Work out the probability that it is white.

[2]

20. A game is played with a fair spinner.



The player spins the spinner twice.

The score is the difference between the two numbers.

(a) Complete the table to show the scores.

		First spin			
		1	2	3	4
Second spin	1			2	
	2				
	3	2			
	4				

[2]

(b) The player loses if the score is 0 or 1

The player wins if the score is 2 or 3

Amy says,

"Two scores win and two scores lose, so the chance of winning is evens."

Is Amy correct?

Yes

☐

No

☐

Give a reason for your answer.

[2]

21. Here is an ordinary dice.



(a) Ali is going to throw the dice six times.

He says, *"I will get one of each number."*

Give a reason why he could be wrong.

[1]

(b) Lucy throws the dice 50 times.

Her results are shown.

Number thrown	1	2	3	4	5	6
Frequency	7	4	12	5	9	13

Work out the relative frequency of throwing an odd number.

[2]