Name: SOLUTIONS

GCSE (1 - 9)

Probability and the Probability Scale

Buy me a coffee

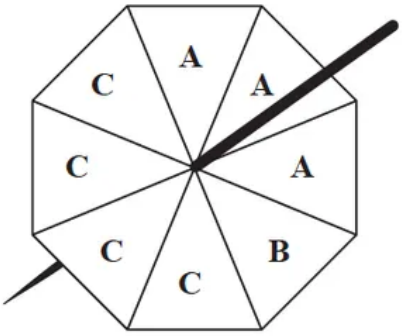
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These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

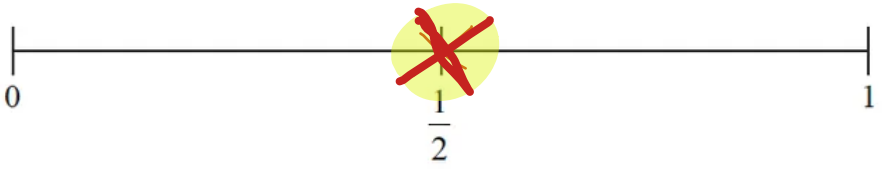
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1

Gita spins a fair 8-sided spinner.

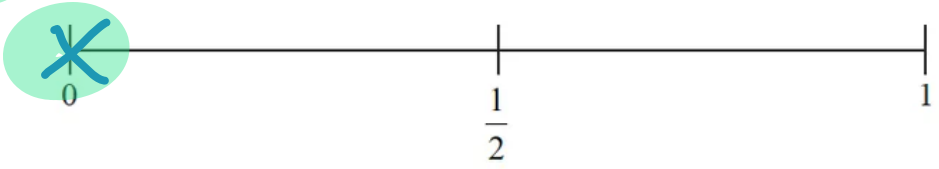


(a) On the probability scale, mark with a cross (X) the probability that the spinner will land on **C**.



(1)

(b) On the probability scale, mark with a cross (X) the probability that the spinner will land on **D**.



(1)

(Total for Question 6 is 2 marks)

[Edexcel, GCSE, Autumn 2020, Paper 1F, Q6]

2

There are only 5 blue cards, 2 green cards and 4 red cards in a pack.

Isabella is going to take at random one card from the pack.

(a) Write down the probability that Isabella will take a blue card.

$5 + 2 + 4 = 11$

$\frac{5}{11}$

(2)

Ken is going to throw a biased dice once.
The probability that the dice will land on six is 0.3

(b) What is the probability that the dice will **not** land on six?

$1 - 0.3 = 0.7$

(1)

(Total for Question 16 is 3 marks)

[Edexcel, GCSE, Autumn 2020, Paper 3F, Q16]

3

Four biased coins, A, B, C and D are thrown.

The probability that each coin will land on Heads is shown in the table.

Coin	Probability
A	0.33
B	0.033
C	$\frac{1}{3}$
D	30%

$= 0.33333...$

(a) (i) Which coin is least likely to land on Heads?

B

(1)

(ii) Which coin is most likely to land on Heads?

C

(1)

Julie says,

"The probability that coin C will land on Heads is the same as the probability that coin C will land on Tails."

(b) Is she correct?
Give a reason for your answer.

No. The probability of a heads is 1/3 so the probability of getting a tails is 2/3

(1)

Coin B is going to be thrown 4000 times.

(c) Work out an estimate for the number of times coin B will land on Heads.

$0.033 \times 4000 = 132$

(2)

(Total for Question 16 is 5 marks)

[Edexcel, GCSE, Summer 2019, Paper 2F, Q16]

4

There are 49 counters in a bag.

20 of the counters are red.
The rest of the counters are blue.

One of the counters is taken at random.

Find the probability that the counter is blue.

Blue = 49 − 20 = 29

29/49

(Total for Question 12 is 2 marks)

[Edexcel, GCSE, Autumn 2018, Paper 2F, Q12]

5

Victoria throws an ordinary fair 6-sided dice once.

She says,

"The probability of getting a 3 is half the probability of getting a 6"

(a) Is Victoria correct?
You must explain your answer.

No. The probabilities would be the same. Both probabilities would be 1/6.

(1)

Andy throws the dice twice.
He says,

"The probability of getting a 6 on both throws is $\frac{2}{6}$"

(b) Is Andy correct?
You must explain your answer.

No. We would multiply the probabilities together.
It would be 1/6 x 1/6 = 1/36

(1)

Indre throws the dice once.
She also throws a coin to get Heads or Tails.

(c) List all the possible outcomes she can get.

H1 H2 H3 H4 H5 H6

T1 T2 T3 T4 T5 T6

(2)

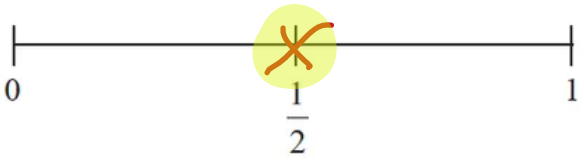
(Total for Question 14 is 4 marks)

[Edexcel, GCSE, Autumn 2018, Paper 2F, Q14]

6

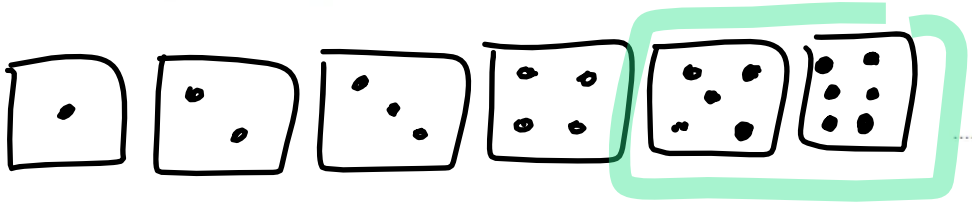
An ordinary fair dice is thrown once.

(a) On the probability scale below, mark with a cross (×) the probability that the dice lands on an odd number.



(1)

(b) Write down the probability that the dice lands on a number greater than 4



$\frac{2}{6} = \frac{1}{3}$

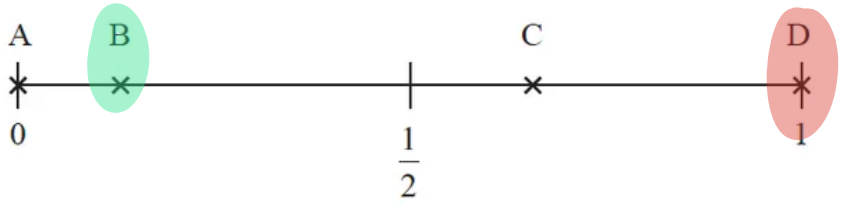
(1)

(Total for Question 6 is 2 marks)

[Edexcel, GCSE, Autumn 2018, Paper 3F, Q6]

7

Here is a probability scale.
It shows the probability of each of the events A, B, C and D.



(a) Write down the letter of the event that is certain.

D

(1)

(b) Write down the letter of the event that is unlikely.

B

(1)

There are 12 counters in a bag.

3 of the counters are red.
1 of the counters is blue.
2 of the counters are yellow.
The rest of the counters are green.

Caitlin takes at random a counter from the bag.

(c) Show that the probability that this counter is yellow or green is $\frac{2}{3}$

3 + 1 + 2 = 6

Green = 12 − 6 = 6

Green or yellow = 6 + 2 = 8

$\frac{8}{12} = \frac{2}{3}$

(3)

(Total for Question 7 is 5 marks)

[Edexcel, GCSE, Summer 2018, Paper 1F, Q7]

8

A scout group has a raffle to raise money for charity.
There is 1 prize to be won in the raffle.

Laura buys 12 raffle tickets.
A total of 350 raffle tickets are sold.

Find the probability that Laura does **not** win the prize.

350 − 12 = 338

338
350

(Total for Question 13 is 2 marks)

[Edexcel, GCSE, Summer 2018, Paper 2F, Q13]

9

There are only blue cubes, yellow cubes and green cubes in a bag.

There are

twice as many blue cubes as yellow cubes
and four times as many green cubes as blue cubes.

Hannah takes at random a cube from the bag.

Work out the probability that Hannah takes a yellow cube.

Yellow = 1 (×2)
Blue = 2 (×4)
Green = 8
Total = 11

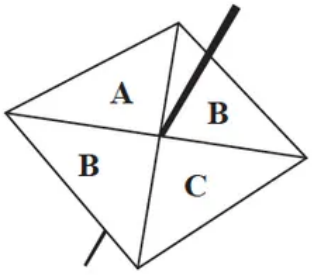
$\frac{1}{11}$

(Total for Question 19 is 3 marks)

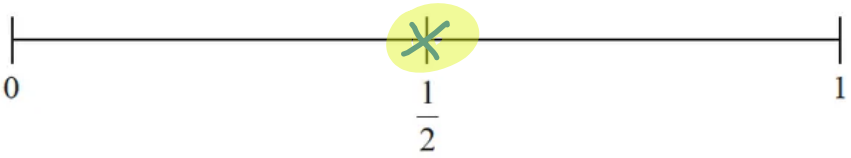
[Edexcel, GCSE, Autumn 2017, Paper 2F, Q19]

10

Sammy spins a fair 4-sided spinner.

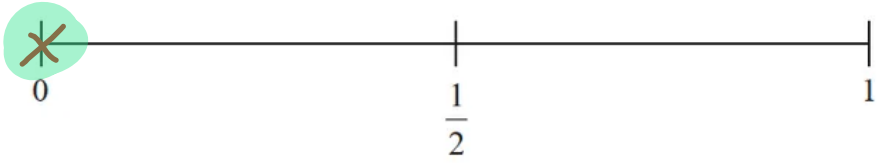


(i) On the probability scale, mark with a cross (×) the probability that the spinner will land on **B**.



(1)

(ii) On the probability scale, mark with a cross (×) the probability that the spinner will land on **F**.



(1)

(Total for Question 6 is 2 marks)

[Edexcel, GCSE, Summer 2017, Paper 1F, Q6]

11

There are only 7 blue pens, 4 green pens and 6 red pens in a box.

One pen is taken at random from the box.

Write down the probability that this pen is blue.

$7 + 4 + 6 = 17$

$\frac{7}{17}$

(Total for Question 12 is 2 marks)

[Edexcel, GCSE, Summer 2017, Paper 1F, Q12]

12

The probability that a new fridge has a fault is 0.015

What is the probability that a new fridge does **not** have a fault?

$1 - 0.015 = 0.985$

.....

(Total for Question 7 is 1 mark)

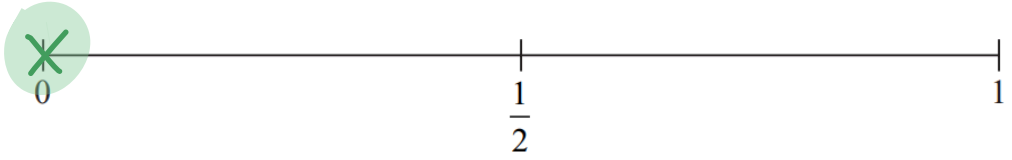
[Edexcel, GCSE, Summer 2017, Paper 2F, Q7]

13

Shari has a fair ordinary dice.

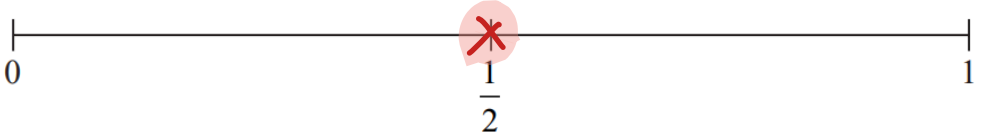
She rolls the dice once.

(a) On the probability scale, mark with a cross (×) the probability that Shari gets the number 7



(1)

(b) On the probability scale, mark with a cross (×) the probability that Shari gets an even number.



(1)

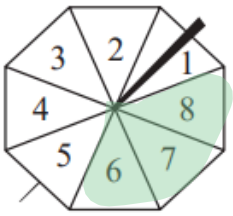
(Total for Question 6 is 2 marks)

[Edexcel, GCSE, Summer 2023, Paper 2F, Q6]

14

Here is a fair ordinary dice and a fair 8-sided spinner.





Charlie throws the dice once and spins the spinner once.

Is Charlie more likely to get

a number less than 3 on the dice → $\frac{2}{6}$

or a number greater than 5 on the spinner? → $\frac{3}{8}$

You must show all your working.

$\frac{3}{8} > \frac{2}{6}$

$0.375 > 0.333\dot{}$

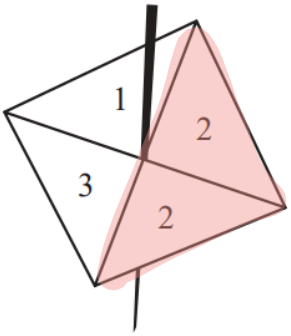
A number greater than 5 on the spinner.

(Total for Question 15 is 3 marks)

[Edexcel, GCSE, Summer 2023, Paper 2F, Q15]

15

Here is a 4-sided spinner.



Samina spins the spinner once.

(a) Choose the word that best describes the probability that the spinner lands on 2

impossible	unlikely	evens	likely	certain

evens

(1)

(b) Choose the word that best describes the probability that the spinner lands on a number less than 4

impossible	unlikely	evens	likely	certain

Certain

(1)

Ralph rolls a biased dice once.
The probability that he gets the number 5 is 0.4

(c) Work out the probability that Ralph does **not** get the number 5

$1 - 0.4 = 0.6$

(1)

(Total for Question 7 is 3 marks)

[Edexcel, GCSE, Summer 2023, Paper 3F, Q7]

16

Here is a list of 8 letters.

B C A A A A B A

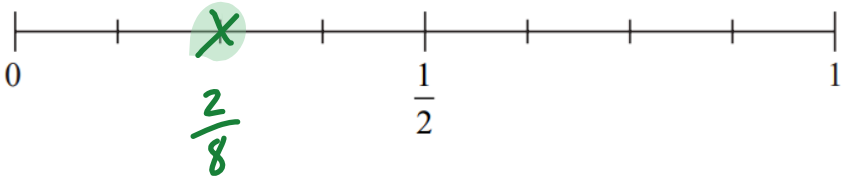
(a) Write down the mode.

A

(1)

One of the 8 letters is going to be picked at random.

(b) (i) On the probability scale, mark with a cross (×) the probability that this letter will be B.



(1)

(ii) Find the probability that this letter will be C.

1/8

(1)

(Total for Question 7 is 3 marks)

[Edexcel, GCSE, November 2022, Paper 1F, Q7]

17

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

The table shows the number of blue counters in the bag.

Colour	blue	green	red	yellow
Number of counters	30			

There is a total of 100 counters in the bag.

Ashin takes at random a counter from the bag.

$P(\text{Blue}) = \frac{30}{100} = \frac{3}{10}$

(a) Find the probability that the counter is **not** blue.

$P(\text{Not blue}) = \frac{7}{10}$

(2)

The ratio of the number of blue counters to the number of green counters is 2 : 3

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

B : G
2 : 3
30 : 45

45

(2)

Bradley says,

"The number of red counters in the bag is the same as the number of yellow counters in the bag."

(c) Can Bradley be correct?
Give a reason for your answer.

No. There are 25 counters remaining so there can't be 12.5 counters of each colour (half of 25)

(1)

(Total for Question 17 is 5 marks)

[Edexcel, GCSE, November 2022, Paper 1F, Q17]

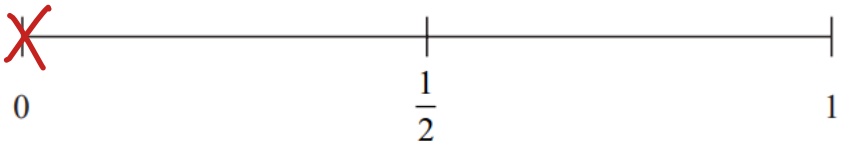
18

Here is a list of 8 numbers.

2 2 3 5 6 6 8 9

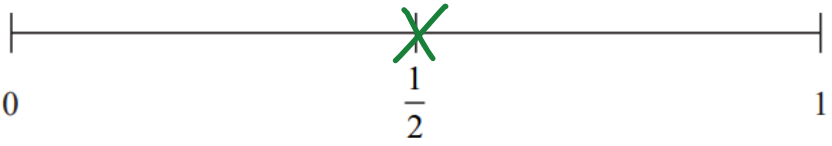
Kim picks at random one of these numbers.

(a) On the probability scale below, mark with a cross (×) the probability that Kim picks a number 7



(1)

(b) On the probability scale below, mark with a cross (×) the probability that Kim picks a number greater than 5



(1)

(c) Find the probability that Kim picks an even number.

5/8

.....

(2)

(Total for Question 10 is 4 marks)

[Edexcel, GCSE, Summer 2022, Paper 3F, Q10]