



THIRD SPACE
LEARNING

GCSE Exam Questions

Probability of Events |
Probability

GCSE Exam Questions: Probability of Events

1) A factory makes electric toy cars.

A quality control officer checks that each car has no faults before it is put in a sales box.

The officer estimates that the probability that a toy car has a fault is 0.1.

(a) What is the probability that a toy car has no faults?

(2)

(b) Two toy cars are selected at random from the factory.

What is the probability that they both have faults?

(2)

(c) Three toy cars are selected at random from the factory.

What is the probability that exactly two of the toy cars have faults?

(3)
(7 marks)

GCSE Exam Questions: Probability of Events

- 2) Jess and Ramaitha have a small box of chocolates each.
In Jess’s box there are two nut chocolates and one caramel.
In Ramaitha’s box there is one nut chocolate, one caramel and two mint chocolates.
Jess and Ramaitha both choose a chocolate from their own box.

(a) Complete a sample space diagram to illustrate all the combined outcomes.

		Ramaitha			
		Nut	Caramel	Mint	Mint
Jess	Nut	NN	NC	NM	
	Nut				
	Caramel				

(2)

(b) What is the probability that Jess and Ramaitha select the same type of chocolate

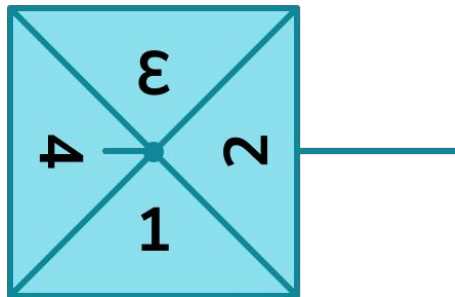
(1)

(c) Jess and Ramaitha then select a second chocolate from their respective boxes and eat both.
What is the probability that Jess eats two nut chocolates and Ramaitha eats two mint chocolates?

(3)
(6 marks)

GCSE Exam Questions: Probability of Events

- 3) A biased four-sided spinner has the numbers 1, 2, 3 and 4 on it.



The table shows the probability that the spinner will land on each of the numbers 1, 2 and 3.

Number	1	2	3	4
Probability	0.2	0.4	0.1	

- (a) What is the probability that the spinner will land on 4?

(2)

- (b) The spinner is spun twice. What is the probability that it will land on 1 and then land on 2?

(2)

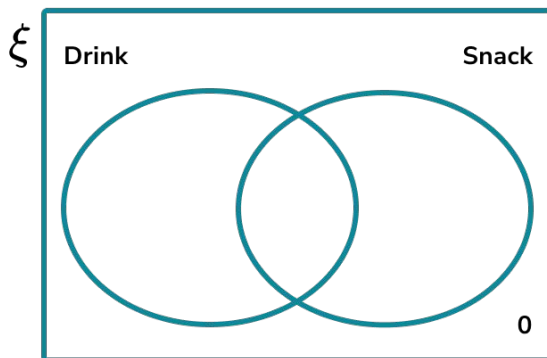
- (c) The spinner is spun twice and the two numbers it lands on are added together.

What is the probability that the total will be 4?

(3)
(7 marks)

GCSE Exam Questions: Probability of Events

- 4) A flight attendant serves 45 passengers. They note that:
- 39 passengers chose a drink.
 - 27 passengers chose a snack.
 - All passengers chose something.
 - Some passengers had both a drink and a snack.
- (a) Complete the Venn diagram to represent the choices of the passengers.



(2)

- (b) Two passengers are chosen at random.
- What is the probability that each of them chose both a drink and a snack?

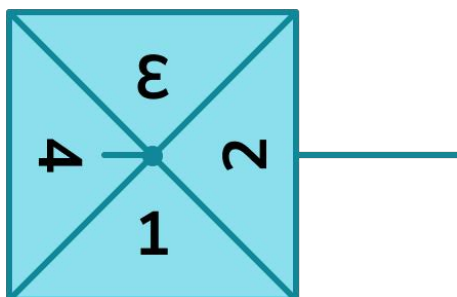
(3)

(5 marks)

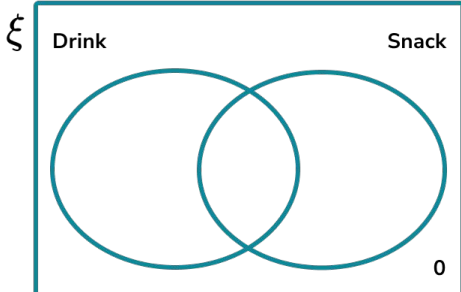
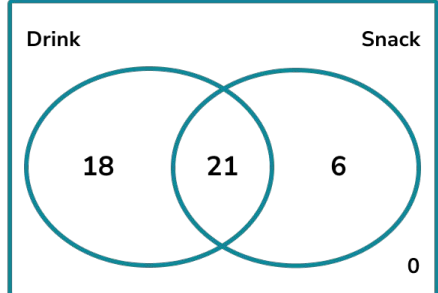
GCSE Exam Questions: Probability of Events Answers

	Question	Answer	Marks																																																				
1)	<p>A factory makes electric toy cars. A quality control officer checks that each car has no faults before it is put in a sales box.</p> <p>The officer estimates that the probability that a toy car has a fault is 0.1.</p>																																																						
(a)	What is the probability that a toy car has no faults?	(a) $1 - 0.1$ 0.9	(1) (1)																																																				
(b)	Two toy cars are selected at random from the factory. What is the probability that they both have faults?	(b) 0.1×0.1 0.01	(1) (1)																																																				
(c)	Three toy cars are selected at random from the factory. What is the probability that exactly two of the toy cars have faults?	(c) $P(\text{Fault, Fault, No fault})$ $= 0.1 \times 0.1 \times 0.9 = 0.009$ 3×0.009 0.027	(1) (1) (1)																																																				
2)	<p>Jess and Ramaitha have a small box of chocolates each.</p> <p>In Jess's box there are two nut chocolates and one caramel.</p> <p>In Ramaitha's box there is one nut chocolate, one caramel and two mint chocolates.</p> <p>Jess and Ramaitha both choose a chocolate from their own box.</p>																																																						
(a)	<p>Draw a sample space diagram to illustrate all the combined outcomes.</p> <table><tr><th colspan="2" rowspan="2"></th><th colspan="4">Ramaitha</th></tr><tr><th>Nut</th><th>Caramel</th><th>Mint</th><th>Mint</th></tr><tr><th rowspan="3">Jess</th><th>Nut</th><td>NN</td><td>NC</td><td>NM</td><td></td></tr><tr><th>Nut</th><td></td><td></td><td></td><td></td></tr><tr><th>Caramel</th><td></td><td></td><td></td><td></td></tr></table>			Ramaitha				Nut	Caramel	Mint	Mint	Jess	Nut	NN	NC	NM		Nut					Caramel					<p>(a)</p> <table><tr><th colspan="2" rowspan="2"></th><th colspan="4">Ramaitha</th></tr><tr><th>Nut</th><th>Caramel</th><th>Mint</th><th>Mint</th></tr><tr><th rowspan="3">Jess</th><th>Nut</th><td>NN</td><td>NC</td><td>NM</td><td>NM</td></tr><tr><th>Nut</th><td>NN</td><td>NC</td><td>NM</td><td>NM</td></tr><tr><th>Caramel</th><td>CN</td><td>CC</td><td>CM</td><td>CM</td></tr></table> <p>For 4 correct entries</p> <p>For a completely correct table with all correct outcomes.</p>			Ramaitha				Nut	Caramel	Mint	Mint	Jess	Nut	NN	NC	NM	NM	Nut	NN	NC	NM	NM	Caramel	CN	CC	CM	CM	(1) (1)
				Ramaitha																																																			
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(b)	What is the probability that Jess and Ramaitha select the same type of chocolate?	(b) $\frac{3}{12}$ oe	(1)																																																				
(c)	Jess and Ramaitha then select a second chocolate from their respective boxes and eat both. What is the probability that Jess eats two nut chocolates and Ramaitha eats two mint chocolates?	(c) $\frac{2}{3} \times \frac{1}{2} = \frac{2}{6}$ oe $\frac{2}{4} \times \frac{1}{3} = \frac{2}{12}$ oe $\frac{1}{3} \times \frac{1}{6} = \frac{1}{18}$ oe	(1) (1) (1)																																																				

GCSE Exam Questions: Probability of Events Answers

	Question	Answer	Marks										
3)	<p>A biased four-sided spinner has the numbers 1, 2, 3 and 4 on it.</p> <div></div> <p>The table shows the probability that the spinner will land on each of the numbers 1, 2 and 3.</p> <table><tr><th>Number</th><th>1</th><th>2</th><th>3</th><th>4</th></tr><tr><td>Probability</td><td>0.2</td><td>0.4</td><td>0.1</td><td></td></tr></table>	Number	1	2	3	4	Probability	0.2	0.4	0.1			
Number	1	2	3	4									
Probability	0.2	0.4	0.1										
(a)	What is the probability that the spinner will land on 4?	(a) $1 - 0.2 - 0.4 - 0.1$ 0.3	(1) (1)										
(b)	The spinner is spun twice. What is the probability that it will land on 1 and then land on 2?	(b) 0.2×0.4 0.08	(1) (1)										
(c)	The spinner is spun twice and the two numbers it lands on are added together. What is the probability that the total will be 4?	(c) There are 3 permutations that produce the sum of 4 $1 + 3 = 4$ $3 + 1 = 4$ $2 + 2 = 4$ (1) $0.2 \times 0.1 = 0.02$ $0.1 \times 0.2 = 0.02$ $0.4 \times 0.4 = 0.16$ 0.02 and 0.16 $0.02 + 0.02 + 0.16 = 0.2$	(1) (1) (1)										

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	Question	Answer	Marks
4)	<p>A flight attendant serves 45 passengers. They note that: 39 passengers chose a drink. 27 passengers chose a snack. All passengers chose something. Some passengers had both a drink and a snack.</p>		
(a)	<p>Draw a Venn diagram to represent the drink choices of the passengers.</p> 	<p>(a) ξ</p>  <p>$39 + 27 - 45 = 21$ Fully correct diagram</p>	<p>(1) (1)</p>
(b)	<p>Two passengers are chosen at random. What is the probability that each of them chose both a drink and a snack?</p>	<p>(b) Second probability = $\frac{20}{44}$</p> <p>$\frac{21}{45} \times \frac{20}{44}$</p> <p>$\frac{420}{1980}$ oe</p>	<p>(1) (1) (1)</p>

Where to go next?

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