

6.6

Probability

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14 (a) Write down the probability of an event that is certain to happen.

.....
(1)

Eliya has a biased dice.

The probability that the dice will land on the number 5 is 0.3

(b) Find the probability that the dice will **not** land on the number 5

.....
(1)

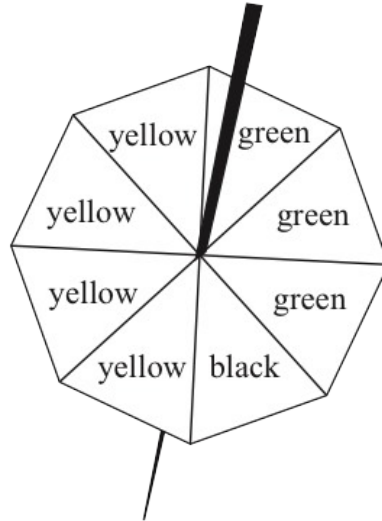
Eliya throws the dice 150 times.

The probability that the dice will land on the number 5 is 0.3

(c) Work out an estimate for the number of times that the dice will land on the number 5

.....
(2)

4 The diagram shows a fair 8-sided spinner.



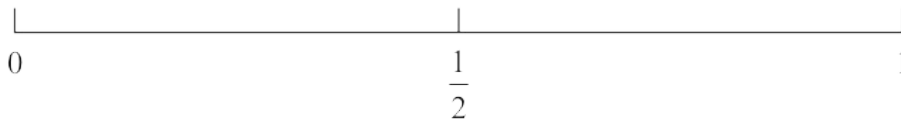
4 sides of the spinner are yellow, 3 sides are green and 1 side is black.

Jan spins the spinner once.

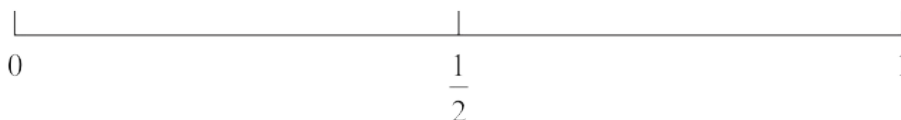
(i) Circle the word from the list below that best describes the likelihood that the spinner lands on black.

impossible unlikely evens likely certain

(ii) On the probability scale, mark with a cross (×) the probability that the spinner lands on white.



(iii) On the probability scale, mark with a cross (×) the probability that the spinner lands on yellow.



(Total for Question 4 is 3 marks)

20 There are only white counters, blue counters and red counters in a bag.

Charlie takes at random a counter from the bag.

The probability that he takes a red counter is $\frac{1}{12}$

The probability that he takes a white counter is three times the probability that he takes a blue counter.

Work out the probability that Charlie takes a blue counter.

(Total for Question 20 is 3 marks)

- 10 Jim puts 4 white tiles and 3 grey tiles into a bag.
Each tile has a letter on it.



Jim takes at random a tile from the bag.

- (a) Write down the letter that Jim is most likely to take.

.....
(1)

- (b) Write down the probability that the tile is grey with the letter C on it.

.....
(1)

- (c) Write down the probability that the tile does not have the letter A on it.

.....
(1)

Jim puts the tile back into the bag.
He then puts more grey tiles into the bag.
Each of these tiles has the letter C on it.

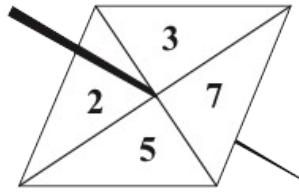
Alice takes at random a tile from the bag.

The probability that this tile has the letter C on it is $\frac{1}{2}$

- (d) Work out the probability that the tile Alice takes is grey with the letter C on it.

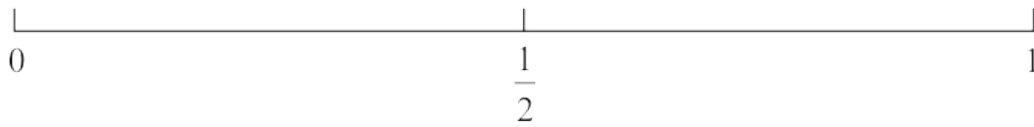
.....
(2)

- 11 Duncan has a fair 4-sided spinner.
The spinner can land on 2, 3, 5 or 7

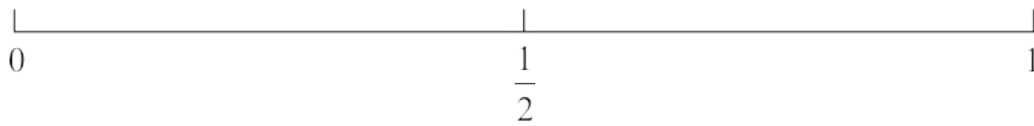


Duncan spins the spinner once.

- (a) (i) On the probability scale, mark with a cross (\times) the probability that the spinner lands on 4



- (ii) On the probability scale, mark with a cross (\times) the probability that the spinner lands on an odd number.



(2)

- 2 Daniel has five bags of coloured sweets.
He picks at random a sweet from each bag.
The table shows the probability that the sweet he picks from each bag is red.

Bag	A	B	C	D	E
Probability of red	0.7	0.9	0.5	1	0.2

- (a) From which bag is Daniel least likely to pick a red sweet?

.....
(1)

- (b) Which bag contains only red sweets?

.....
(1)

- (c) From which bag is Daniel equally likely to pick a red sweet as a sweet of another colour?

.....
(1)

- 10 Last Thursday, 135 students each bought one item of fruit.
The table shows information about the 135 items of fruit they bought.

Fruit	apple	pear	orange	banana	peach
Number of students	36	15	27	33	24

One of the 135 students is chosen at random.

- (a) Find the probability that this student bought an apple or a banana.

.....
(2)

A pie chart is drawn for the information in the table.

- (b) Work out the size of the angle in the pie chart for oranges.

.....
(2)

14 Javier has two sets of cards.

Each set contains 4 cards, one marked **A**, one marked **B**, one marked **C** and one marked **D**.

Javier is going to take at random one card from each set.

The table shows all possible pairs of cards that Javier could take.

		Set 2			
		A	B	C	D
Set 1	A	AA	AB	AC	AD
	B	BA	BB	BC	BD
	C	CA	CB	CC	CD
	D	DA	DB	DC	DD

(a) Find the probability that Javier will take at least one card marked **C**.

.....
(2)

Javier is going to take at random one card from each set, note the letter on each card and replace the cards.

He is going to do this a total of 80 times.

(b) Work out an estimate for the number of times that Javier will take at least one card marked **C**.

.....
(2)

10 There are 20 counters in bag **X**.

7 of the counters are green.

10 of the counters are red.

The rest of the counters are blue.

Ruth takes at random a counter from bag **X**.

(a) Write down the probability that the counter is red.

.....
(1)

(b) Work out the probability that the counter is blue.

.....
(1)

Ruth puts the counter back into bag **X**.

Bag **Y** only contains green counters, red counters and blue counters.

In bag **Y** there are,

2 more green counters than in bag **X**

1 more red counter than in bag **X**

2 more blue counters than in bag **X**

Adam takes at random a counter from bag **Y**.

Ruth takes at random a counter from bag **X**.

(c) Who has the greater probability of taking a green counter, Adam or Ruth?

Show your working clearly.

(3)

10 All the teachers at a school are either left footed or right footed.

At the school

the number of left footed teachers : the number of right footed teachers = 3 : 13

A teacher at the school is picked at random.

(a) Find the probability that this teacher is left footed.

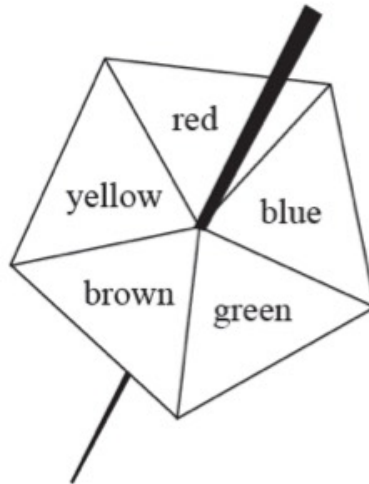
(1)

At the school, there are 18 left footed teachers.

(b) How many right footed teachers are there?

(2)

15 Here is a biased 5-sided spinner.



Kenny spins the spinner once.

The table gives the probabilities that the spinner lands on red or on blue or on green.

Colour	red	blue	green	brown	yellow
Probability	0.15	0.26	0.33		

(a) Work out the probability that the spinner lands on red or blue.

(1)

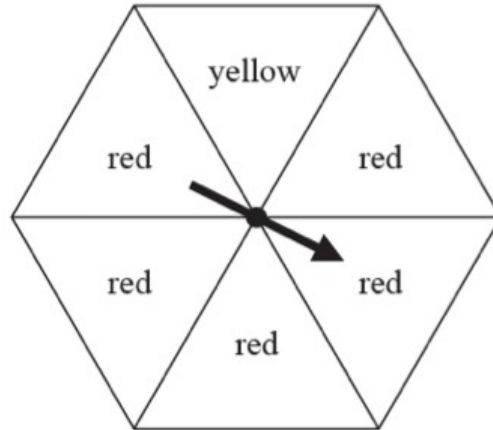
When the spinner is spun once, the probability that the spinner lands on brown is 0.06 more than the probability that the spinner lands on yellow.

Jenine spins the spinner 150 times.

(b) Work out an estimate for the number of times the spinner lands on yellow.

(4)

2 The diagram shows a fair spinner.



Mikail spins the arrow on the spinner once.

impossible	unlikely	evens	likely	certain
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(a) Write down the word from the box that best describes the likelihood that the arrow will land on

(i) red,

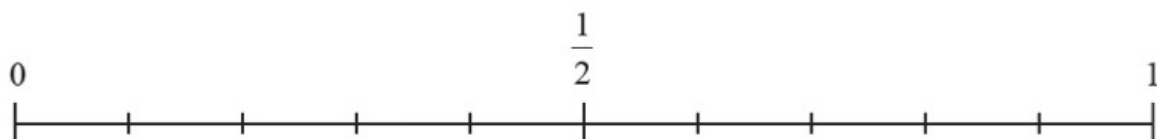
(ii) blue.

(2)

10 balls are in a bag.
3 of these balls are green.

Jill takes at random a ball from the bag.

(b) On the probability scale below, mark with a cross (×) the probability that the ball is green.



(1)

- 6 Steve throws a 6-sided dice.
The dice can land on 1 or on 2 or on 3 or on 4 or on 5 or on 6
- He also spins a coin.
The coin can land on heads (H) or on tails (T).
- List all the possible combinations he could get.

(Total for Question 6 is 2 marks)

17 There are 90 counters in a bag.

Each counter in the bag is either red or blue so that

the number of red counters : the number of blue counters = 2 : 13

Li is going to put some more red counters in the bag so that

the probability of taking at random a red counter from the bag is $\frac{1}{3}$

Work out the number of red counters that Li is going to put in the bag.

10 There are 20 beads in a box.

7 of the beads are red.

11 of the beads are green.

The rest of the beads are yellow.

Jan takes at random a bead from the box.

(a) Write down the probability that she takes a red bead.

(1)

(b) Find the probability that she takes a red bead or a yellow bead.

(2)

There are 26 counters in a bag.

5 of the counters are pink.

10 of the counters are blue.

The rest of the counters are white.

Jan puts some more pink counters into the bag.

She then takes some blue counters out of the bag.

After she has done this there are still 26 counters in the bag.

Jan then takes at random a counter from the bag.

The probability that she takes a pink counter is $\frac{1}{2}$

(c) What is the probability that she takes a blue counter?

(3)

- 6 80 students studying sciences were asked which science subject they liked the best.

Some information about the results is shown in the two-way table.

	Biology	Chemistry	Physics	Total
Boys	25		7	
Girls		4		43
Total	31			80

- (a) Complete the two-way table.

(3)

One of the students is picked at random.

- (b) Write down the probability that this student is a girl.

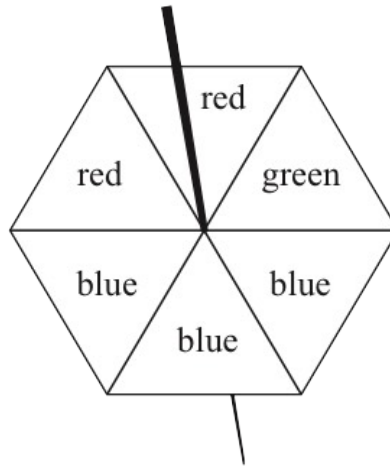
(1)

One of the girls is picked at random.

- (c) Write down the probability that this girl likes Chemistry the best.

(2)

4 The diagram shows a fair 6-sided spinner.



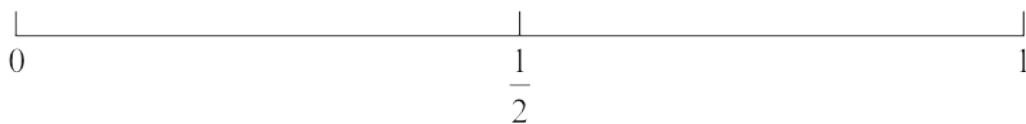
Rami is going to spin the spinner once.

(a) Circle the word in the box below that best describes the likelihood that the spinner will land on green.

impossible	unlikely	evens	likely	certain
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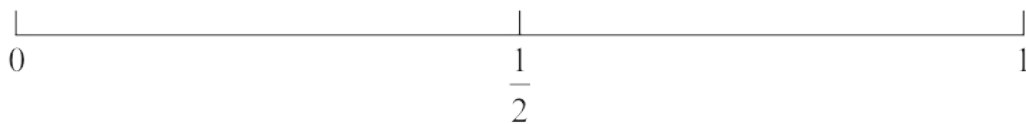
(1)

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



(1)

(c) On the probability scale below, mark with a cross (X) the probability that the spinner will land on yellow.



(1)

19 Becky has a biased 6-sided dice.

The table gives information about the probability that, when the dice is thrown, it will land on each number.

Number	1	2	3	4	5	6
Probability	$2x$	0.18	$2x$	$3x$	0.26	x

Becky is going to throw the dice 200 times.

Work out an estimate for the number of times that the dice will land on an even number.

(Total for Question 19 is 4 marks)

7 In a game, a fair 3-sided spinner is spun once and a fair dice is rolled once.



The spinner can land on 1, 2 or 3
 The dice can land on 1, 2, 3, 4, 5 or 6

In the game, the score is found by multiplying the number the spinner lands on by the number the dice lands on.

(a) Complete the table to show all possible scores.
 Eleven of the scores have been done for you.

		Dice					
		1	2	3	4	5	6
Spinner	1	1	2	3	4		
	2		4		8	10	
	3	3	6		12		18

(2)

Steven plays the game once.

(b) Work out the probability that his score is greater than 10

(2)

Adam plays the game and Carmen plays the game.

Adam gets a prize if his score is 5 or less.

Carmen gets a prize if her score is a multiple of 6

Carmen says the game is unfair because Adam is more likely to get a prize.

(c) Is the game unfair?

You must give a reason for your answer.

.....

.....

.....

(2)

9 A bag of 11 counters contains

- 3 purple counters
- 2 orange counters
- 6 white counters

A counter is going to be taken at random from the bag.

(a) Find the probability that the counter will be

(i) orange

.....

(ii) not white

.....

(iii) green

.....

(3)

A box of 12 toy cars contains

- 3 red cars
- 4 blue cars
- 5 yellow cars

Some extra **red** cars are put in the box.

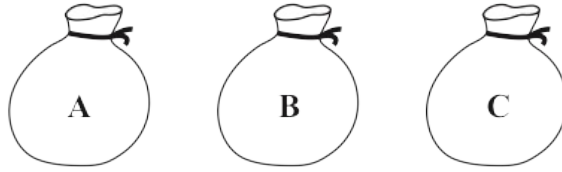
When a car is taken at random from the box, the probability that the car is yellow is $\frac{1}{6}$

(b) Work out the number of extra red cars that are put in the box.

.....

(2)

12 Three bags, **A**, **B** and **C**, each contain some marbles.



There is a total of 75 marbles in the three bags.

$\frac{1}{5}$ of the marbles are in bag **A**.

There are 4 more marbles in bag **B** than in bag **C**.

Work out the number of marbles in each bag.

Bag **A**

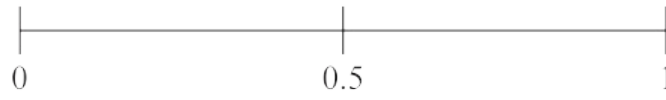
Bag **B**

Bag **C**

(Total for Question 12 is 3 marks)

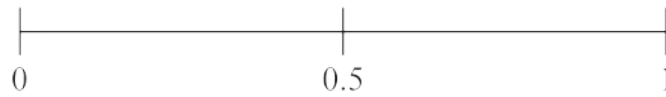
4 Imran throws an ordinary fair dice.

(a) On the probability scale, mark with a cross (×) the probability that the dice will land on 10



(1)

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



(1)

9 There are 25 pens in a packet.

7 of the pens are green.

10 of the pens are black.

The rest of the pens are red.

Jurgen takes at random a pen from the packet.

(a) Find the probability that

(i) the pen is black,

.....
(1)

(ii) the pen is red.

.....
(1)

22 A bag contains only red beads, blue beads, green beads and yellow beads.

The table gives the probabilities that, when a bead is taken at random from the bag, the bead will be blue or the bead will be yellow.

Colour	red	blue	green	yellow
Probability		0.24		0.31

The probability that the bead will be green is twice the probability that the bead will be red.

Sofia takes at random a bead from the bag.

She writes down the colour of the bead and puts the bead back into the bag.

She does this 180 times.

Work out an estimate for the number of times she takes a red bead from the bag.

7 Mohsen is going to a party.

He will choose at random one shirt from the three shirts and one pair of trousers from the three pairs of trousers in the list below.

Shirts	Trousers
Blue (B)	Green (G)
Red (R)	Orange (O)
Yellow (Y)	Purple (P)

(a) Write down all the possible combinations that Mohsen can choose.

.....

.....

.....

(2)

(b) Find the probability that Mohsen chooses the red shirt to wear to the party.

.....

(1)

There are 20 counters in a bag.

4 of the counters are pink.

9 of the counters are white.

The rest of the counters are black.

Jean takes at random one counter from the bag.

(c) Work out the probability that Jean takes a black counter.

.....

(2)

- 8 Lin has 60 bricks.
He puts his 60 bricks into a bag.

Some information about the 60 bricks is shown in the two-way table.

	orange	blue	yellow	Total
small		7	14	
large	13			33
Total		23		60

- (a) Complete the two-way table.

(3)

One of the bricks is taken at random from the bag.

- (b) Write down the probability that this brick is blue.

.....
(1)

Lin now puts all his large bricks into a sack.
He takes at random a large brick from the sack.

- (c) Write down the probability that this large brick is orange.

.....
(2)

15 Toy cars are made in a factory.

The toy cars are made for 15 hours each day.

5 toy cars are made every 12 seconds.

For the toy cars made each day, the probability of a toy car being faulty is 0.002

Work out an estimate of the number of faulty toy cars that are made each day.

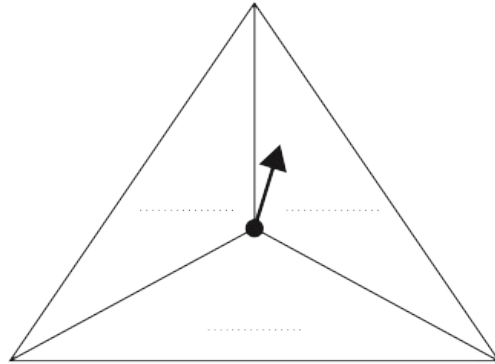
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(Total for Question 15 is 4 marks)

2 Sandeep is designing some 3-sided spinners.

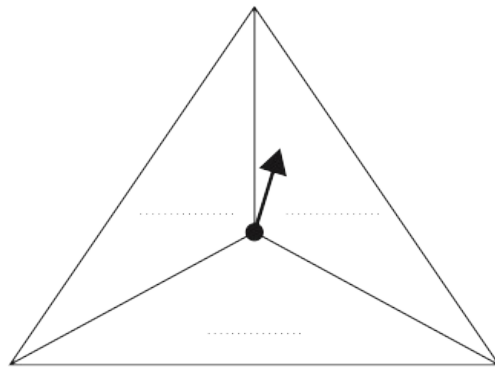
He is going to spin each spinner once.

(a) (i) Write a different number on each dotted line so that when the spinner is spun it is **impossible** that the spinner will land on a number greater than 9



(1)

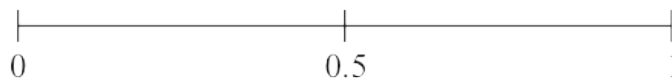
(ii) Write a different number on each dotted line so that when the spinner is spun it is **certain** that the spinner will land on a multiple of 10



(1)

The likelihood of an outcome is **evens**.

(b) On the probability scale, mark with a cross (×) the probability of this outcome.



(1)

(Total for Question 2 is 3 marks)

15 A bag contains 30 coloured counters.

The table gives the number of counters of each colour.

Colour	Red	Green	Yellow	Blue
Number of counters	7	13	4	6

One of the counters is taken at random from the bag.

(a) Write down the probability that this counter is green.

.....
(1)

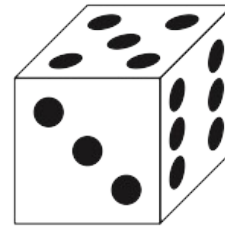
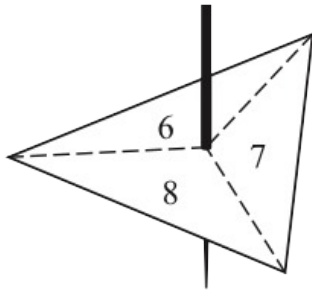
(b) Write down the probability that this counter is **not** red.

.....
(2)

9 Grace has a fair spinner and a fair dice.

The spinner is 3-sided and can land on 6, 7 or 8

The dice can land on 1, 2, 3, 4, 5 or 6



Grace spins the spinner once and throws the dice once.

Grace subtracts the number that the dice lands on from the number that the spinner lands on to get her score.

- (a) Complete the table to show all possible scores.
Eight of the scores have been done for you.

		Number on dice					
		1	2	3	4	5	6
Number on spinner	6	5	4	3	2	1	0
	7			4			
	8		6				

(2)

Grace spins the spinner once and throws the dice once.

- (b) Find the probability that her score is less than 6

.....
(1)

- (c) Find the probability that her score is an odd number.

.....
(1)

2 Caroline has a bag containing 10 counters.

In the bag there are

- 7 red counters
- 2 blue counters
- 1 green counter

Caroline is going to choose at random a counter from the bag.

impossible	unlikely	evens	likely	certain
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(a) Write down the word from the box that best describes the likelihood that Caroline will take

(i) a red counter,

.....

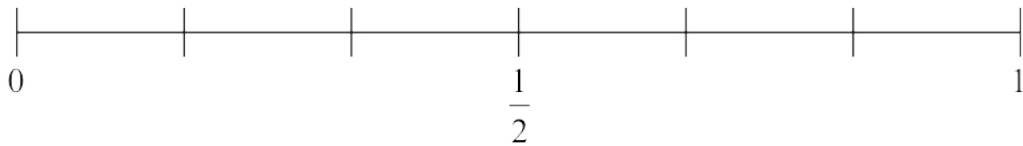
(ii) a yellow counter.

.....

(2)

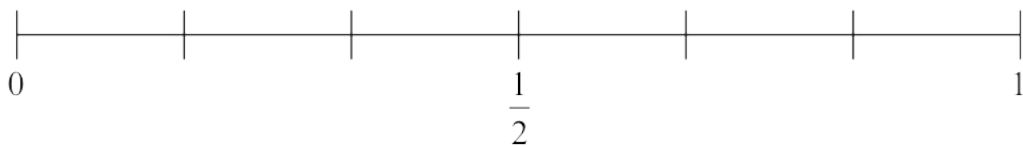
Jamil is going to roll a fair six-sided dice.

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



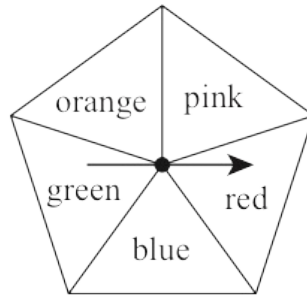
(1)

(c) On the probability scale, mark with a cross (×) the probability that the dice will land on 2



(1)

21 Grace has a biased 5-sided spinner.



Grace is going to spin the arrow on the spinner once.

The table below gives the probabilities that the spinner will land on red or on blue or on green.

Colour	Red	Blue	Green	Orange	Pink
Probability	0.20	0.12	0.08		

The probability that the spinner will land on orange is 3 times the probability that the spinner will land on pink.

(a) Work out the probability that the spinner will land on orange.

.....
(3)

Grace spins the arrow on the spinner 150 times.

(b) Work out an estimate for the number of times the spinner lands on blue.

.....
(2)

- 7 Hassan is going to eat at a restaurant.
Here is the menu at the restaurant.

Starter	Main course
Fruit (F) Prawns (P) Soup (S)	Burger (B) Curry (C) Lasagne (L) Risotto (R)

Hassan is going to choose one starter and one main course from the menu.

List all the possible combinations that Hassan can choose.

.....

.....

.....

(Total for Question 7 is 2 marks)

13 There are some counters in a bag.

7 of the counters are blue.

5 of the counters are green.

The rest of the counters are yellow.

One counter is going to be taken at random from the bag.

The probability that the counter is blue or is green is $\frac{6}{13}$

Work out how many yellow counters there are in the bag.

.....

(Total for Question 13 is 3 marks)

- 19 The table gives information about the amounts of money, in euros, that 70 of Anjali's friends spent last Saturday.

Money spent (S euros)	Frequency
$0 < S \leq 8$	6
$8 < S \leq 16$	14
$16 < S \leq 24$	19
$24 < S \leq 32$	25
$32 < S \leq 40$	6

One of Anjali's 70 friends is going to be chosen at random.

- (a) Find the probability that this friend spent more than 24 euros last Saturday.

.....
(1)

- 6 Bohai works in a shop that sells mobile phones.
Last week he sold one mobile phone to each of 300 customers.

The incomplete two-way table shows some information about these mobile phones.

	32 GB	64 GB	128 GB	Total
type A	75		83	195
type B		29		
Total	127			300

Bohai selects at random one of these 300 customers.

- (b) Write down the probability that this customer bought a type **B**, 64GB mobile phone.

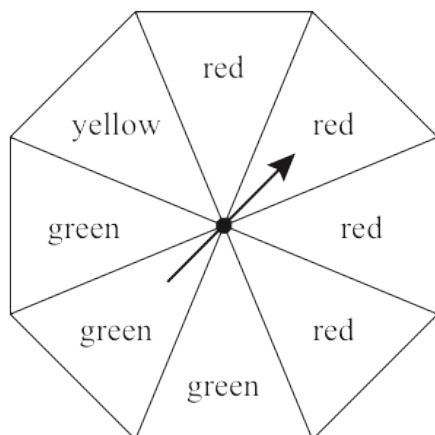
.....
(1)

Bohai now selects at random one of the customers who bought a type **A** phone last week.

- (c) Write down the probability that this customer bought a 128GB mobile phone.

.....
(2)

3 The diagram shows a fair 8-sided spinner.



Hollie is going to spin the spinner once.

impossible unlikely evens likely certain

(a) Write down the word from the box above that best describes the likelihood that the spinner will land on

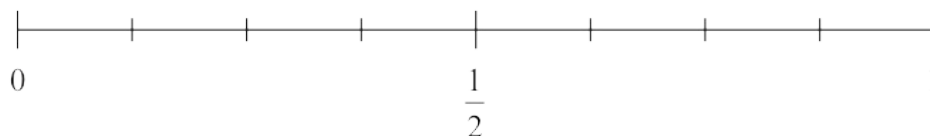
(i) yellow

.....
(1)

(ii) red.

.....
(1)

(b) On the probability scale below, mark with a cross (×) the probability that the spinner will land on blue.



(1)

(Total for Question 3 is 3 marks)

10 In a library there are two trolleys of books.

On trolley 1 the subjects of the books are Buildings (B), Rivers (R) and Space (S).

On trolley 2 the subjects of the books are Buildings (B), History (H) and Animals (A).

Tomos takes one book from trolley 1 and one book from trolley 2

Write down all the possible combinations of subjects that Tomos can take.

(Total for Question 10 is 2 marks)

21 A bag contains only pink sweets, white sweets, green sweets and red sweets.

The table gives each of the probabilities that, when a sweet is taken at random from the bag, the sweet will be green or the sweet will be red.

Sweet	pink	white	green	red
Probability			0.2	0.35

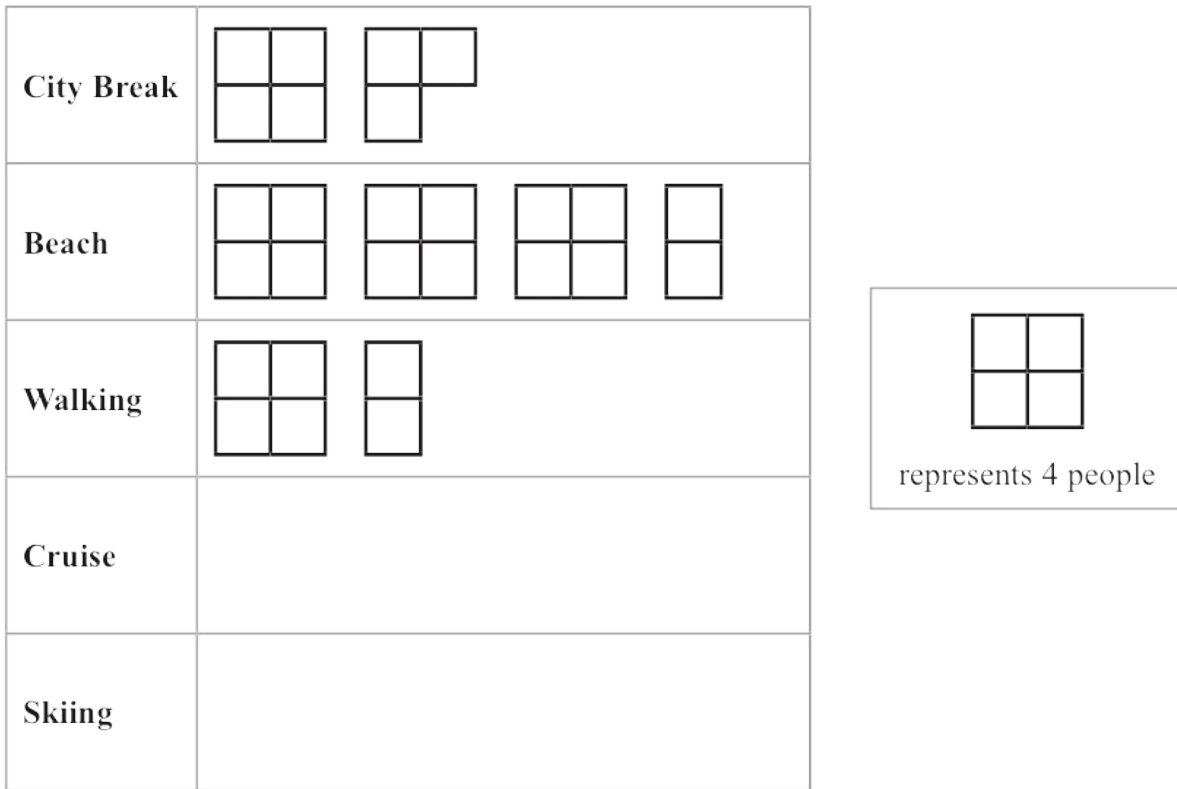
The ratio

number of pink sweets : number of white sweets = 2 : 1

There are 28 red sweets in the bag.

Work out the number of white sweets in the bag.

- 4 40 people were asked to name their favourite type of holiday.
 The pictogram gives information about the number of these people who said each of
 City Break or Beach or Walking.



One person from the 40 people asked is selected at random.

- (c) Find the probability that this person said City Break.

.....
 (2)

16 Each time John plays a game, the probability that he wins the game is 0.65

John is going to play the game 300 times.

Work out an estimate for the number of games that John wins.

.....
(Total for Question 16 is 2 marks)

11 At school each week, Gabriella has to play a sport on Monday and a sport on Thursday.

The table shows the sports from which she can choose on Monday and the sports from which she can choose on Thursday.

Monday	Thursday
Tennis (T)	Volleyball (V)
Netball (N)	Badminton (B)
Hockey (H)	Tennis (T)

Write down all the possible combinations of these sports that Gabriella can play in one week.

.....
.....
.....

(Total for Question 11 is 2 marks)

- 18** A tin contains tea bags with a choice of four different flavours of tea.
The four flavours of tea are Assam or Darjeeling or Nilgiri or Rize.

Sara takes at random a tea bag from the tin.

The table shows each of the probabilities that the flavour of the tea Sara takes is Assam or Darjeeling or Rize.

Flavour of tea	Assam	Darjeeling	Nilgiri	Rize
Probability	0.38	0.24		0.16

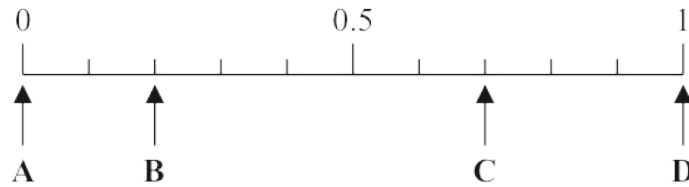
- (a) Work out the probability that the flavour of the tea Sara takes is Nilgiri.

.....
(2)

- (b) Work out the probability that the flavour of the tea Sara takes is either Darjeeling or Rize.

.....
(2)

3 Here is a probability scale.



In a fruit bowl, there are only

- 3 bananas
- 7 pears

Shimon is going to take at random one of the fruits from the bowl.

(a) Write down the letter of the arrow that points to the probability that Shimon takes

(i) a pear,

.....
(1)

(ii) a grape.

.....
(1)

Emma has some carrots, some potatoes and some onions in a bag.

She says that the probability of taking at random a carrot from the bag is 1.4

Emma is not correct.

(b) Explain why.

.....
.....
(1)

10 Anjali wants to go on a boat at the seaside.

At the seaside there are 20 boats.

Of these boats

2 are white

5 are blue

7 are green

6 are yellow

Anjali selects at random one of these boats.

Write down the probability that she selects

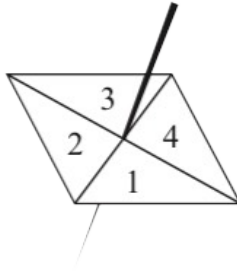
(i) a green boat,

.....
(1)

(ii) a white boat or a yellow boat.

.....
(2)

17 Here is a biased 4-sided spinner.



The table gives the probabilities that, when the spinner is spun once, it will land on 1 or it will land on 3

Number	1	2	3	4
Probability	0.26		0.18	

The probability that the spinner will land on 2 is equal to the probability that the spinner will land on 4

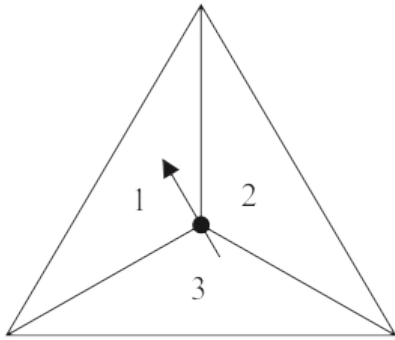
Ravina is going to spin the spinner a number of times.

Ravina works out that an estimate for the number of times the spinner will land on 3 is 45

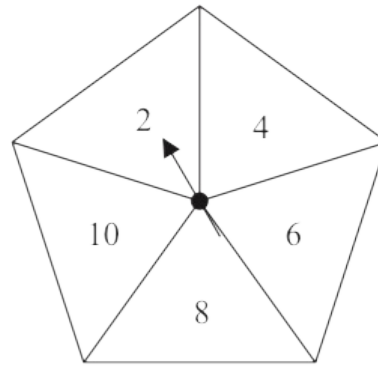
Work out an estimate for the number of times the spinner will land on 4

(Total for Question 17 is 4 marks)

- 5 Jian has two fair spinners.
 Spinner **A** is 3-sided and can land on 1, 2 or 3
 Spinner **B** is 5-sided and can land on 2, 4, 6, 8 or 10



Spinner **A**



Spinner **B**

Jian spins each spinner once.

He adds together the number that spinner **A** lands on and the number that spinner **B** lands on to get his total score.

- (a) Complete the table to show all possible total scores.
 Five of the total scores have been done for you.

Spinner **A**

		1	2	3
Spinner B	2	3		
	4			7
	6	7		
	8		10	
	10		12	

(2)

- (b) Find the probability that

- (i) Jian's total score is an odd number

.....
 (1)

- (ii) Jian's total score is less than 9

.....
 (1)

13 Hazel is buying a snack and a drink.

She can have a bar of chocolate (*B*) or some fruit (*F*) or a packet of crisps (*C*) as her snack.

She can have orange juice (*O*) or apple juice (*A*) or water (*W*) as her drink.

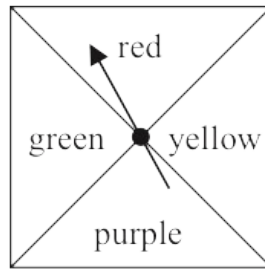
Write down all the possible combinations Hazel can have.

.....

.....

.....

17 Here is a biased spinner.



When the spinner is spun once, the probabilities that it lands on red or on yellow or on green are given in the table.

Colour	red	yellow	purple	green
Probability	0.25	0.2		0.2

(a) Work out the probability that the spinner lands on red or on yellow.

.....
(1)

Yang is going to spin the spinner 300 times.

(b) Work out an estimate for the number of times the spinner will land on purple.

.....
(3)

12 Mario is going to play two games on Saturday.

He will play one game on Saturday morning and one game on Saturday afternoon.

The following table shows the games from which he is going to choose.

Morning	Afternoon
Bridge (B)	Ludo (L)
Chess (C)	Mahjong (M)
Draughts (D)	Snakes and ladders (S)

(a) Write down all the possible combinations of games that Mario can play on Saturday.

.....

.....

.....

(2)

Question 12 continued

Mario asked 100 students in his school to name their favourite card game.

His results are shown in the two-way table below.

	Solitaire	Rummy	Whist	Total
Year 10	30	19	4	53
Year 11	17	18	12	47
Total	47	37	16	100

One of the students Mario asked is picked at random.

(b) Write down the probability that this student is in Year 11

.....
(1)

One of the Year 10 students is picked at random.

(c) Work out the probability that this student did **not** answer Whist.

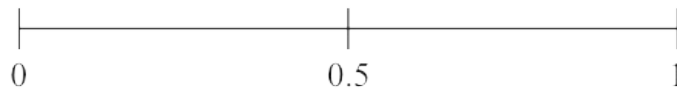
.....
(2)

- 5 Adam has 8 packets of noodles.
Here is the flavour of noodles in each packet.

Hot and Spicy	Curry	Vegetarian	Hot and Spicy
Curry	Hot and Spicy	Curry	Hot and Spicy

Adam takes at random a packet of noodles.

- (a) (i) On the probability scale, mark with a cross (×) the probability that Adam takes a packet of Hot and Spicy noodles.



(1)

- (ii) Circle the word that best describes the likelihood that Adam takes a packet of Vegetarian noodles.

impossible	unlikely	even	likely	certain
------------	----------	------	--------	---------

(1)

Belinda asks 20 people to name the type of rice that they each like the best.

Here are her results.

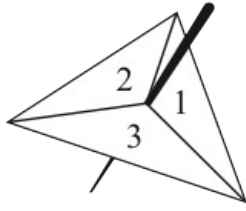
arborio	jasmine	basmati	jasmine	basmati
basmati	arborio	wild	jasmine	jasmine
jasmine	jasmine	arborio	basmati	basmati
wild	basmati	jasmine	wild	arborio

- (b) Complete the frequency table for Belinda's results.

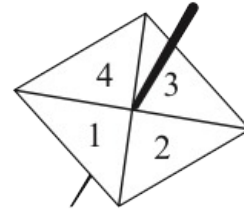
Type of rice	Tally	Frequency
arborio		
basmati		
jasmine		
wild		

(2)

9 Avner has two fair spinners.



Spinner A



Spinner B

Spinner **A** can land on 1, 2 or 3
 Spinner **B** can land on 1, 2, 3 or 4

Avner **multiplies** the number on which spinner **A** lands by the number on which spinner **B** lands to find his score.

- (a) Complete the table to show all possible scores.
 Seven of the scores have been completed for you.

		Spinner A		
		1	2	3
Spinner B	1	1	2	3
	2	2	4	
	3	3		
	4	4		

(2)

Avner spins spinner **A** once and spinner **B** once.

- (b) Find the probability that his score is an odd number.

.....
 (1)

- 22 Some members of a library were asked to name the type of book that they each liked to read the best.

One of the members is chosen at random.

The table shows information about the probability of the type of book that this member answered.

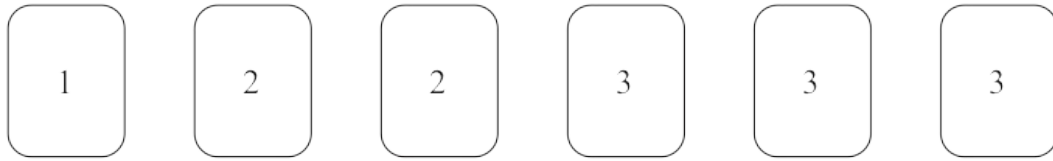
Type of book	comedy	romance	mystery	thriller
Probability	0.24	0.40	$3x$	x

48 members answered comedy books.

Work out how many of the members answered mystery books.

(Total for Question 22 is 4 marks)

- 2 Here are 6 counters.
Each counter has a number on it.



Finn takes at random one of these counters.

- (i) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with the number 2 on it.

impossible	unlikely	evens	likely	certain

- (ii) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with the number 3 on it.

impossible	unlikely	evens	likely	certain

- (iii) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with a number greater than 4 on it.

impossible	unlikely	evens	likely	certain

(Total for Question 2 is 3 marks)

- 8 Linford is going to take part in an athletics competition.
He can choose one event from List **A** and one event from List **B**

List A	List B
Discus (<i>D</i>) Hammer (<i>H</i>) Javelin (<i>J</i>) Shot Put (<i>S</i>)	Long Jump (<i>L</i>) Pole Vault (<i>P</i>) Relay (<i>R</i>)

Write down all the possible combinations Linford can choose.

.....

.....

.....

(Total for Question 8 is 2 marks)

20 In a bag, there are only red counters, blue counters, green counters and yellow counters.

The total number of counters in the bag is 80

In the bag

the number of red counters is $x + 7$

the number of blue counters is $x - 11$

the number of green counters is $3x$

Jude takes at random a counter from the bag.

The probability that he takes a red counter is $\frac{1}{4}$

Work out the probability that Jude takes a yellow counter.

(Total for Question 20 is 4 marks)

10 There are 30 counters in a bag.

13 of the counters are purple.

11 of the counters are white.

The rest of the counters are red.

Suha takes at random a counter from the bag.

(a) Write down the probability that the counter is purple.

.....
(1)

(b) Work out the probability that the counter is red.

.....
(1)

The counter is put back into the bag.

Clive now puts 10 more counters into the bag.

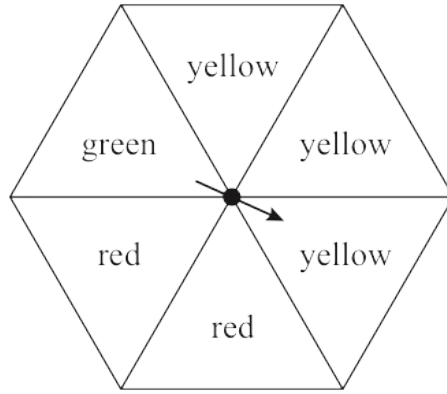
When a counter is taken at random from the bag,

the probability that it is white is now $\frac{2}{5}$

(c) How many of the 10 counters that Clive puts into the bag are white?

.....
(2)

7 The diagram shows a fair 6-sided spinner.



Mario spins the arrow on the spinner once.

impossible	unlikely	evens	likely	certain
------------	----------	-------	--------	---------

Write down the word from the box that best describes the likelihood that the arrow will land on

(i) green

.....
(1)

(ii) yellow

.....
(1)

(iii) blue

.....
(1)

(Total for Question 7 is 3 marks)

18 A biased spinner can land on green or on yellow or on brown or on pink.

The table gives the probabilities that, when the spinner is spun, it will land on green or on yellow or on brown.

Colour	green	yellow	brown	pink
Probability	0.32	0.13	0.28	

Timucin spins the spinner 200 times.

Work out an estimate for the number of times the spinner lands on pink.

.....
(Total for Question 18 is 3 marks)

15

There are 90 members in a diving club.

The diving club has a beginners group, an intermediate group and an advanced group. Every member of the diving club is only in one of these groups.

The table shows information about the number of members in each group.

Group	beginners	intermediate	advanced
Frequency	18	x	$2x$

Kasim chooses at random one of the members of the diving club.

(b) Find the probability that this member is in the intermediate group.

.....
(3)

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8 There are four teams in a cricket competition.

The teams are

Australia (A)	England (E)	Pakistan (P)	West Indies (W)
-------------------	-----------------	------------------	---------------------

Each team will play every other team once.

Write down all the matches that will take place.

.....

.....

.....

(Total for Question 8 is 2 marks)

- 18 A biased spinner has three sections each of a different colour.

The table shows the probability that, when the spinner is spun once, it will land on blue or on orange or on white.

Colour	blue	orange	white
Probability	0.58	$2x$	x

- (a) Work out the value of x

$$x = \dots\dots\dots$$

(2)

The spinner is spun 250 times.

- (b) Work out an estimate for the number of times the spinner will land on blue.

$$\dots\dots\dots$$

(2)

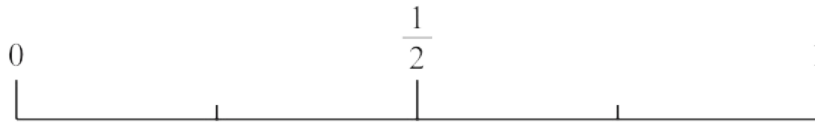
5 There are 8 counters in a bag.

6 of these counters are orange.

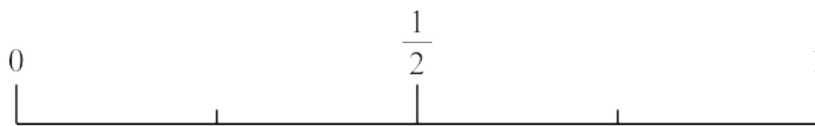
The rest of the counters are purple.

Delilah takes at random a counter from the bag.

- (i) On the probability scale below, mark with a cross (×) the probability that the counter is orange.



- (ii) On the probability scale below, mark with a cross (×) the probability that the counter is yellow.



(Total for Question 5 is 2 marks)