Probability- Questions

Key Stage 3: 2003 Paper 1 Level 3_5

1.

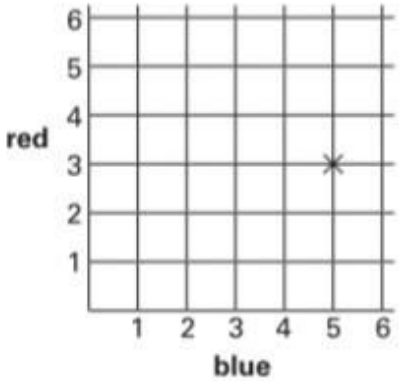
10. Some pupils throw two fair six-sided dice. Each dice is numbered 1 to 6

One dice is blue. The other dice is red.

Anna's dice show **blue 5, red 3**

Her **total score** is **8**

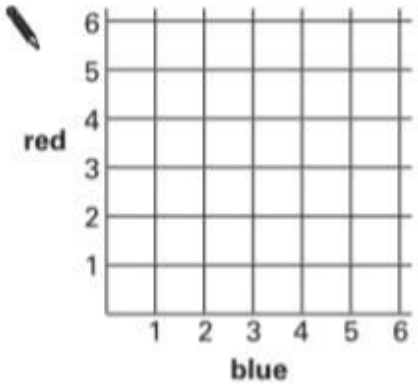
The cross on the grid shows her throw.



(a) Carl's **total score** is **6**

What numbers could Carl's dice show?

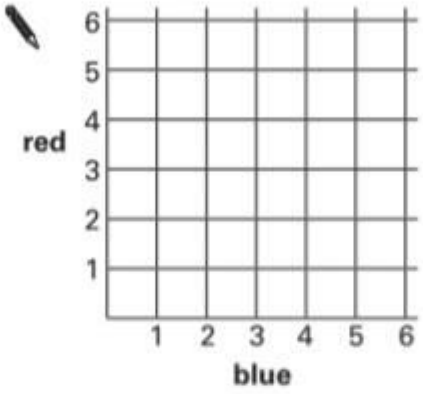
Put crosses on the grid to show **all** the different pairs of numbers Carl's dice could show.



(b) The pupils play a game.

Winning rule:	Win a point if the number on the **blue** dice is the **same as** the number on the **red** dice.

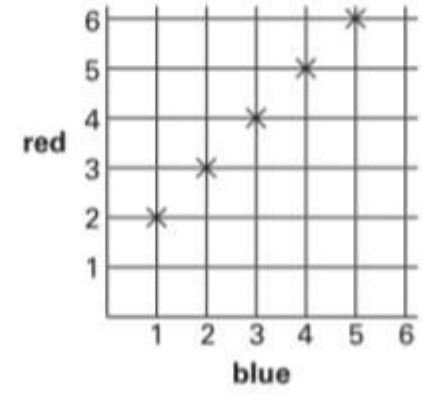
Put crosses on the grid to show **all** the different winning throws.



2 marks

(c) The pupils play a different game.

The grid shows all the different winning throws.



Complete the sentence below to show the winning rule.

Winning rule:	Win a point if the number on the **blue** dice is .....

1 mark

Key Stage 3: Paper 2 Level 3_5

2.

16. (a) Jo has these **4 coins**.

Jo is going to take one of these coins at random.

Each coin is equally likely to be the one she takes.

Show that the **probability** that it will be a **10p** coin is $\frac{1}{2}$

1 mark

(b) Colin has **4 coins** that total **33p**.

He is going to take one of his coins at random.

What is the probability that it will be a **10p** coin?

You **must** show your working.

1 mark

Key Stage 3: 2003 Paper 1 Level 4_6

3.

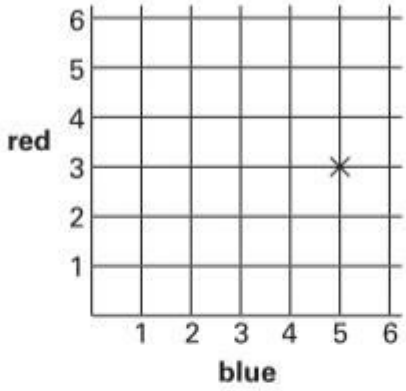
5. Some pupils throw two fair six-sided dice. Each dice is numbered 1 to 6

One dice is blue. The other dice is red.

Anna's dice show **blue 5, red 3**

Her **total score** is **8**

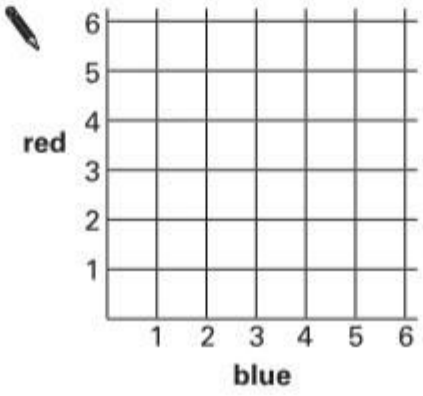
The cross on the grid shows her throw.



(a) Carl's **total score** is **6**

What numbers could Carl's dice show?

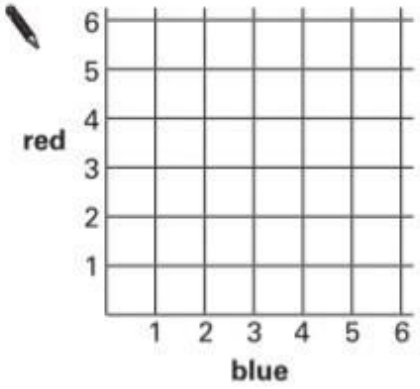
Put crosses on the grid to show **all** the different pairs of numbers Carl's dice could show.



(b) The pupils play a game.

Winning rule:	Win a point if the number on the **blue** dice is the **same as** the number on the **red** dice.

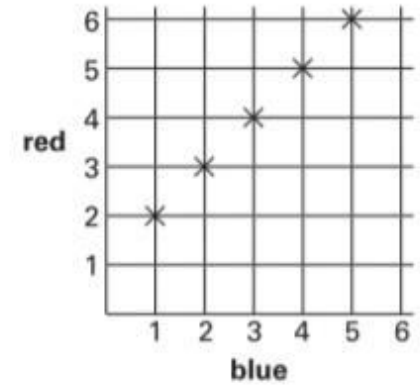
Put crosses on the grid to show **all** the different winning throws.



2 marks

(c) The pupils play a different game.

The grid shows all the different winning throws.



Complete the sentence below to show the winning rule.

Winning rule:	Win a point if the number on the **blue** dice is .....

1 mark

Key Stage 3: Paper 2 Level 4-6

4.

10. (a) Jo has these **4 coins**.

Jo is going to take one of these coins at random.

Each coin is equally likely to be the one she takes.

Show that the **probability** that it will be a **10p** coin is $\frac{1}{2}$

1 mark

(b) Colin has **4 coins** that total **33p**.

He is going to take one of his coins at random.

What is the probability that it will be a **10p** coin?

You **must** show your working.

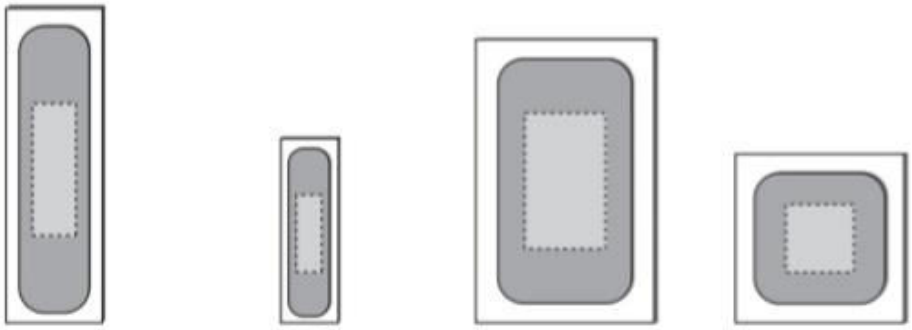
1 mark

Key Stage 3: 2004 Paper 1 Level 3-5

5.

15. I buy a box of different size plasters.

Assume each plaster is equally likely to be the top plaster inside the box.



16 plasters of **size A**

16 plasters of **size B**

2 plasters of **size C**

1 plaster of **size D**

Altogether there are **35** plasters.

I take the top plaster from inside the box.

(a) What is the probability that the plaster is of **size D**?

1 mark

(b) What is the probability that the plaster is of **size A**?

1 mark

(c) What is the probability that the plaster is **not** of **size A**?

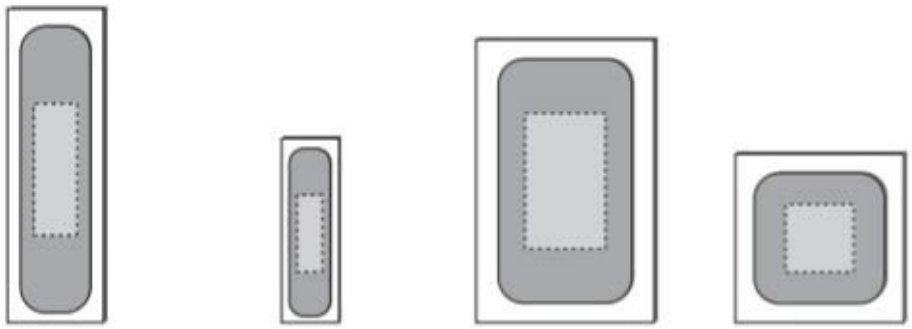
1 mark

Key Stage 3: 2004 Paper 1 Level 4-6

6.

10. I buy a box of different size plasters.

Assume each plaster is equally likely to be the top plaster inside the box.



16 plasters of **size A**

16 plasters of **size B**

2 plasters of **size C**

1 plaster of **size D**

Altogether there are **35** plasters.

I take the top plaster from inside the box.

(a) What is the probability that the plaster is of **size D**?

1 mark

(b) What is the probability that the plaster is of **size A**?

1 mark

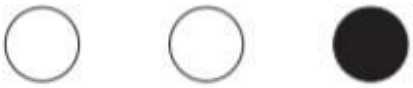
(c) What is the probability that the plaster is **not** of **size A**?

1 mark

Key Stage 3: 2005 Paper 2 Level 3-5

7.

20. (a) Aidan puts 2 white counters and 1 black counter in a bag.



He is going to take one counter without looking.

What is the **probability** that the counter will be **black**?

1 mark

(b) Aidan puts the counter back in the bag and then puts **more black** counters in the bag.

He is going to take one counter without looking.

The **probability** that the counter will be black is now $\frac{2}{3}$

How many more black counters did Aidan put in the bag?

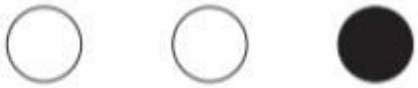
.....

1 mark

Key Stage 3: 2005 Paper 2 Level 4-6

8.

12. (a) Aidan puts 2 white counters and 1 black counter in a bag.



He is going to take one counter without looking.

What is the **probability** that the counter will be **black**?

1 mark

(b) Aidan puts the counter back in the bag and then puts **more black** counters in the bag.

He is going to take one counter without looking.

The **probability** that the counter will be black is now $\frac{2}{3}$

How many more black counters did Aidan put in the bag?

.....

1 mark

9.

20. Here is some information about all the pupils in class 9A.

	girls	boys
right-handed	13	14
left-handed	1	2

A teacher is going to choose a pupil from 9A at random.

(a) What is the probability that the pupil chosen will be a **girl**?

1 mark

(b) What is the probability that the pupil chosen will be **left-handed**?

1 mark

(c) The teacher chooses the pupil at random.
She tells the class the pupil is **left-handed**.

What is the probability that this left-handed pupil is a **boy**?

1 mark

10.

22. A spinner has the numbers 1 to 4 on it.

The probability of spinning a number 4 is 0.1

The probability of spinning a number 1 is 0.6

The probability of spinning a number 2 is the same as the probability of spinning a number 3

Calculate the probability of spinning a **number 3**

2 marks

Key Stage 3: 2006 Paper 2 Level 3-5

11.

18. I buy **12 packets** of cat food in a box.

The table shows the different varieties in the box.

Variety	Number of packets
Cod	3
Salmon	3
Trout	3
Tuna	3

(a) I am going to take out a packet at random from the box.

What is the **probability** that it will be **cod**?

1 mark

(b) My cat eats **all** the packets of **cod**.

I am going to take out a packet at random from the ones left in the box.

What is the **probability** that it will be **salmon**?

1 mark

(c) A different type of cat food has **10 packets** in a box.

The probability that the variety is chicken is **0.7**

What is the probability that the variety is **not** chicken?

1 mark

Key Stage 3: 2006 Paper 2 Level 4-6

12.

9. I buy **12 packets** of cat food in a box.

The table shows the different varieties in the box.

Variety	Number of packets
Cod	3
Salmon	3
Trout	3
Tuna	3

(a) I am going to take out a packet at random from the box.

What is the **probability** that it will be **cod**?

1 mark

(b) My cat eats **all** the packets of **cod**.

I am going to take out a packet at random from the ones left in the box.

What is the **probability** that it will be **salmon**?

1 mark

(c) A different type of cat food has **10 packets** in a box.

The probability that the variety is chicken is **0.7**

What is the probability that the variety is **not** chicken?

1 mark

Key Stage 3: 2007 Paper 1 Level 3-5

13.

18. Fred has a bag of sweets.

Contents
3 yellow sweets
5 green sweets
7 red sweets
4 purple sweets
1 black sweet

He is going to take a sweet from the bag at random.

(a) What is the **probability** that Fred will get a **black** sweet?

1 mark

(b) Write the missing **colour** in the sentence below.

The probability that Fred will get a _____ sweet is $\frac{1}{4}$

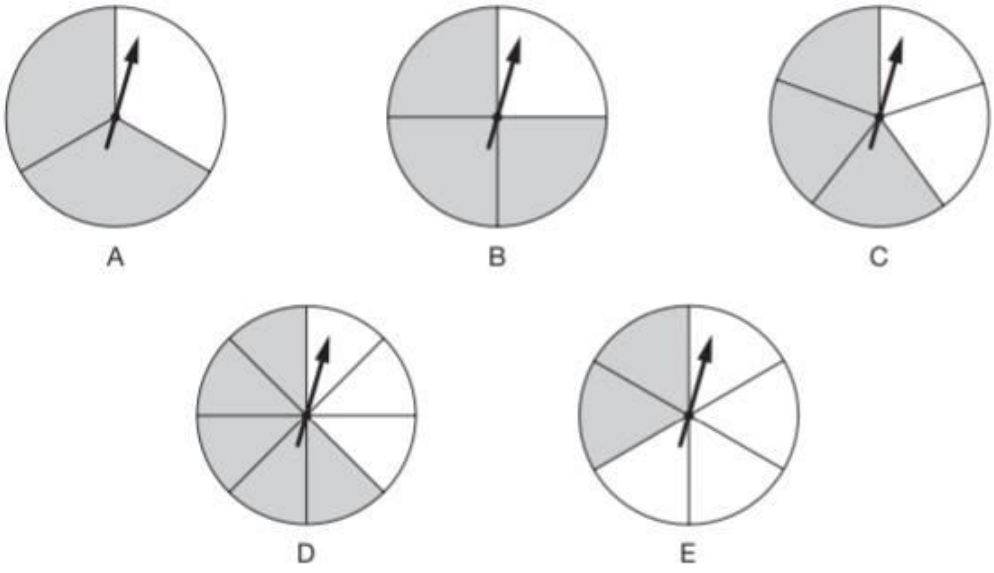
1 mark

Key Stage 3: 2007 Paper 2 Level 3-5

14.

21. The diagram shows five fair spinners with grey and white sectors.

Each spinner is divided into equal sectors.



I am going to spin all the pointers.

(a) For one of the spinners, the probability of spinning **grey** is $\frac{3}{4}$

Which spinner is this? Write its letter.

_____

1 mark

(b) For two of the spinners, the probability of spinning **grey** is **more than 60%** but **less than 70%**

Which two spinners are these? Write their letters.

_____ and _____

1 mark

Key Stage 3: 2007 Paper 1 Level 4-6

15.

11. Fred has a bag of sweets.

Contents
3 yellow sweets
5 green sweets
7 red sweets
4 purple sweets
1 black sweet

He is going to take a sweet from the bag at random.

(a) What is the **probability** that Fred will get a **black** sweet?

1 mark

(b) Write the missing **colour** in the sentence below.

The probability that Fred will get a _____ sweet is $\frac{1}{4}$

1 mark

16.

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

(a) I am going to take a counter out of the bag at random.

Complete the table below.

Colour of counters	Number of counters	Probability
Red	6	
Blue		$\frac{1}{5}$
Green	6	

2 marks

(b) Before I take a counter out of the bag, I put **one extra blue** counter into the bag.

What effect does this have on the probability that I will take a **red** counter?

Tick (✓) the correct box.

- ☐ The probability has increased.
- ☐ The probability has decreased.
- ☐ The probability has stayed the same.
- ☐ It is impossible to tell.

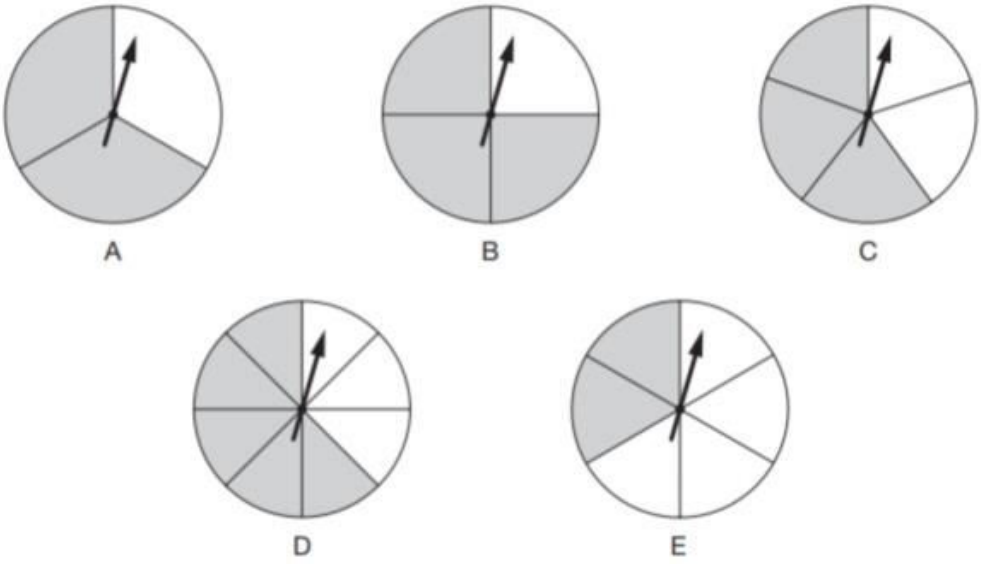
1 mark

Key Stage 3: 2007 Paper 2 Level 4-6

17.

14. The diagram shows five fair spinners with grey and white sectors.

Each spinner is divided into equal sectors.



I am going to spin all the pointers.

(a) For one of the spinners, the probability of spinning **grey** is $\frac{3}{4}$

Which spinner is this? Write its letter.

_____

1 mark

(b) For two of the spinners, the probability of spinning **grey** is **more than 60%** but **less than 70%**

Which two spinners are these? Write their letters.

_____ and _____

1 mark

18.

30. A computer is going to choose a letter at random from an English book.

The table shows the probabilities of the computer choosing each vowel.

Vowel	A	E	I	O	U
Probability	0.08	0.13	0.07	0.08	0.03

What is the probability that it will **not** choose a vowel?

2 marks

Key Stage 3: 2008 Paper 2 Level 3-5

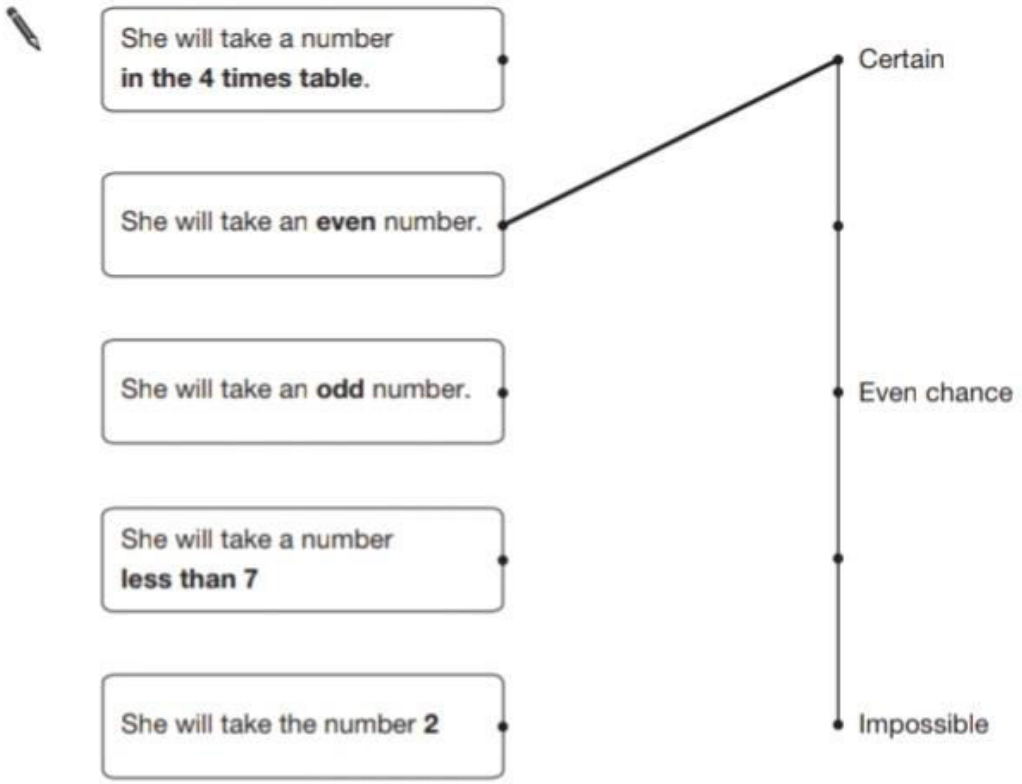
19.

10. A pupil has these four number cards.

She is going to mix them up and take one card at random.

Match each statement to the correct position on the probability scale.

One is done for you.



2 marks

Key Stage 3: 2008 Paper 2 Level 4-6

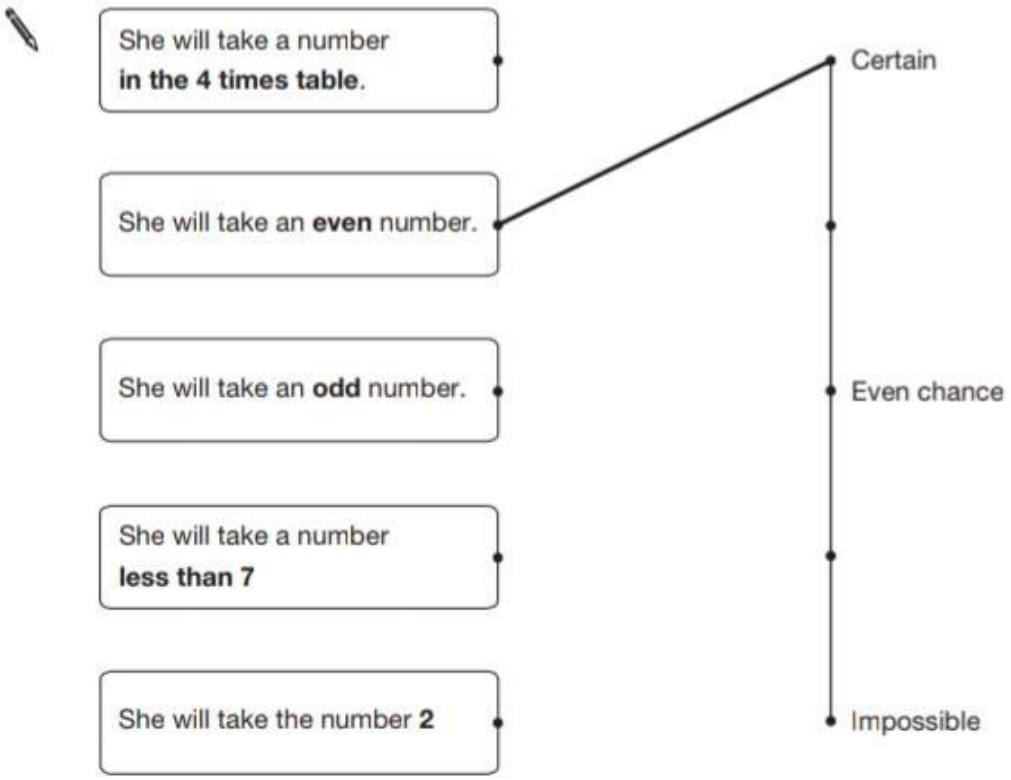
20.

2. A pupil has these four number cards.

She is going to mix them up and take one card at random.

Match each statement to the correct position on the probability scale.

One is done for you.



2 marks

21.

24. In a bag, there are only red, white and yellow counters.

I am going to take a counter out of the bag at random.

> The probability that it will be **red** is **more than** $\frac{1}{4}$
>
> It is **twice as likely** to be **white** as **red**.

Give an example of how many counters of each colour there could be.

Write numbers in the sentence below.

There could be _____ red, _____ white and _____ yellow counters.

2 marks

Key Stage 3: 2009 Paper 1 Level 3-5

22.

18. Paul has **15** T-shirts.

The information shows the colours of his T-shirts.

5 black
3 white
3 red
2 dark blue
1 light blue
1 yellow

Paul is going to take one of his T-shirts at random.

(a) What is the probability that the T-shirt will be **red**?

1 mark

(b) What is the probability that the T-shirt will **not** be **black**?

1 mark

(c) He takes one of his **blue** T-shirts at random.

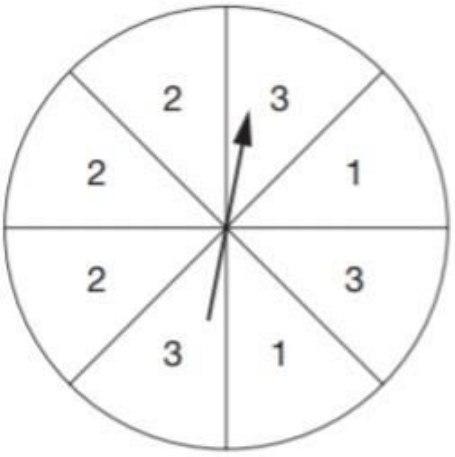
What is the probability that the T-shirt is **light blue**?

1 mark

Key Stage 3: 2009 Paper 2 Level 3-5

23.

5. Here is a fair spinner divided into 8 equal sections.



I am going to spin the pointer.

For each statement below, tick (✓) True or False.

	True	False
I am **equally likely** to spin a 2 as to spin a 3	☐	☐
I am **more likely** to spin an even number than an odd number.	☐	☐
It is **impossible** that I will spin a number less than 2	☐	☐
It is **certain** that I will spin a number less than 4	☐	☐

2 marks

Key Stage 3: 2009 Paper 1 Level 4-6

24.

11. Paul has **15** T-shirts.

The information shows the colours of his T-shirts.

5 black
3 white
3 red
2 dark blue
1 light blue
1 yellow

Paul is going to take one of his T-shirts at random.

(a) What is the probability that the T-shirt will be **red**?

1 mark

(b) What is the probability that the T-shirt will **not** be **black**?

1 mark

(c) He takes one of his **blue** T-shirts at random.

What is the probability that the T-shirt is **light blue**?

1 mark

Key Stage 3: 2009 Paper 2 Level 4-6

25.

25. A teacher has five bags containing only red and blue counters.

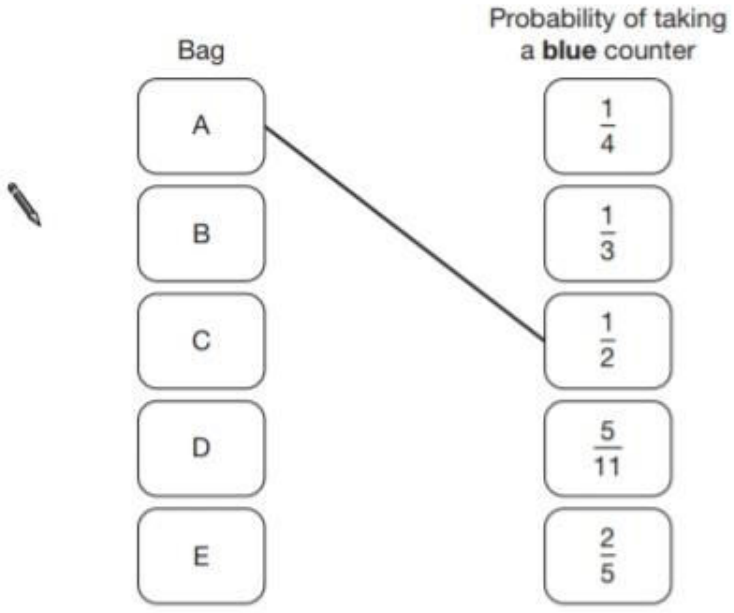
The table shows how many red and blue counters are in each bag.

	Bag				
	A	B	C	D	E
Red counters	6	6	6	6	6
Blue counters	6	5	4	3	2

The teacher is going to take a counter at random from each bag.

Match each bag with the correct probability of taking a **blue** counter below.

The first one is done for you.



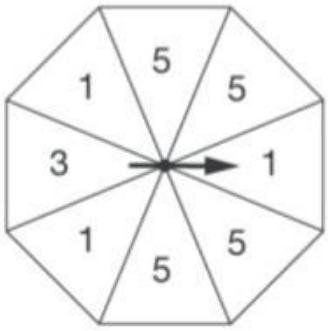
2 marks

Key Stage 3: 2010 Paper 2 Level 3-5

26.

15. Tom has a fair spinner with 8 equal sections.

He is going to spin the pointer.



Draw lines to show how likely the following are.

One is done for you.

He will spin the **number 3**	certain
He will spin the **number 5**	likely
He will spin the **number 6**	even chance
He will spin a **number less than 7**	unlikely
	impossible

2 marks

Key Stage 3: 2010 Paper 1 Level 4-6

27.

27. Jerry has a bag of counters.

Inside his bag are

2 blue,

4 green,

5 red, and

9 yellow counters

Jerry is going to take a counter at random from his bag.

Write the correct **colours** to complete these sentences.

The probability that it will be _____ is **0.2**

The probability that it will **not** be _____ is $\frac{3}{4}$

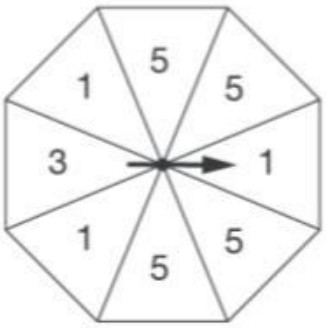
1 mark

Key Stage 3: 2010 Paper 2 Level 4-6

28.

5. Tom has a fair spinner with 8 equal sections.

He is going to spin the pointer.



Draw lines to show how likely the following are.

One is done for you.

He will spin the **number 3**	certain
He will spin the **number 5**	likely
He will spin the **number 6**	even chance
He will spin a **number less than 7**	unlikely
	impossible

2 marks

29.

20. I have a fair six-sided dice, numbered **4**, **9**, **12**, **16**, **20** and **24**

I am going to roll the dice.

(a) What is the probability of rolling a **multiple of 4**?

1 mark

(b) What is the probability of rolling a **square number**?

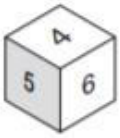
1 mark

Key Stage 3: 2011 Paper 1 Level 4-6

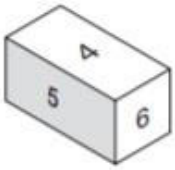
30.

11. Look at these three dice, A, B and C.

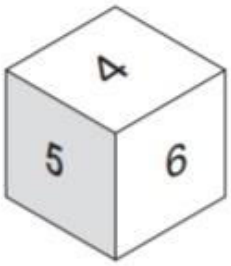
Each dice is numbered 1 to 6



Dice A



Dice B



Dice C

What can you say about the probability of rolling a **5** when you use...

...Dice A

_____

...Dice B

_____

...Dice C

_____

2 marks

31.

18. Mark is going to play a game.

The probability that he will win the game is $\frac{7}{12}$

Is he more likely to win the game or lose the game?

☐ Win ☐ Lose

Explain how you know.

1 mark

32.

25. Anna and Tom each have a small bag of coins.

Anna's bag

Tom's bag

Anna is going to take a coin at random from her bag.

Tom is going to take one at random from his.

Who is most likely to take a **10p coin**?

☐ Anna ☐ Tom ☐ Both equally likely

Show working to explain your answer.

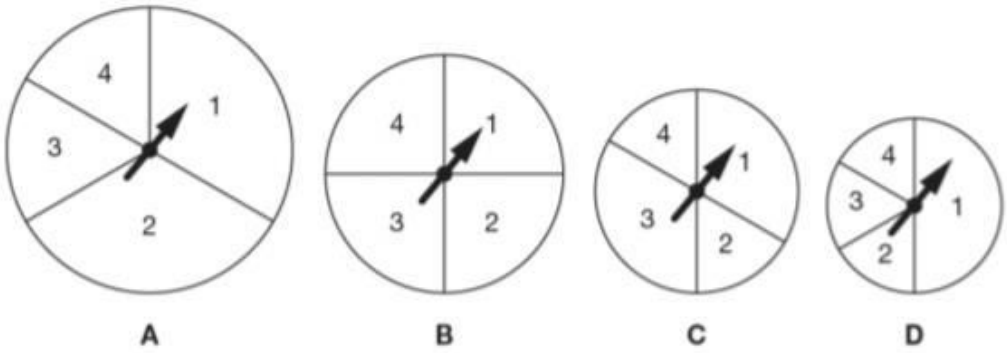
2 marks

Key Stage 3: 2011 Paper 2 Level 4-6

33.

11. Here are four spinners, labelled A, B, C and D.

I am going to spin each pointer.



(a) Which spinner gives the **greatest chance** that the pointer will stop on **3**?

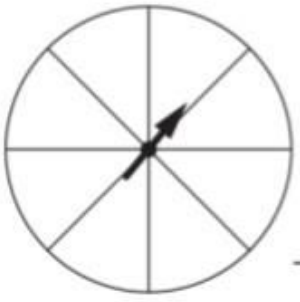
Spinner _____ _____ 1 mark

(b) Which spinner gives the **least chance** that the pointer will stop on **1**?

Spinner _____ _____ 1 mark

(c) This spinner is divided into eight equal sectors.

Write a number in each sector so that there is a **50% chance** that the pointer will stop on **2**



_____ 1 mark

34.

24. A word game has tiles with letters on.

Some letters are more common than others.

(a) There are **100 tiles** in the English version of the game.

Here is information about how many tiles show the letter A, E or O.

A	E	O
9 tiles	**12** tiles	**8** tiles

I am going to take one of the 100 tiles at random.

What is the **probability** that it will show one of the letters A, E or O?

1 mark

(b) There are **104 tiles** in the Russian version of the game.

The probability that a tile taken at random will show A, E or O is $\frac{1}{4}$

The ratio of tiles showing A, E or O is **4 : 4 : 5**

Work out how many of the 104 tiles show the letters A, E or O.

A	E	O
_____ tiles	_____ tiles	_____ tiles

2 marks