

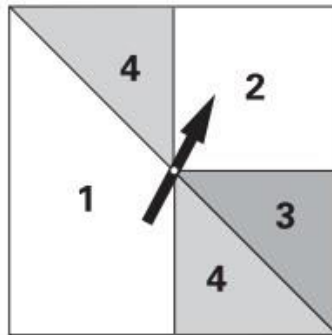
# Probability - Questions

Key Stage 2: 2004 Paper A

1.

22

Here is a square spinner.



Look at these statements.

For each one put a tick (✓) if it is **correct**.  
Put a cross (✗) if it is **not correct**.



'4' is the **most likely** score.

'2' and '4' are **equally likely** scores.

Odd and even scores are **equally likely**.

A score of '3' or more is **as likely as** a score of less than '3'.

22i

22ii

2 marks

1.

**14**

Sapna makes up a game using seven cards.

Here are the cards.



Josh picks a card without looking.

If Josh picks an **odd** number then Sapna scores a point.

If Josh picks an **even** number then Josh scores a point.

Is this a fair game?  
Circle Yes or No.



Yes / No

Explain how you know.



.....

.....

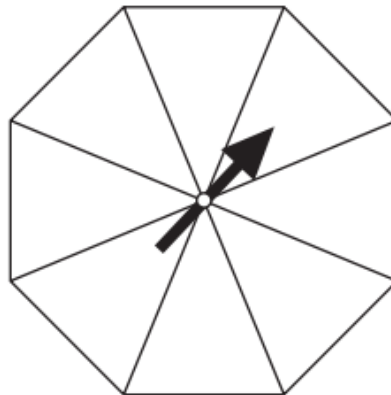
.....

1.

**10**

Here is a spinner which is a regular octagon.

Write 1, 2 or 3 in each section of the spinner so that **1 and 2 are equally likely** to come up and **3 is the least likely** to come up.



10i

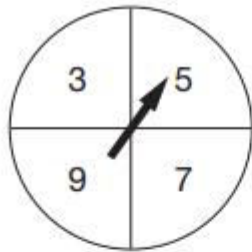


10ii

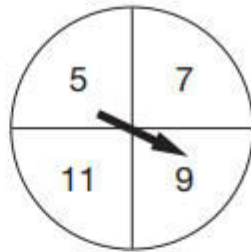
2 marks

1.

**23** Here are two spinners, A and B.



A




B

Hassan spins the pointer on each spinner.

He adds his two scores together.

For each statement put a tick (✓) to show if it is **certain**, **possible** or **impossible**.

One has been done for you.

	certain	possible	impossible
 The total will be more than 15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The total will be an even number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The total will be less than 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The score on A will be less than the score on B.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25

25

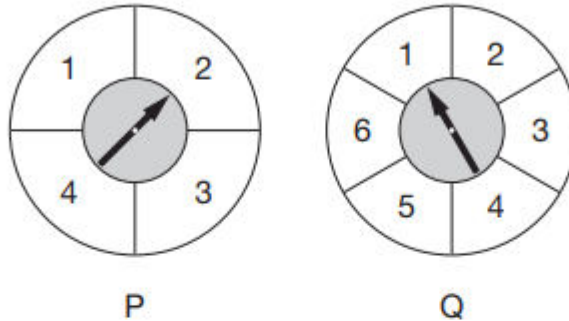
2 marks

1.

20


Here are two spinners, P and Q.

Spinner P has 4 equal sections.  
Spinner Q has 6 equal sections.



Ben spins the pointer on each spinner.

For each statement below, put a tick (✓) if it is correct.  
Put a cross (✗) if it is not correct.

 Ben is **more likely** to score 4 on spinner P than on spinner Q.

The score on spinner P is **certain** to be less than the score on spinner Q.

Ben is **equally likely** to score an even number on spinner P and spinner Q.

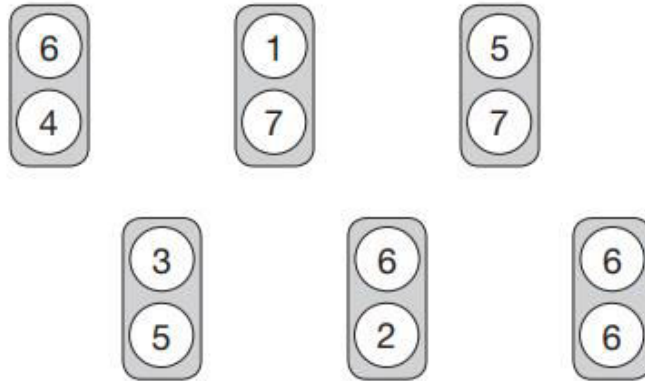
A score of less than 3 is **equally likely** on spinner P and spinner Q.

201  
200  
2 marks

1.

15

Each of these cards has two numbers on it.



Stefan chooses one card without looking.

He adds the two numbers together.

What is the **most likely** total of the numbers on his card?

A small pencil icon is positioned to the left of a rectangular box intended for the student's answer.

1.

24

Here are two bags of marbles, **A** and **B**.

Each bag contains blue marbles and red marbles only.



3 blue marbles  
and  
3 red marbles



6 blue marbles  
and  
9 red marbles

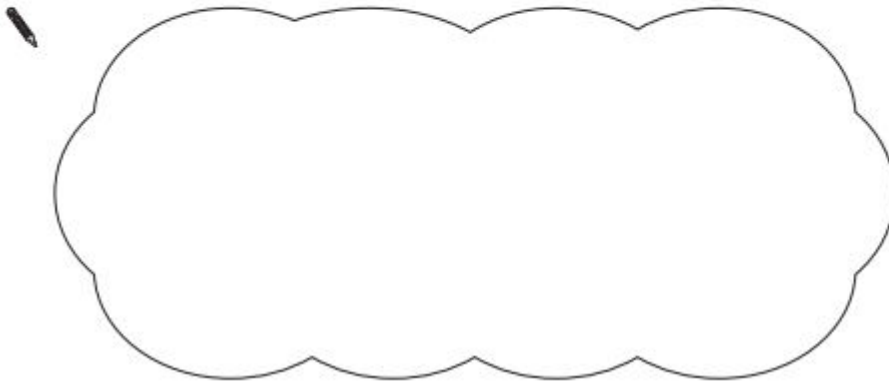
Liam chooses a marble from each bag without looking.

From which bag is he more likely to choose a **blue** marble?

Circle **A** or **B**.

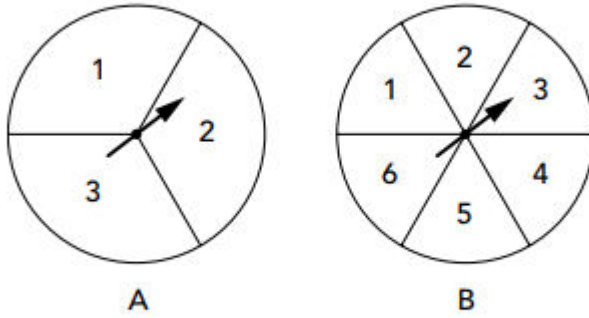
 A / B

Explain how you know.

A large, hand-drawn cloud-shaped area with a scalloped border, intended for the student to write their explanation. A small pencil icon is positioned at the top left corner of the cloud.

1.


**3** Here are two spinners divided into equal parts.



Kemi spins the pointers once to get a score on each spinner.

Put one tick (✓) in each row to complete the table below.

One row is done for you.

	more likely on A	more likely on B	equally likely on A or B
a score less than 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 an even number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a score of 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a score greater than 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)



1.

18

Dev has three discs.

Each disc has a 7 on one side  
and an 8 on the other side.



He spins all the discs and adds the three scores together.

How many **different totals** can he get using the three discs?

A small pencil icon is positioned to the left of a rectangular box, indicating where the student should write their answer.

18

1 mark

1.

21

A bag contains 50 green counters and 40 white counters.

The green counters are numbered 1 to 50

The white counters are numbered 1 to 40

Holly picks one counter without looking.



Holly says,

***'A counter with the number 35 on it is more likely to be picked than a counter with the number 45 on it'.***

Is Holly correct?  
Circle **Yes** or **No**.

 Yes / No

Explain how you know.

A large, hand-drawn cloud-shaped area with a scalloped border, intended for the student to write their explanation. A small pencil icon is positioned at the top left of the cloud.

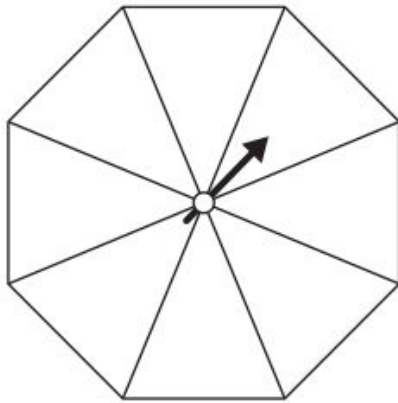
1.

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**2**

Here is a spinner.

It is a regular octagon.



Write a number in each section of the spinner so that all of the following statements are true:

It is impossible that you will get a **1**

There is an even chance that you will get a **2**

It is more likely that you will get a **3** than a **4**

It is equally likely that you will get a **4** or a **5**

(2 marks)

1.

3

Runa and Jon are playing a game using a fair six-sided dice.

Runa throws the dice first, then Jon.



Jon wins the game if his number is **greater** than Runa's.

Runa throws the dice.  
It shows **3**



What is the probability that Jon will win the game?

A small pencil icon is positioned to the left of a vertical rectangular box. The box is empty and intended for the student to write the probability.

(1 mark)

Runa throws the dice again.

The probability that Jon will win this game is  $\frac{1}{3}$

What **number** did Runa throw?

A small pencil icon is positioned to the left of a horizontal rectangular box. The box is empty and intended for the student to write the number.

(1 mark)

1.

1

A box of crisps contains three different flavours.



A quarter of the packets are prawn cocktail flavour.

The probability of picking cheese and onion flavour is 30%

What is the probability of picking salt and vinegar flavour?

Show  
your  
working



2 marks

1.

11

A bag contains 35 red counters only.

Chen adds green counters to the bag.

The probability of picking a **green** counter is now **0.3**



How many green counters did Chen add?



Show your method

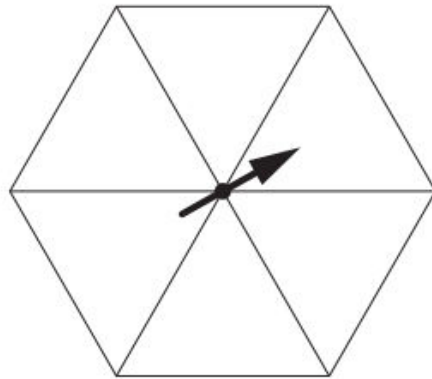
2 marks

1.

18

Here is a spinner.

Write a whole number in each section of the spinner so that it is **certain** you will get a number less than 4 and it is **impossible** you will get an even number.



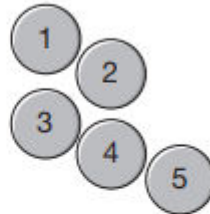
2.

25

Chen and Megan each have a set of numbered counters.



Chen




Megan

They each take one of their own counters without looking.

Chen says,

***'I am more likely than Megan to get a 4'***

Is Chen correct?  
Circle **Yes** or **No**.

 Yes / No

Explain how you know.

A large, hand-drawn cloud-shaped area with a scalloped border, intended for the student to write their explanation. A small pencil icon is positioned at the top left of the cloud.



1.

5


Megan has a bag containing white counters and black counters.

There are 20 counters in the bag altogether.

The probability of choosing a **white** counter from the bag is 0.75



(a) How many white counters are in the bag?



1 mark

(b) Megan adds more **black** counters to the bag.

How many **black** counters must she add so that the probability of choosing a **white** counter is 0.25?



Show your working

2 marks

1.

19

Liam did a survey of 55 people to see how many were left-handed.

Liam says,

***'The results show that exactly 10% of the people in the survey are left-handed.'***

Explain why Liam cannot be correct.



1.

7

Anna has 10 number cards in a bag.



She is going to take out one of the cards at random.

- (a) The probability that the number will be a **factor of 14** is  $\frac{3}{10}$

Explain why.

A large, empty, cloud-shaped writing area with a scalloped border. A small pencil icon is positioned at the top left corner of the shape.

1 mark

1.

5

A bag contains coloured counters.

**20 red** counters numbered 1 to 20


**50 blue** counters numbered 1 to 50

**100 green** counters numbered 1 to 100



Chen is going to pick one counter without looking.


- (a) What is the probability of picking a counter with the number 40 on it?



1 mark

- (b) The counter Chen picks is **red**.

What is the probability that it has the number 15 on it?



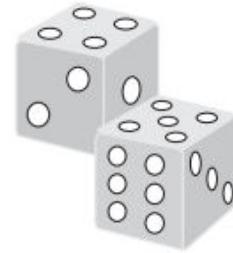
1 mark

2.

8

Two fair dice are each numbered from 1 to 6

The dice are rolled. The numbers are added together to make a total.



Total 9

Jack says,

***'The totals 3 and 9 are equally likely.'***

Explain why Jack is **not** correct.

A large, empty, cloud-shaped area for writing an explanation.

1 mark

1.

**23** Megan and Chen each have a bag of counters.

Megan's bag has **5** blue counters and **5** green counters.

Chen's bag has **10** blue counters, **5** green counters and **5** red counters.



Megan's bag



Chen's bag

They each take a counter from their bag without looking.

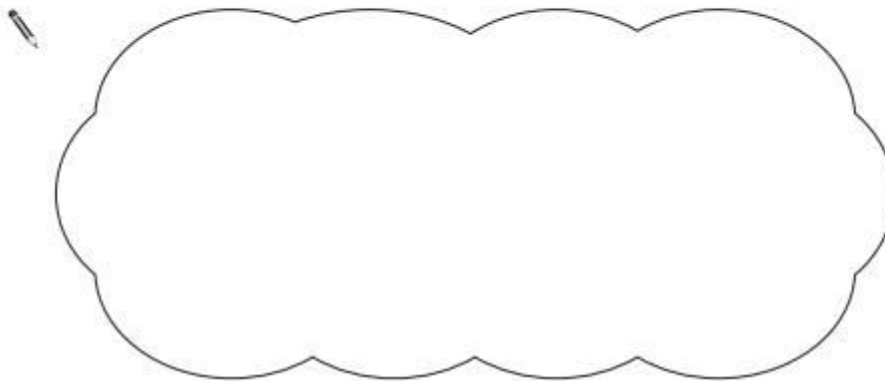
Chen says,

***'I am more likely than Megan to take a blue counter.'***

Is Chen correct?  
Circle **Yes** or **No**.

 Yes / No

Explain how you know.



Key Stage 2: 2018 Paper 3 Reasoning

1.

2

Adam chooses the colours for a new team shirt.

The shirt has **two** colours.



There are four colours to choose from: **yellow, blue, white** and **red**.

Write the **two** missing combinations.

The shirt could be:

- yellow and blue
- yellow and white
- yellow and red
- blue and white.

\_\_\_\_\_ and \_\_\_\_\_

\_\_\_\_\_ and \_\_\_\_\_

1 mark