

**Q1.** Lucy uses some letter cards to spell the word "NOVEMBER".



Lucy takes one of these cards at random.

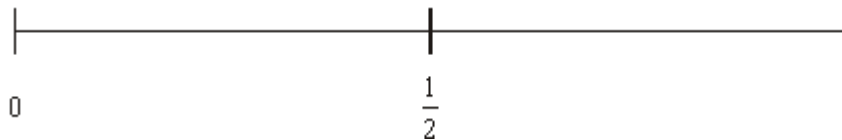
Write down the probability that Lucy takes a card with a letter E.

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**(Total 2 marks)**

**Q2.** Tom throws an ordinary coin once.

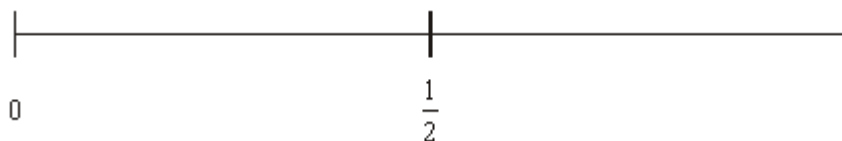
- (a) On the probability scale, mark with a cross (×) the probability that the coin will show tails.



**(1)**

Tom rolls an ordinary dice once.

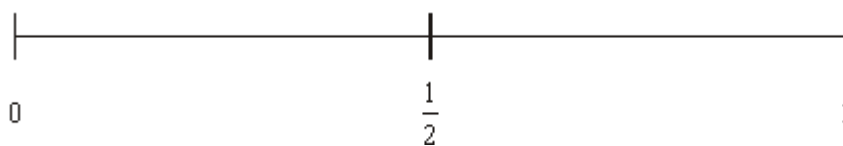
- (b) On the probability scale, mark with a cross (×) the probability that he will score a number less than 6.



**(1)**

Tom takes a Maths test.

- (c) On the probability scale, mark with a cross (×) the probability that he will score more than full marks.

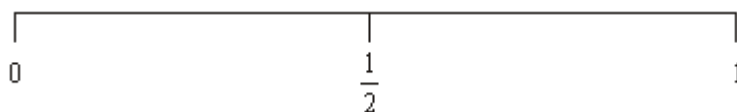


(1)  
(Total 3 marks)

- Q3.** In a box, there are 11 coloured bricks.  
5 bricks are red, 2 bricks are blue, 3 bricks are orange and 1 brick is green.

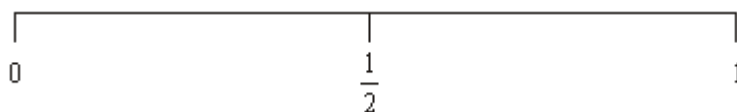
Sally takes one of these bricks at random.

- (a) On the probability scale, mark with a letter R, the probability that Sally will take a red brick.



(1)

- (b) On the probability scale, mark with a letter W, the probability that Sally will take a white brick.



(1)  
(Total 2 marks)

- Q4.** The table shows some information about 4 cars for sale.

Type of car	Number of	Number of	Cost in £
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	doors	previous owners	
Saloon	4	0	17 200
Coupé	3	2	12 500
Sports	2	3	14 950
Estate	5	2	11 300

(a) How many doors does the Coupé have?

.....

(1)

(b) Which type of car costs less than £12 000?

.....

(1)

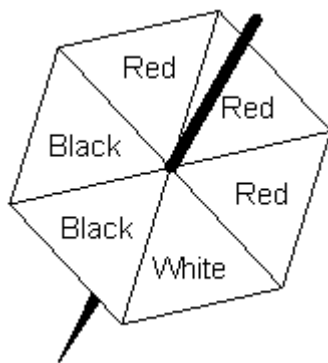
Simon picks a car at random.

(c) Write down the probability that Simon will pick a car with exactly two previous owners.

.....

(2)

(Total 4 marks)



**Q5.**

Here is a fair 6-sided spinner.  
Jack will spin the spinner once.  
The spinner will land on one of the colours.

Draw a circle around the word to best describe the probability of the following events.

(a) The spinner will land on White.

impossible	unlikely	even	likely	certain
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(1)

(b) The spinner will land on Red.

impossible	unlikely	even	likely	certain
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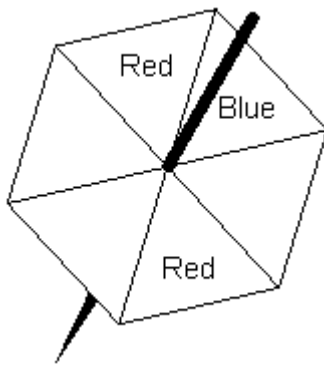
(1)

(c) The spinner will land on Pink.

impossible	unlikely	even	likely	certain
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(1)

Here is a different fair 6-sided spinner.  
Jack will spin this spinner once.



The spinner is more likely to land on Blue than to land on Red.

(d) Write the missing colours on the spinner.

(1)  
(Total 4 marks)

**Q6.** Jake plays a game of throwing a ball at a target.

The table shows information about the probability of each possible score.

<b>Score</b>	0	1	2	3	4	5
<b>Probability</b>	0.09	$x$	0.18	0.16	0.21	0.30

Work out the value of  $x$ .

.....  
(Total 2 marks)

**Q7.** The table shows information about 6 students.

Name	Age in years	Tutor Group	Studying Spanish	Studying French
Callum	16	11A	Yes	No
Seema	16	11B	No	Yes
Mark	15	11B	Yes	Yes
Abby	15	11A	Yes	No
Ben	16	11B	No	Yes
Lori	15	11B	Yes	Yes

(a) Write down the number of students studying Spanish.

.....  
(1)

(b) Write down the names of the students aged 15 years **and** in Tutor Group 11B.

.....  
(1)

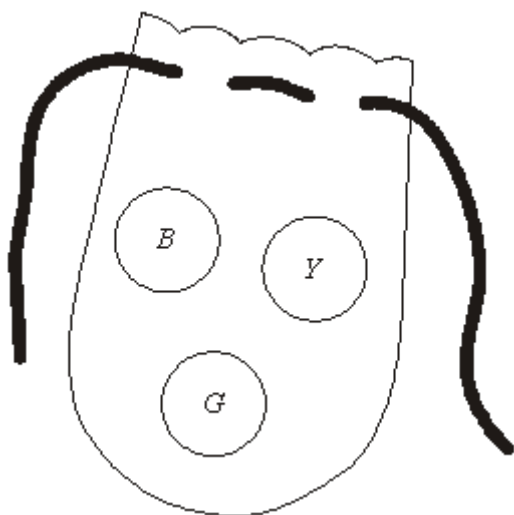
A student is going to be chosen at random.

- (c) Write down the probability that this student is in Tutor Group 11A.

.....

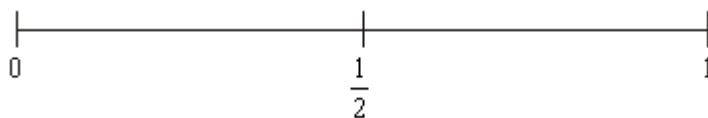
(2)  
(Total 4 marks)

- Q8.** There are three beads in a bag.  
One bead is blue, one bead is yellow and one bead is green.



Zoe takes a bead at random from the bag.

- (a) On the probability scale, mark with the letter *B* the probability that she takes a blue bead.



(1)

Zoe now throws a coin.

One possible outcome for the bead and the coin is (green, heads).

- (b) List all the possible outcomes for the bead and the coin. One has already been done for you.

(green, heads)

.....

.....

.....

(2)  
(Total 3 marks)

**Q9.**

Impossible	Unlikely	Even	Likely	Certain
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Which word from the box best describes the likelihood of each of these events?

- (a) You throw an ordinary dice and get an eight.

.....

(1)

- (b) You throw a coin and get a Heads.

.....

(1)

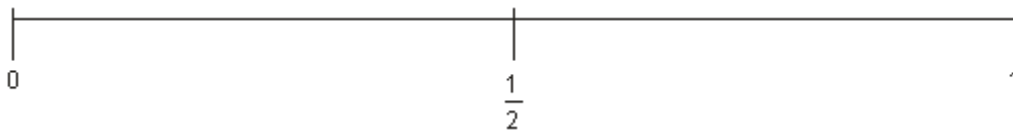
- (c) December 6th 2008 is the day after December 5th 2008

.....

(1)  
(Total 3 marks)



- Q10.** (a) On the probability scale below, mark with a cross (×) the probability that it will snow in London in June.



(1)

- (b) On the probability scale below, mark with a cross (×) the probability that it will rain in Manchester next year.



(1)

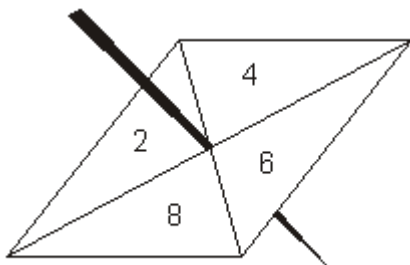
- (c) What is the **probability** that you will get a head when you flip a fair coin?

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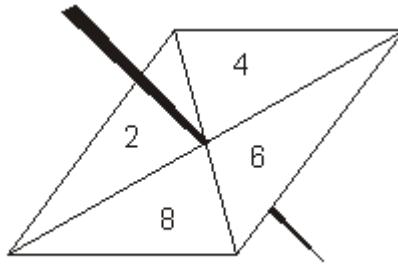
(1)

(Total 3 marks)

- Q11.** Here are two **fair** 4-sided spinners.  
One is a Blue spinner and one is a Red spinner.



**Blue Spinner**



**Red Spinner**

Each spinner has four sections numbered 2, 4, 6 and 8.

Each spinner is to be spun once.

Total score = Blue spinner score + Red spinner score

- (a) List the different ways that the total score can be 8.

.....

(2)

Ali and Shazia play a game.  
In each round of the game, Ali spins the Blue spinner once and Shazia spins the Red spinner once.  
Ali wins when the Blue spinner score is greater than the Red spinner score.

- (b) Work out the probability that Ali will win the first round.

.....

**(4)**  
**(Total 6 marks)**

M1.

Working	Answer	Mark	Additional Guidance
$\frac{2}{8}$	$\frac{2}{8}$	2	<p><b>M1</b> for <math>\frac{x}{8}</math> (<math>x &lt; 8</math>) or (<math>x &gt; 2</math>)</p> <p><b>A1</b> for <math>\frac{2}{8}</math> o.e.</p>
<b>Total for Question: 2 marks</b>			

M2.

	Answer	Mark	Additional Guidance
(a)		1	<b>B1</b> for cross at $\frac{1}{2}$ (allow $\pm 2$ mm tolerance)
(b)		1	<b>B1</b> for cross between $\frac{3}{4}$ and 1
(c)		1	<b>B1</b> for cross at 0 (allow $\pm 2$ mm tolerance)
<b>Total for Question: 3 marks</b>			

M3.

	Answer	Mark	Additional Guidance
(a)	Between $\frac{1}{4}$ and $\frac{1}{2}$ but nearer to $\frac{1}{2}$	1	<b>B1</b> for a mark between $\frac{1}{4}$ and $\frac{1}{2}$ but nearer to $\frac{1}{2}$ than $\frac{1}{4}$
(b)	At 0	1	<b>B1</b> for a clear mark at 0 within $\pm 2$ mm
<b>Total for Question: 2 marks</b>			

**M4.**

	Answer	Mark	Additional Guidance
(a)	3	1	<b>B1</b> cao
(b)	Estate	1	<b>B1</b> cao
(c)	$\frac{2}{4}$ oe	2	<b>M1</b> for a fraction with a denominator of 4 or numerator of 2 $\frac{2}{4}$ <b>A1</b> for $\frac{2}{4}$ oe (accept 0.5 or 50%) SC <b>B1</b> for 2 out of 4 or 1 out of 2 <b>B0</b> for 1 : 2 or 2 : 4 or 4 : 2 etc
<b>Total for Question: 4 marks</b>			

**M5.**

	Answer	Mark	Additional Guidance
(a)	unlikely	1	<b>B1</b> cao

(b)	even	1	<b>B1</b> cao
(c)	impossible	1	<b>B1</b> cao
(d)	e.g. blue, blue, blue	1	<b>B1</b> for two or three 'blue' and no 'red'
<b>Total for Question: 4 marks</b>			

**M6.**

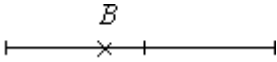
Answer	Mark	Additional Guidance
0.06 or 6%	2	<p><b>M1</b> for <math>1 - (0.09 + 0.18 + 0.16 + 0.21 + 0.30)</math> oe OR <b>M1</b> for <math>100 - (9 + 18 + 16 + 21 + 30)</math> oe OR <b>M1</b> for <math>1 - \left( \frac{9}{100} + \frac{18}{100} + \frac{16}{100} + \frac{21}{100} + \frac{30}{100} \right)</math> <b>A1</b> for 0.06 or 6% (6 only gets A0) or <math>\frac{6}{100}</math> oe [SC; <b>B1</b> for 6 on the answer line without working, if M0 scored]</p>
<b>Total for Question: 2 marks</b>		

**M7.**

	Answer	Mark	Additional Guidance
(a)	4	1	<b>B1</b> cao
(b)	Mark and Lori	1	<b>B1</b> cao (accept M and L)

(c)	$\frac{2}{6}$	2	<b>M1</b> for $\frac{2}{n}$ where $2 < n \leq 6$ or $\frac{n}{6}$ where $n < 6$ <b>A1</b> for $\frac{2}{6}$ oe (condone incorrect cancelling) [SC: <b>B1</b> for 2 out of 6 or 2 : 6 or 2 in 6 or 1 out of 3, etc. if <b>M0</b> scored]
<b>Total for Question: 4 marks</b>			

**M8.**

	Answer	Mark	Additional Guidance
(a)		1	<b>B1</b> for $B$ marked on line $0.25 \leq B < 0.5$
(b)	(g, t), (y, h), (y, t) (b, h), (b, t)	2	<b>B2</b> for 5 correct pairs (order within brackets need not be consistent, ignore pairs repeated) and no incorrect pairs <b>(B1</b> for 2 or more correct pairs, ignore any incorrect pairs)
<b>Total for Question: 3 marks</b>			

**M9.**

	Answer	Mark	Additional Guidance
(a)	Impossible	1	<b>B1</b> cao
(b)	Even	1	<b>B1</b> cao
(c)	Certain	1	<b>B1</b> cao

<b>Total for Question: 3 marks</b>
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**M10.**

	Working	Answer	Mark	Additional Guidance
(a)		Correct plot	1	<b>B1</b> Cross placed within 0.5 cm to right of 0 inclusive
(b)		Correct plot	1	<b>B1</b> Cross placed within 0.5 cm to left of 1 inclusive
(c)		$\frac{1}{2}$	1	<b>B1</b> 0.5 oe
<b>Total for Question: 3 marks</b>				

**M11.**

	Working	Answer	Mark	Additional Guidance
(a)		(2, 6)(4, 4) (6, 2)	2	<b>M1</b> lists as ordered pairs or in a table with at least 2 entries <b>A1</b> all 3 correct entries
(b)		$\frac{6}{16}$	4	<b>M1</b> lists the sample space (at least 4 pairs) <b>A1</b> fully correct <b>M1</b> identifies cases where Ali wins <b>A1</b> cao
<b>Total for Question: 6 marks</b>				





- E1.** This question was answered well by the majority of the candidates. Most candidates knew that they were expected to write their answer as a fraction. Common incorrect answers here were  $1/8$ ,  $2/6$ ,  $1/7$ , 2 out of 8, 2:8 and likely.
- E2.** Part (a) was done well by the vast majority of the candidates.
- Part (b) was not done well. Common incorrect answers here include putting the cross at 1 or at  $3/4$  or between 0 and  $1/2$ .
- Part (c) was done well by most candidates. Common incorrect answers here include putting the cross at 1 or at  $1/4$  or between  $1/2$  and 1.
- E3.** This question too was well understood but only 35% of candidates obtained 2 marks for marking both probabilities on the probability scale correctly. One mark was obtained in part (a) for marking the probability scale between a quarter and a half and nearer to a half than a quarter. Many candidates thought that  $5/11$  was actually  $1/2$  and marked it on the halfway point or marked the point between a half and one so did not score the mark. Many candidates placed their  $5/11$  mark at or beyond the  $1/2$  mark on the scale. In part (b) the success rate was much higher with 58% gaining the mark for marking the probability near zero.
- E4.** This question was well understood with 98% of candidates obtaining the correct answer for part (a) and 97% of candidates for part (b). In part (c) candidates were rewarded with 1 mark for probabilities with a denominator of 4 or a numerator of 2 or for writing the probability as 2 out of 4 or 1 out 2. 66% of candidates gained 2 marks and 13% gained 1 mark. Common incorrect answers included  $1/4$ ,  $3/4$ ,  $4/7$  and  $2/5$ . A small number of candidates appeared to not understand the question and gave answers such as “coupe”

or “saloon”.

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This question was well answered except for part (b). In part (b) the majority of candidates indicated likely as the answer instead of even. In part (d) most candidates scored well however a common mistake was to add two blues and then one red, making the probability even.

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Candidates who realised that the sum of the probabilities was 1, usually gained at least one mark, poor arithmetic often accounting for the loss of the final mark. Some candidates worked in percentages and nearly always failed to give the units of their answer of 6.

A great many candidates treated the information given as a linear sequence and attempted to interpolate an answer of 0.12 or 0.13 or 0.14 between 0.09 and 0.18. Some thought they were trying to find the mean and divided by 6.

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Parts (a) and (b) were usually correctly answered, although Abby was often included in the list in part (b).

In part (c),  $\frac{2}{4}$  and  $\frac{1}{6}$  were the most common incorrect answers offered. Many candidates lost marks because of incorrect notation eg. 2 out of 6, 2:6. Some tried to cancel but offered an alternative answer, using OR not equals, and therefore losing the marks; for example  $\frac{2}{6}$  or  $\frac{1}{2}$ .

**E8.** In part (a) it was rather surprising that only half of the candidates could mark the probability correctly on the scale. Part (b) was generally answered well. Many candidates knew what was expected and weaker candidates were often able to gain one mark by identifying two correct pairs. Some used red as a colour and some did didn't appear to know that tails is on the opposite side of a coin to heads.

- E9.** Whilst parts (b) and (c) were usually correct, in part (a) many candidates gave “unlikely” as their answer. Perhaps some candidates were unaware of the meaning of an ‘ordinary’ dice.