1 A bag contains only red, yellow and blue counters.
Bashira picks a counter at random from the bag, records its colour, and puts it back in the bag.
She does this 60 times.

(a) Complete the table for her results.

Colour	Frequency	Relative frequency
Red	19	
Yellow		
Blue	28	

[2]

(b) Gita picks a counter at random from the same bag.

Which colour counter is she most likely to pick?

Answer(b) ..... [1]

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2 During April the probability that it will rain on any one day is $\frac{5}{6}$.
On how many of the 30 days in April would it be expected to rain?

Answer ..... [1]

---

3 In a survey of 60 cars, the type of fuel that they use is recorded in the table below.

Each car only uses one type of fuel.

Petrol	Diesel	Liquid Hydrogen	Electricity
40	12	2	6

(a) Write down the mode.

Answer(a) ..... [1]

(b) Olav drew a pie chart to illustrate these figures.

Calculate the angle of the sector for Diesel.

Answer(b) ..... [2]

(c) Calculate the probability that a car chosen at random uses Electricity.

Write your answer as a fraction in its simplest form.

Answer(c) ..... [2]

(c) A number from the list is chosen at random.

Find the probability that the number is

(i) even,

Answer(c)(i) ..... [1]

(ii) a multiple of 5.

Answer(c)(ii) ..... [1]

(d) A bag of 30 sweets contains 8 chocolates, 13 nougats and 9 toffees.

A sweet is selected at random.
What is the probability that it is a toffee?

Answer ..... [1]

(d) **(i)** Use the information in the pie chart to complete the frequency table for the 288 students.

Number of points	0	1	2	3
Number of students				

[2]

(ii) Calculate the mean number of points.

Answer(d)(ii) ..... [3]

(e) One student is chosen at random.

Find the probability that this student scored

(i) 3 points,

Answer(e)(i) ..... [1]

(ii) at least 1 point,

Answer(e)(ii) ..... [2]

(iii) more than 3 points.

Answer(e)(iii) ..... [1]

(f) 1440 students took part in the same quiz.

How many students would be expected to score 3 points?

Answer(f) ..... [1]

4 **(a)** 85% of the seeds in a packet will produce red flowers.
One seed is chosen at random.
What is the probability that it will **not** produce a red flower?

Answer(a) ..... [1]

(b) A box of 15 pencils contains 5 red, 4 yellow and 6 blue pencils.
One pencil is chosen at random from the box.
Find the probability that it is

(i) yellow,

Answer(b)(i) ..... [1]

(ii) yellow or blue,

Answer(b)(ii) ..... [1]

(iii) green.

Answer(b)(iii) ..... [1]

5

(a) The diagram shows 5 discs.
One disc is chosen at random.

(i) Which number is most likely to be chosen?

Answer(a)(i) ..... [1]

(ii) What is the probability that the number on the disc is even?

Answer(a)(ii) ..... [1]

(iii) What is the probability that the number on the disc is even and a factor of 20?

Answer(a)(iii) ..... [1]

(b) A disc is chosen at random from the discs with even numbers.

What is the probability that the number on the disc is a factor of 20?

Answer(b) ..... [1]

---

6 Tom has 50 model cars.
He has 10 blue cars and 19 red cars.
He has no yellow cars.

(a) Tom chooses a car at random.

Write down the probability that it is

(i) red,

Answer(a)(i) ..... [1]

(ii) red or blue,

Answer(a)(ii) ..... [1]

(iii) not blue,

Answer(a)(iii) ..... [1]

(iv) yellow.

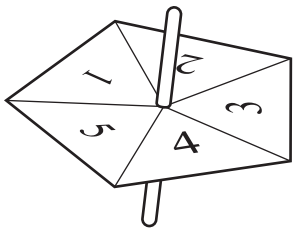
Answer(a)(iv) ..... [1]

(b) The probability that a car is damaged is 1.

How many cars are damaged?

Answer(b) ..... [1]

7



Jonah uses a fair five-sided spinner in a game.

(a) What is the probability that the spinner lands on

(i) 3,

Answer(a)(i) ..... [1]

(ii) an even number,

Answer(a)(ii) ..... [1]

(iii) a number greater than 5?

Answer(a)(iii) ..... [1]

(b) Jonah spins the spinner 25 times and records the results in a frequency table.

Number that the spinner lands on	Frequency
1	8
2	4
3	5
4	
5	2

(i) Fill in the missing number. [1]

(ii) Write down the mode.

Answer(b)(ii) ..... [1]

8 **(a)** There are 11 boys and 13 girls in a choir.

The teacher chooses one choir member at random.

What is the probability that this is a girl?

Write your answer as a fraction.

Answer(a) ..... [1]

(b) The probability that Carla arrives at school before 08 00 is $\frac{9}{20}$.

What is the probability that Carla does not arrive before 08 00?

Write your answer as a fraction.

Answer(b) ..... [1]

(b) A disc is chosen at random.

Find, **as a fraction**, the probability of each of the following events.

(i) Event A: the disc is red.

Answer(b)(i) ..... [1]

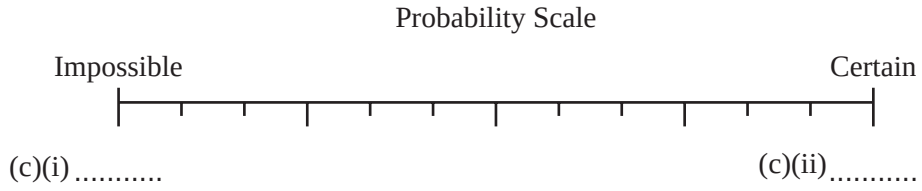
(ii) Event B: the disc is red or yellow.

Answer(b)(ii) ..... [1]

(iii) Event C: the disc is **not** yellow.

Answer(b)(iii) ..... [1]

(c)



The diagram shows a horizontal probability scale.

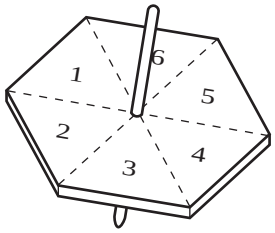
Write on the dotted lines in the diagram, the probability of

(i) an impossible event, [1]

(ii) a certain event. [1]

(d) Using the notation, A, B and C, mark the positions of your three answers in **part (b)** on the Probability Scale diagram in **part (c)**. [3]

9 The diagram shows a six-sided spinner.



(a) Amy spins a biased spinner and the probability she gets a two is $\frac{5}{36}$.

Find the probability she

(i) does not get a two,

Answer(a) (i) ..... [1]

(ii) gets a seven,

Answer(a) (ii) ..... [1]

(iii) gets a number on the spinner less than 7.

Answer(a) (iii) ..... [1]

(b) Joel spins his blue spinner 99 times and gets a two 17 times.
Write down the relative frequency of getting a two with Joel's spinner.

Answer(b) ..... [1]

(c) The relative frequency of getting a two with Piero's spinner is $\frac{21}{102}$.

Which of the three spinners, Amy's, Joel's or Piero's, is most likely to give a two?

Answer(c) ..... [1]

10 Jane records the number of telephone calls she receives each day for two weeks.

5 6 10 0 15 6 12 2 13 16 0 16 6 10

(a) Calculate the mean.

Answer(a) ..... [3]

(b) Find the median.

Answer(b) ..... [2]

(c) Write down the mode.

Answer(c) ..... [1]

(d) Complete the frequency table below.

Number of calls	0 − 4	5 − 9	10 − 14	15 − 19
Frequency				

[2]

(e) Find the probability that Jane receives

(i) ten or more calls,

Answer(e)(i) ..... [1]

(ii) less than five calls.

Answer(e)(ii)..... [1]

(f) Estimate the number of days in the next six weeks that Jane can expect to receive 10 − 14 calls.

Answer(f)..... days [2]

11

S	U	S	A	N

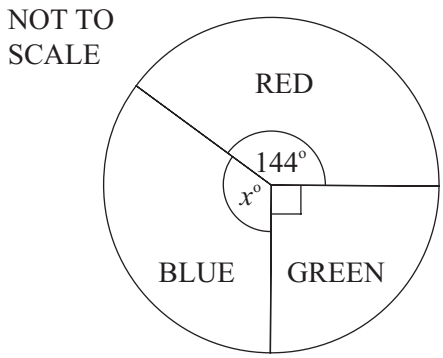
Susan writes the letters of her name on five cards.
One of the five cards is chosen at random.
Find the probability that the letter on the card is

(a) S, *Answer (a)*……. [1]

(b) E. *Answer (b)*……. [1]

A country has three political parties, the Reds, the Blues and the Greens.

The pie chart shows the proportion of the total vote that each party received in an election.



(a) Find the value of x.

Answer (a) x =……. [1]

(b) What percentage of the votes did the Red party receive?

Answer (b)…….……% [2]

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12 A dentist recorded the number of fillings that each of a group of 30 children had in their teeth. The results were

2	4	0	5	1	1	3	2	6	0
2	2	3	2	1	4	3	0	1	6
1	4	1	6	5	1	0	3	4	2

(a) Complete this frequency table.

Number of fillings	Frequency
0	
1	
2	
3	
4	
5	
6	

[2]

(b) What is the modal number of fillings?

Answer (*b*)..... [1]

(c) Find the median number of fillings.

Answer (*c*)..... [2]

(d) Work out the mean number of fillings.

Answer (*d*) ..... [2]

(e) One of these children is chosen at random.
Find the probability that this child has

(i) exactly one filling,

Answer (*e*)(i) ..... [1]

(ii) more than three fillings.

Answer (*e*)(ii) ..... [1]

(f) These 30 children had been chosen from a larger group of 300 children. Estimate how many in the larger group have no fillings in their teeth.

Answer (*f*) ..... [1]

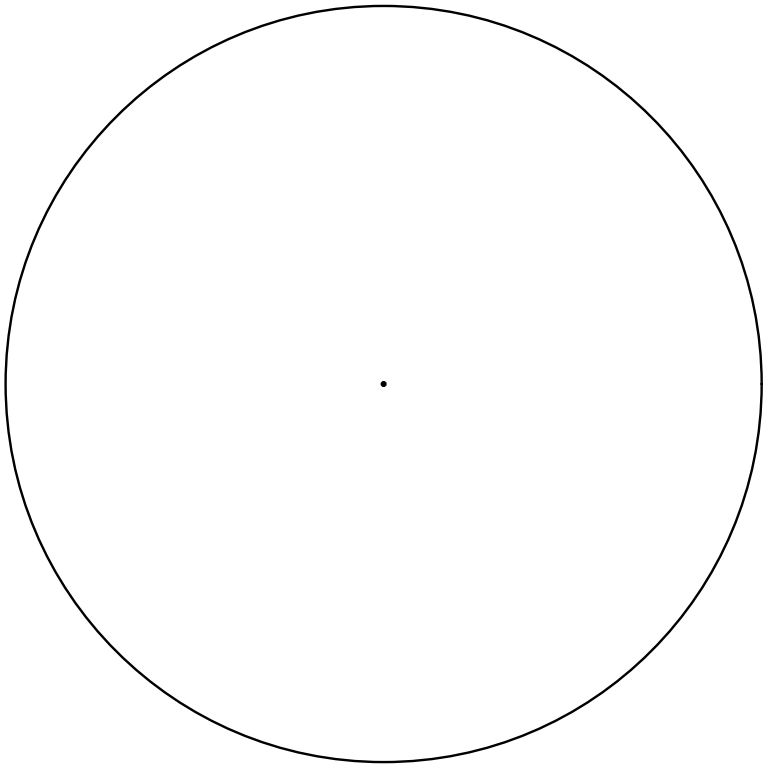
13 **(a)** The results of the school's senior football team during a year are recorded, using W for a win, L for a loss and D for a draw. They are:

L	L	W	D	L	W	L	W
L	L	D	L	L	W	W	L
W	L	L	W	D	L	L	W

(i) Complete the table below to show these results.

Then display this information in the pie chart below.

	Frequency	Pie chart angle
W		
L		
D		
TOTAL		360°



[6]

(ii) The team play another match.

Based on the results above, what is the probability that they will win?

Answer (a)(ii) ..... [1]

(b) The probability that the school's junior team wins is 0.45 and the probability that it loses is 0.35. What is the probability of a draw?

Answer (b) ..... [2]