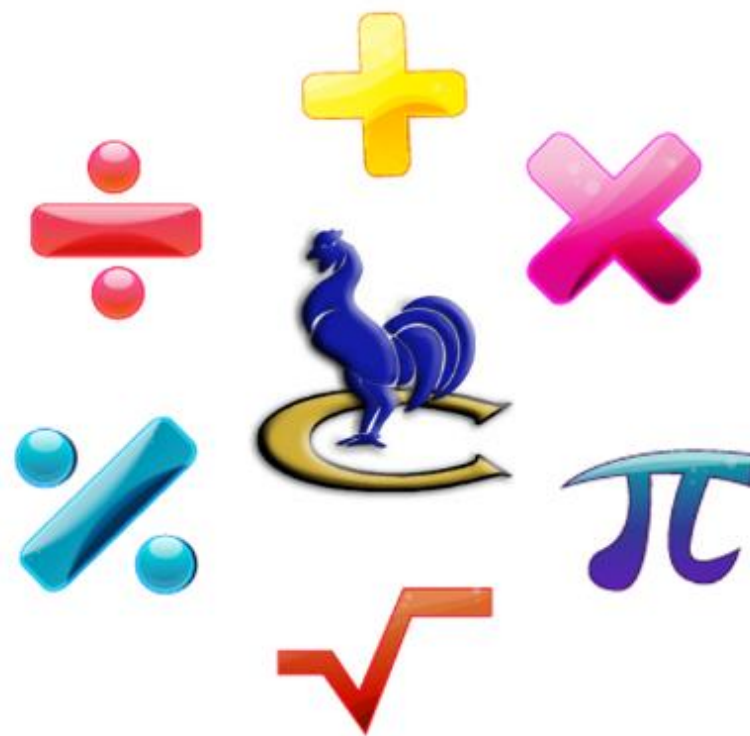Key Stage 4

Foundation Statistics Revision

Name:

Teacher:

Maths Non-Calculator

2. *(a)* Huw has 19 coins in his pocket.
13 of these coins are 10p coins and the rest are 5p coins.
Huw chooses one coin at random from his pocket.

Circle the best expression from those given below to describe the chance that Huw chooses a 5p coin. [1]

impossible   **unlikely**   **an even chance**   **likely**   **certain**

(b) Catrin has 10 pieces of fruit in her bag.
She has 4 oranges and 6 apples.

Catrin chooses one piece of fruit at random from her bag.

Circle the best expression from those given below to describe the chance that Catrin chooses a banana from her bag. [1]

impossible   **unlikely**   **an even chance**   **likely**   **certain**

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3. *(a)* Jac has a box of 100 cards.
50 of the cards are blue.
Jac chooses a card at random from his box of cards.

Describe the chance that Jac chooses a blue card.
Circle the correct expression from those given below. [1]

impossible   **unlikely**   **an even chance**   **likely**   **certain**

(b) Mair has a different box of 100 cards.
All the cards are either red or yellow.
Mair chooses a card at random from her box of cards.

Describe the chance that Mair chooses a green card.
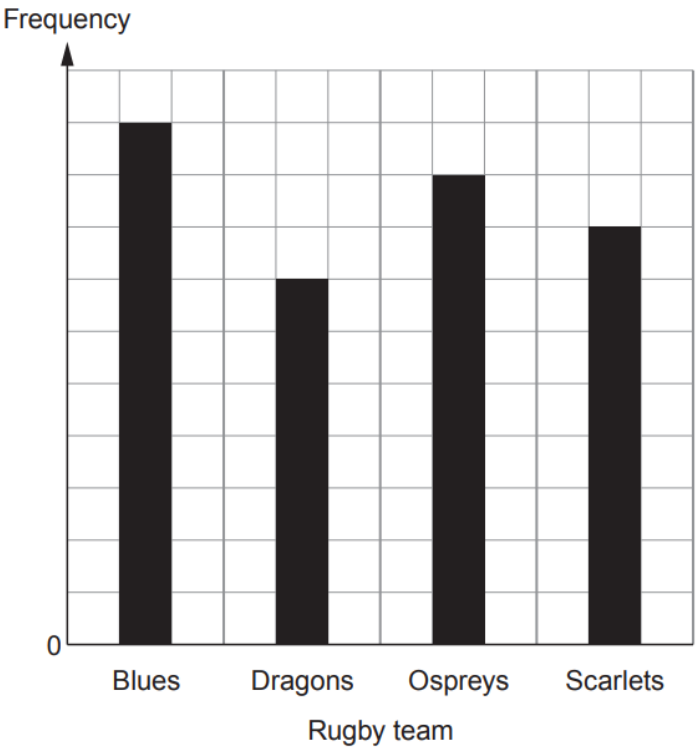Circle the correct expression from those given below. [1]

impossible   **unlikely**   **an even chance**   **likely**   **certain**

5. Blues, Dragons, Ospreys and Scarlets are four Welsh rugby teams.

Aled asked a group of 170 pupils which of these 4 teams they preferred.
He then drew this bar chart to show the data that he had collected.

(a) Aled knew that 50 of these pupils said that they preferred the Blues.
Complete the table below.   [3]

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Rugby team preferred	Number of pupils
Blues	50
Dragons	
Ospreys	
Scarlets	

(b) A pupil is chosen at random from this group.
What is the probability that this pupil preferred the Blues?   [2]

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(d) Draw a bar chart to display the favourite sports of the 60 people.
Use the grid below. [3]
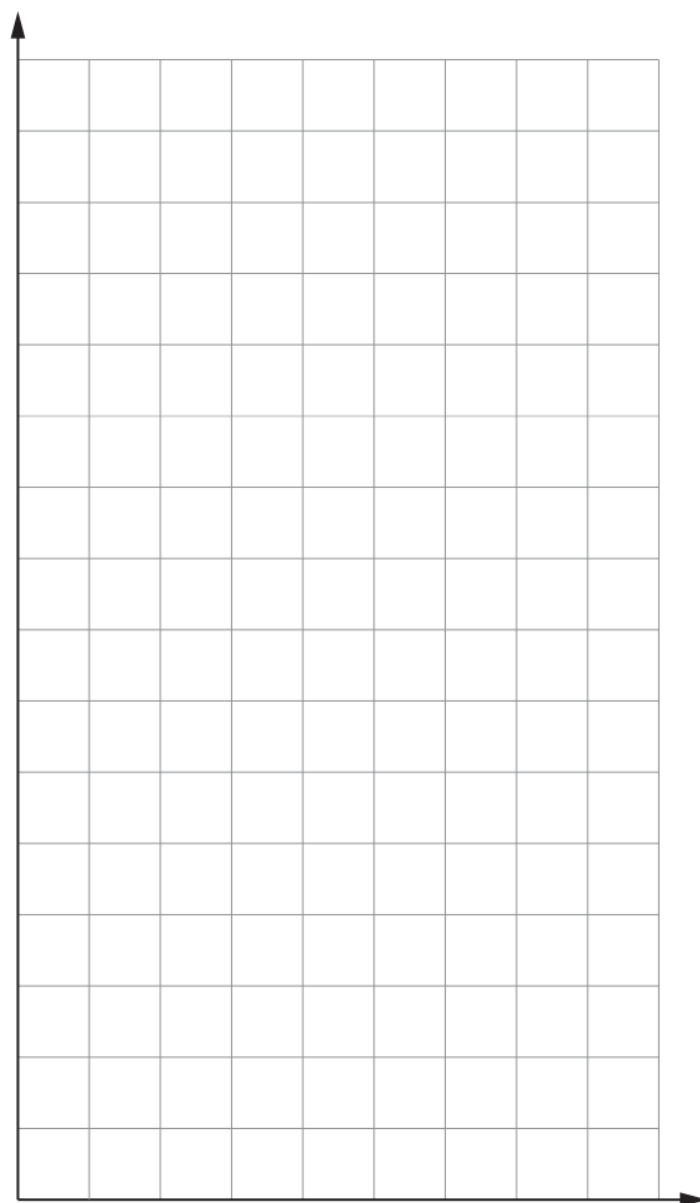
Space for working:

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5. *(a)* Sara has 20 balls in a bag.
There are 15 blue balls and 5 red balls.
Sara chooses a ball at random from her bag.

Describe the chance that Sara chooses a red ball from her bag.
Circle the correct expression from those given below. [1]

impossible   **unlikely**   **an even chance**   **likely**   **certain**

(b) Gareth has some cards with a number written on each one.
These are Gareth's cards.

| 125 | 269 | 748 | 731 |

Gareth chooses one of his cards at random.

Describe the chance that Gareth chooses a card with an odd number on it.
Circle the correct expression from those given below. [1]

impossible   **unlikely**   **an even chance**   **likely**   **certain**

6. Arjuna has the 10 cards shown below.

| 2 | 4 | 7 | 8 | 9 | 11 | 15 | 16 | 18 | 19 |

He puts the cards in a box and then chooses one at random.

On the probability scale shown below, mark the points A and B where:

- A is the probability of Arjuna choosing a number that is greater than 16,

- B is the probability of Arjuna choosing a number that is less than 20. [2]

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 ├───────────────────┼─────────────────────┤
 0                                           1
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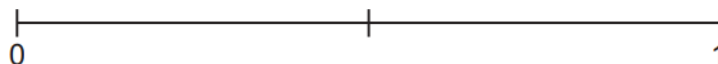
6. The pie chart below shows the favourite sport of 60 people.
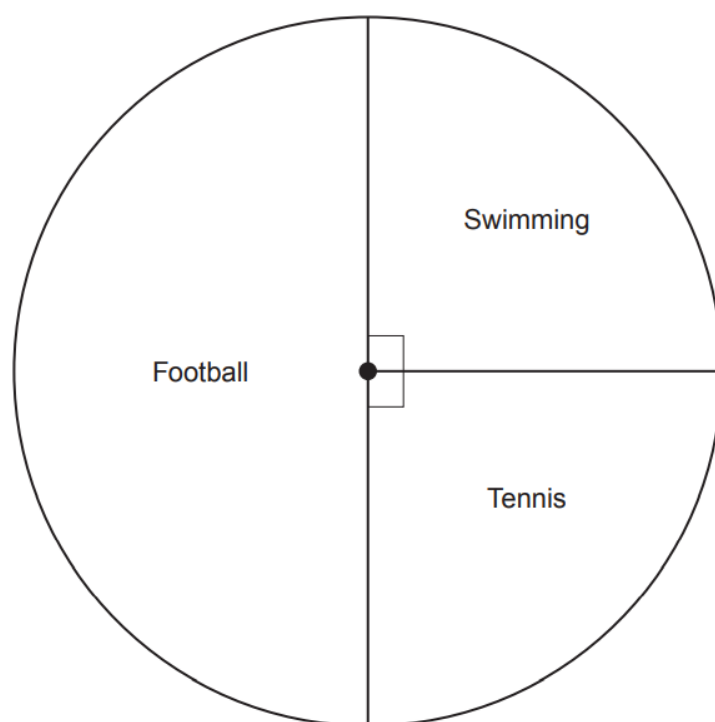
(a) Which is the modal sport? [1]

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(b) One person is chosen at random.

What is the probability that this person said swimming is their favourite sport? [1]

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(c) How many people said tennis is their favourite sport? [2]

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10. Twenty-five balls have numbers printed on them.
Some of the balls are coloured yellow (Y), the others are coloured blue (B).
The list below shows both the colour of each ball and the number printed on it.

Y 76	Y 217	B 54	B 126	Y 21
Y 438	Y 32	B 561	B 194	Y 69
B 37	B 518	Y 94	Y 157	Y 208
Y 382	B 56	B 234	Y 72	B 84
Y 68	Y 271	Y 53	B 100	Y 321

(a) Complete the frequency table. [2]

Type of ball	Yellow		Blue	
	Number < 100	Number ⩾ 100	Number < 100	Number ⩾ 100
Frequency	8			

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(b) How can you use your table to check that all the balls have been counted? [1]

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(c) The 25 balls are placed in a box.
One ball is chosen at random.
What is the probability that it is a yellow ball numbered less than 100? [2]

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14. *(a)* A fair, six-sided dice is rolled.
What is the probability that a 4 is shown on the dice?
Circle your answer. [1]

6% $\frac{1}{5}$ $\frac{1}{4}$ 6:1 $\frac{1}{6}$

(b) 50 raffle tickets were sold at a charity event.
Sian has a 20% chance of winning the top prize.
How many tickets did Sian buy?
Circle your answer. [1]

1 2 4 10 20

(c) A bag contains a mixture of blue beads, yellow beads and pink beads.
One bead is taken at random from the bag.

The probability that the bead is pink is $\frac{1}{5}$.

Which of the following sets of beads could have been in the bag?
Circle your answer. [1]

6 blue
6 yellow
3 pink

5 blue
5 yellow
5 pink

1 blue
1 yellow
5 pink

5 blue
5 yellow
1 pink

6 blue
3 yellow
6 pink

14. The mean of two numbers is 7.
The range of these two numbers is 8.

What are these two numbers? [2]

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The numbers are ☐ and ☐

16. David, Jane and Mary are beach inspectors.
Three beaches, Harlech, Rhyl and Porhcawl, are all to be inspected on a certain day.
It is decided to share the work so that the inspectors will visit one beach each, chosen at random.

List all the possible different ways they could share the work.
One has been done for you. [2]

David ⟶ Harlech,   Jane ⟶ Rhyl   and   Mary ⟶ Porthcawl

16. Three **red** cards have the following numbers written on them.

<div style="text-align:center">

3   6   9

</div>

Four **green** cards have the following numbers written on them.

<div style="text-align:center">

1   2   3   4

</div>

In a game, the cards are turned face down.
A player chooses one red card and one green card at random.
The player's score is the sum of the two numbers.

(a) Complete the following table. [1]

	Score			
9	....	11	....	....
6	....	8	....	....
3	4	5	6	7
	1	2	3	4

Red card

Green card

(b) A player wins a prize if the score is **more** than 9.
Safira plays the game once. What is the probability that she wins a prize? [2]

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(c) 60 people play the game once.
Approximately how many people would you expect to win a prize? [2]

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19. Write down five numbers that satisfy all of the following conditions:

- They are all between 1 and 9 inclusive.
- They have a median value of 6.
- They have a range of 7.
- Their mean is 5.

[3]

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20. 200 young people are taking part in a conference held at Aberystwyth.

(a) One of the young people is chosen at random to be the chairperson.

Complete the table below to find the probability that the person chosen lives outside the United Kingdom (UK). [2]

	North Wales	Mid Wales	South Wales	Elsewhere in the UK	Outside the UK
Probability	0·2	0·3	0·25	0·15	

(b) How many of the 200 young people live in Mid Wales? [2]

Maths Calculator

4. The number of points scored by the Welsh rugby team in their 9 games during the 2014-2015 season were as follows:

28	17	16	12	16	26	20	23	61

(a) Find the mode of the number of points scored. [1]

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(b) Find the median number of points scored. [2]

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(c) Find the mean number of points scored. [3]

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6. A sixth number is to be added to the list below.
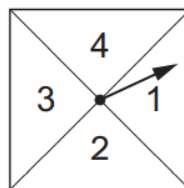
$$12 \qquad 6 \qquad 15 \qquad 3 \qquad 5$$

When the sixth number is added, the range increases by 2.

Write down the two possible values for the sixth number.
You must show all your working. [3]

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7. *(a)* Gareth is running a game stall at his school fete.
In his game, a player must flip a coin and spin a fair 4-sided spinner.
The sections of the spinner are labelled 1, 2, 3 and 4, as shown below.

   (i) Write down all the possible outcomes.
   One has been done for you. [2]

   Head, 1

   (ii) A player wins a prize if the coin lands on tails and the spinner shows the number 4.
   Azi plays the game once.

   What is the probability that Azi wins a prize? [2]

(b) Cerys says:

"The chance of throwing a three on an ordinary 6-sided dice is higher than the chance of throwing a six, because six is the hardest number to get."

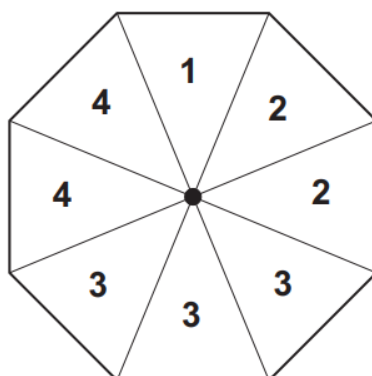Is Cerys correct?
Explain your reasoning fully. [1]

11. Seren has a fair 8-sided spinner.
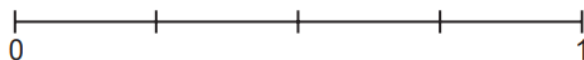The sections of the spinner are numbered 1, 2, 2, 3, 3, 3, 4, 4.

(a)   Which number is the spinner most likely to land on?   [1]

....

(b)   Circle one term from the list below that describes the probability of the spinner landing on
       a 2.   [1]

impossible   unlikely   even chance   likely   certain

(c)   On the probability scale below, mark with an arrow the probability of the spinner landing
       on a 3.   [1]

17. Alison and Sarfraz play a game. They each have a different bag of cards.

Alison has the following cards in her bag.

C A E R N A R F O N

Sarfraz has the following cards in his bag.

A B E R

They each take a card at random from their own bag. They make a note of the letter, and return the card to the bag.

They each do this 100 times.

Who do you think is likely to choose the letter R more often?

Alison ☐   Sarfraz ☐

You must explain your decision and show all your working. [4]

14. *(a)* A person is chosen at random.
Which is the best estimate for the probability that this person was born in the month of March?
Circle the correct answer. [1]
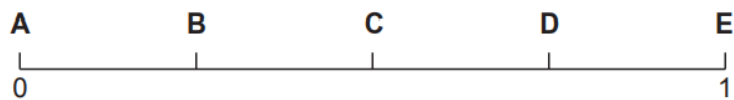
$$\frac{1}{30} \qquad \frac{1}{31} \qquad \frac{12}{365} \qquad \frac{1}{12} \qquad \frac{12}{31}$$

(b) A box contains four coloured cards.
One card is blue, one is red, one is green and one is white.
A card is drawn from the box at random.

Which letter, **A**, **B**, **C**, **D** or **E**, represents the probability that the card drawn is **not** blue?
Circle the correct letter on the probability scale below. [1]

A	**B**	**C**	**D**	**E**
0				1

(c) The pupils at a school were asked the following question.

'What design would you like to have on the school's badge?'

Dragon ☐   Daffodil ☐   Leek ☐   No preference ☐

The results of the replies received are shown in the pie chart below.
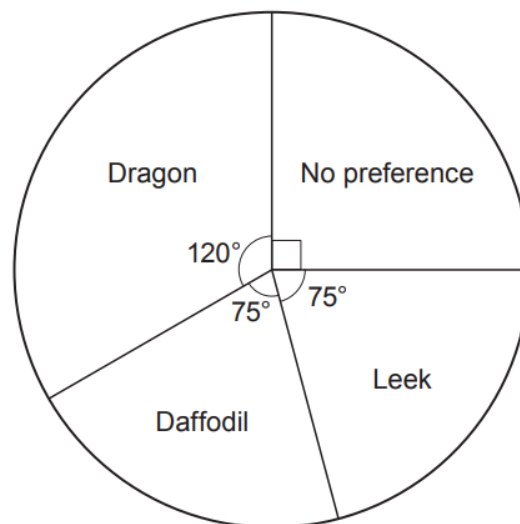
A pupil who answered the question is chosen at random.
What is the probability that this pupil wanted the design to be a dragon?
Circle the correct answer. [1]

$$\frac{1}{3} \qquad \frac{1}{4} \qquad \frac{1}{360} \qquad 4\% \qquad \frac{1}{120}$$

16. Write down three integers, all less than 25, whose
- range is 8, and
- mean is 13. [2]

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The three integers are .... , ... and ....

(b) Cadfan writes down four **positive odd** numbers.

The mode of his numbers is 7.
The median of his numbers is 6.

Which odd numbers could Cadfan have written down? [3]

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The numbers Cadfan could have written are .... , ... , ... and ....