1. Here is an incomplete probability line.

| $\frac{0}{4}$ | $\frac{1}{4}$ | $\frac{2}{4} = \frac{1}{2}$ | $\frac{3}{4}$ | $\frac{4}{4}$ | (as a fraction) |

$$0 \qquad\qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad 1 \quad \text{(as a decimal)}$$

0%   10%   20%   30%   40%   50%   60%   ...   ...   90%   100%   (as a percentage)
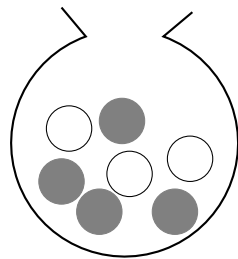
Complete

(i) the percentage labels,

(ii) the decimal labels,

(iii) $\frac{1}{4} = \text{.......} \%$ $\frac{1}{2} = \text{.......} \%$ $\frac{3}{4} = \text{.......} \%$

2. (a) Here is a bag with some grey and white marbles in it.

     Lennox, shakes the bag and takes a marble, at random, from the bag.
     Work out the probability that he takes a white marble.

                 (a) ....

(b) Juliana puts these tiles in a bag.

| 1 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 |

     Juliana, shakes the bag and takes a tile, at random, from the bag.
     Work out the probability that she takes a tile with 3 on it.

                 (b) ....
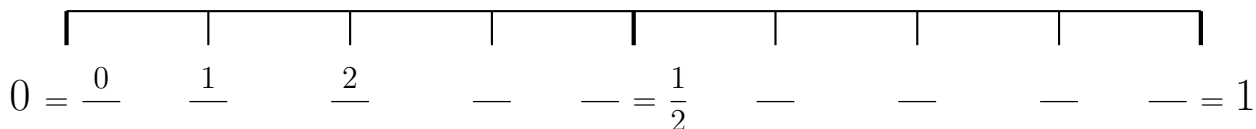
3. There are 7 good rulers and 2 chipped ruler in a tray.

A ruler is taken at random from the tray.

What is the probability that the ruler is good?

                 3. ....

4. Here is an incomplete probability line.

$$0 = \frac{0}{} \qquad \frac{1}{} \qquad \frac{2}{} \qquad \frac{}{} \qquad \frac{}{} = \frac{1}{2} \qquad \frac{}{} \qquad \frac{}{} \qquad \frac{}{} \qquad \frac{}{} = 1$$

(a) Complete the fraction labels.

Zuva puts these tiles in a bag.

▲	△	□	▲	△	■	▲	□

(b) On the probability line, mark with a cross ($\times$) the probability that Zuva takes a tile with a triangle shape on it.

5. There are only red pencils, blue pencils and green pencils in a tin.

There are 3 red pencils.

There are 7 blue pencils.

There are 4 green pencils.

Ananya takes at random a pencil from the tin.

(a) Work out the probability that she takes a red pencil.

(b) Work out the probability that Ananya takes a pencil that is **not** red.

6. Farhan throws a fair coin once.

(a) Choose the word that best describes the probability that Farhan will get heads.

     impossible   unlikely   evens   likely   certain

Farhan puts these tiles in a bag.

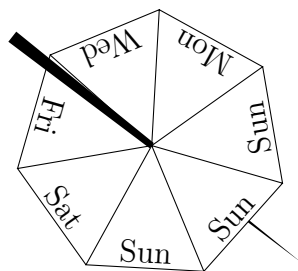| ○	■	□	■	▲	▲	△	▲

Farhan, shakes the bag and takes a tile, at random, from the bag.

(b) Choose the word that best describes the probability that Farhan takes a tile with a white shape on it.

     impossible   unlikely   evens   likely   certain

Farhan has a fair 7-sided spinner.

The sides of the spinner are labelled Mon, Wed, Fri, Sat, Sun, Sun and Sun
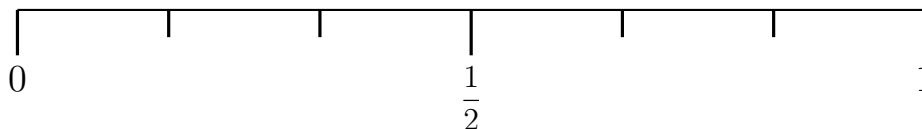

Farhan spins the spinner once.

(c) Which day of the week is the spinner most likely to land on?

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7. Dorian puts these tiles in a bag.
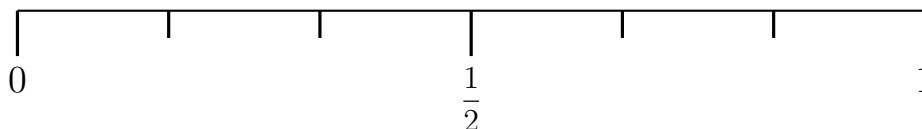
| ■ | □ | ■ | ▲ | △ | ▲ |

Dorian, shakes the bag and takes a tile, at random, from the bag.

(a) On the probability scale below, mark with a cross ($\times$) the probability that Dorian takes a tile with a white circle on it.

$$0 \qquad\qquad\qquad \frac{1}{2} \qquad\qquad\qquad 1$$

Dorian rolls an ordinary dice once.

(b) On the probability scale below, mark with a cross ($\times$) the probability that Dorian gets more than 3.

$$0 \qquad\qquad\qquad \frac{1}{2} \qquad\qquad\qquad 1$$

8. Circle the word that best describes the probability that all your teachers will be away on Monday.

   impossible   unlikely   evens   likely   certain

9. Four students survey people opening the "lucky dip" with their burger.

   The tables below show for each student the frequency of a free burger voucher and the frequency of not getting a free burger voucher.

Ines	voucher	no voucher
Frequency	0	5
Total number of burgers = 5		

Jake	voucher	no voucher
Frequency	1	9
Total number of burgers = 10		

Keira	voucher	no voucher
Frequency	4	26
Total number of burgers = 30		

Lenny	voucher	no voucher
Frequency	17	73
Total number of burgers = 90		

One more burger is to be bought.

(a) Which of the students' results will give the best estimate for the probability that burger will come with a free burger voucher?

(b) Use all the results to work out a better estimate for the probability that ...

10.

10. . . . .

11. The probability that a biased coin lands on heads is 0.8

    Work out the probability that the biased coin will **not** land on heads.

12.   12. . . . .

13. Each customer who signs up on-line for a spa day can choose a free treatment.

    The table shows the probability that a customer will chose a facial or a head massage or a pedicure.

Free treatment	facial	head massage	pedicure	reflexology
Probability	0.43	0.18	0.3	

    Work out the probability that a customer will choose a free reflexology treatment.

14. (a) The sides of a biased dice are labelled 1, 2, 3, 4, 5 and 6.

    The probability that the dice will land on each numbers is given in the table.

Number	1	2	3	4	5	6
Probability	0.1	0.15	0.15	0.15	0.15	0.3

    Don is going to spin the spinner 400 times.
    Work out an estimate for the number of times the spinner will land on a number **more** than 4.

  (b) There are 1200 counters in a bag.
    The counters are yellow or blue or red or green or white.

    The table shows the probability that a counter take at random from the bag will be yellow, blue, red, green or white.

Colour	yellow	blue	red	green	white
Probability	0.24	0.31	0.2	0.1	0.15

    Work out the number of red counters in the bag.