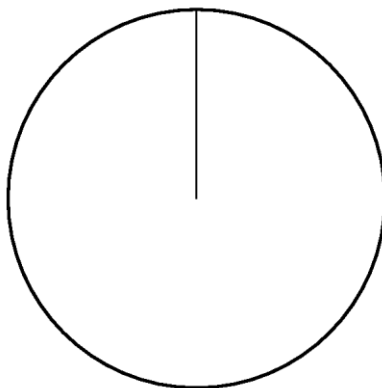

Question 1

Here is a frequency table of the animals on Mr McDonald's farm

| Animal | Frequency | |
|--------|-----------|--|
| Hens | 30 | |
| Sheep | 80 | |
| Cows | 104 | |
| Pigs | 20 | |
| Geese | 6 | |

(a) Draw a fully labelled pie chart to show this data



An animal is chosen at random from Mr. McDonald's farm.

(b) What is the probability that the animal

- i) is a pig
- ii) is a horse
- iii) has four legs?

Question 2

Martin bought a packet of mixed flower seeds.

The seeds produce flowers that are Red or Blue or White or Yellow.

The probability of a flower seed producing a flower of a particular colour is:

| Colour | Red | Blue | White | Yellow |
|-------------|-----|------|-------|--------|
| Probability | 0.6 | 0.15 | | 0.15 |

(a) Write down the most common colour of a flower. **(1 mark)**

Martin chooses a flower seed at random from the packet.

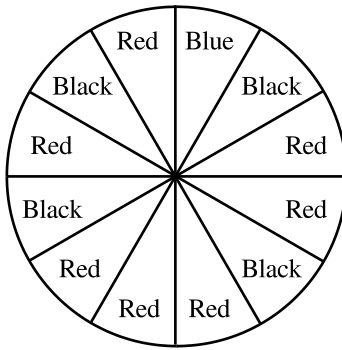
- (b) i) Work out the probability that the flower produced will be White.
ii) Write down the probability that the flower produced will be Orange.

(3 marks)

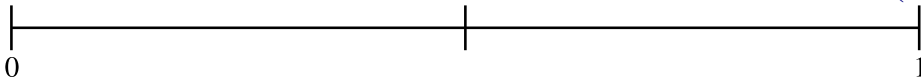
Question 3

Here is a spinner.

The spinner is spun.



- (a) i) Which colour is least likely?
 ii) Give a reason for your answer. **(2 marks)**
- (b) On the probability line, mark with an X the probability that the colour will be Red. **(1 mark)**



- (c) Write down the probability that the colour will be Blue. **(1 mark)**

Question 4






Peter and Asif are both taking their driving test for a motor cycle for the first time. The table below gives the probabilities that they will pass the test at their first attempt.

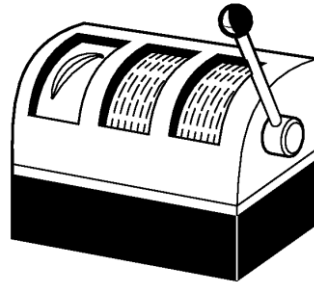
| | Probability of passing at first attempt |
|-------|---|
| Peter | 0.6 |
| Asif | 0.7 |

- (a) Write down the probability that Asif will pass the test at the first attempt.
 (b) Work out the probability that Peter will fail the test at the first attempt.
 (c) Explain clearly why Asif is more likely to pass the test at the first attempt than he is to fail at the first attempt.

Question 5

A game in an amusement arcade can show the following pictures. The fraction under each picture shows the probability of the picture being shown at the first window.

| Cherry | Bar | Banana | Strawberry | Apple |
|---|---|---|---|---|
|  |  |  |  |  |
| $\frac{4}{12}$ | $\frac{1}{12}$ | $\frac{2}{12}$ | $\frac{2}{12}$ | $\frac{3}{12}$ |



Calculate the probability of the game **not** showing a Bar at the first window.

Question 6

Alison, Brenda, Claire and Donna are the only runners in a race. The probabilities of Alison, Brenda and Claire winning the race are shown below.

| Alison | Brenda | Claire | Donna |
|--------|--------|--------|-------|
| 0.31 | 0.28 | 0.24 | |

Work out the probability that Donna will win the race.

Question 7

A packet contains only yellow counters and green counters. There are 8 yellow counters and 5 green counters. A counter is to be taken from the packet at random.

- (a) Write down the probability that
 i) a yellow counter will be taken,
 ii) a yellow counter will **not** be taken.

A second counter is to be taken from the packet.

- (b) Write down all the possible outcomes of taking two counters from the packet.

Question 8

A dice has six faces numbered 1, 2, 3, 4, 5 and 6.

The dice, which is biased, is thrown 200 times and the number on the upper face is recorded.

The frequencies of the numbers obtained are shown in the table.

| | | | | | | |
|----------------------|----|----|----|----|----|----|
| Number shown on dice | 1 | 2 | 3 | 4 | 5 | 6 |
| Frequency | 38 | 22 | 46 | 25 | 53 | 16 |

Estimate the probability that the next time the dice is thrown it will show the number 3.

Question 9

The probability of a machine being able to manufacture a component within a tolerance of one tenth of a millimetre is 0.995.

(a) Work out the probability of the machine **not** being able to manufacture a component to within a tolerance of one tenth of a millimetre.

Ten thousand components are manufactured in one day.

(b) Work out an estimate of how many components will be outside the tolerance of one tenth of a millimetre.

Question 10

Peter and Asif are both taking their driving test for a motor cycle for the first time.

The table below gives the probabilities that they will pass the test at the first attempt or, if they fail the first time, the probability that they will pass at the next attempt.

| | Probability of passing at first attempt | Probability of passing at next attempt if they fail the first attempt |
|-------|---|---|
| Peter | 0.6 | 0.8 |
| Asif | 0.7 | 0.7 |

On a particular day 1000 people will take the test for the first time.

For each person the probability that they will pass the test at the first attempt is the same as the probability that Asif will pass the test at the first attempt.

(a) Work out an estimate for how many of these 1000 people are likely to pass the test at the first attempt.

(b) Calculate the probability that both Peter and Asif will pass the test at the first attempt.

(c) Calculate the probability that Peter will pass the test at the first attempt and Asif will fail the test at the first attempt.

(d) Calculate the probability that Asif will pass the test within the first two attempts.

Question 11

Shreena has a bag of 20 sweets.

10 of the sweets are red.

3 of the sweets are black.

The rest of the sweets are white.

Shreena chooses one sweet at random.

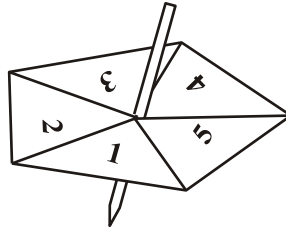
What is the probability that Shreena will choose a

- (a) red sweet (1 mark)
 (b) white sweet? (1 mark)

Question 12

Alan throws a fair coin 600 times.

- (a) How many times would you expect him to get Heads? (1 mark)
 Here is a 5-sided spinner.



Its sides are labelled 1, 2, 3, 4, 5.

Alan spins the spinner and throws a coin.

One possible outcome is (3, Heads).

- (b) List all the possible outcomes. (2 marks)
 The spinner is biased.

The probability that the spinner will land on each of the numbers 1 to 4 is given in the table.

| Number | 1 | 2 | 3 | 4 | 5 |
|-------------|------|-----|------|------|---|
| Probability | 0.36 | 0.1 | 0.25 | 0.15 | |

Alan

spins the spinner once.

- (c) i) Work out the probability that the spinner will land on 5. (2 marks)
 ii) Write down the probability that the spinner will land on 6. (1 mark)
 iii) Write down the number that the spinner is most likely to land on. (1 mark)

Question 13

A bag contains coloured beads.

A bead is selected at random.

The probability of choosing a red bead is $\frac{5}{8}$.

Write down the probability of choosing a bead that is **not** red from the bag. (1 mark)

Question 14

Chris is going to roll a biased dice.

The probability that he will get a six is 0.09.

- (a) Work out the probability that he will **not** get a six. (1 mark)
 Chris is going to roll the dice 30 times.

- (b) Work out an estimate for the number of sixes he will get. (2 marks)

Question 15

There are 20 bubble gums in a bubble gum machine.

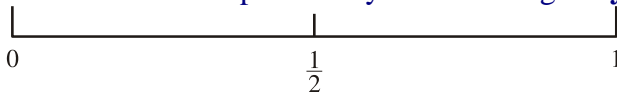
The colour of each bubble gum can be red or green or yellow or white.

The pictogram shows the number of bubble gums of each colour in the bubble gum machine.

| | |
|--------|---------------------|
| Red | ● ● |
| Green | ● ● ● ● ● |
| Yellow | ● ● ● |
| White | ● ● ● ● ● ● ● ● ● ● |

Bob gets one bubble gum at random from the machine.

- (a) Which colour of bubble gum is he
- (i) most likely to get,
 - (ii) least likely to get? (2 marks)
- (b) On the line below,
- (i) mark with an *R* the probability that he will get a **red** bubble gum,
 - (ii) mark with a *Y* the probability that he will get a **yellow** bubble gum.



(2 marks)

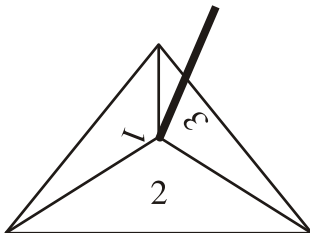
- (c) Write down the probability that he will get
- (i) a **white** bubble gum,
 - (ii) a **black** bubble gum,
 - (iii) either a **red** or a **green** bubble gum. (3 marks)
- (d) Write down the probability that he will **not** get a **green** bubble gum. (2 marks)

Question 16

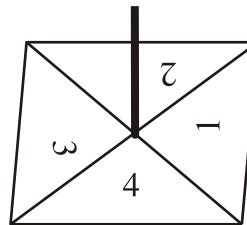
A game is played with two spinners.

You multiply the two numbers on which the spinners land to get the score.

Spinner A



Spinner B



This score is $2 \times 4 = 8$

- (a) Complete the table to show all the possible scores.
One score has been done for you.

SPINNER B

| | | | | | |
|--------------|---|---|---|---|---|
| | × | 1 | 2 | 3 | 4 |
| SPINNER A | 1 | | | | |
| | 2 | | | | 8 |
| | 3 | | | | |

(2 marks)

- (b) Work out the probability of getting a score of 6. (2 marks)
- (c) Work out the probability of getting a score that is an odd number. (2 marks)

Question 17

Asif has a box of 25 pens.
12 of the pens are blue.
8 of the pens are black.
The rest of the pens are red.
Asif chooses one pen at random from the box.

What is the probability that Asif will choose

(i) a blue pen,

(ii) a red pen?

.....

(2 marks)

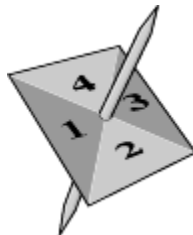
Question 18

Kevin buys one raffle ticket.
A total of 350 raffle tickets are sold.
One of these tickets will win the raffle.
Each ticket has an equal chance of winning the raffle.

Write down the probability that Kevin's ticket will win the raffle.....**(1 mark)**

Question 19

Here is a 4-sided spinner.



The sides are labelled 1, 2, 3, 4.

The spinner is biased.

The probability that the spinner will land on each of the numbers 1 to 3 is given in the table.

| | | | | |
|-------------|-----|-----|-----|---|
| Number | 1 | 2 | 3 | 4 |
| Probability | 0.3 | 0.4 | 0.1 | |

Sabia spins the spinner once.

(a) (i) Work out the probability that the spinner will land on the number 4.....

(ii) Write down the number that the spinner is most likely to land on.**3 marks)**

Nick spins the spinner 100 times.

(b) Work out an estimate for the number of times the spinner will land on the number 2..... **(2 marks)**

Question 20

The probability that it will snow in London on Christmas Day in any year is 0.08

(a) Work out the probability that it will **not** snow in London on Christmas Day.
..... **(1 mark)**

(b) Work out an estimate for the number of Christmas Days in the next 50 years on which it will snow in London..... **(2 marks)**