1 Each time John plays a game, the probability that he wins the game is 0.65

John is going to play the game 300 times.

Work out an estimate for the number of games that John wins.

.....

(Total for Question 1 is 2 marks)

2 Toy cars are made in a factory.
The toy cars are made for 15 hours each day.
5 toy cars are made every 12 seconds.

For the toy cars made each day, the probability of a toy car being faulty is 0.002

Work out an estimate of the number of faulty toy cars that are made each day.

.....

(Total for Question 2 is 4 marks)

3 In a supermarket, the probability that John buys fruit is 0.7

In the same supermarket, the probability that John independently buys vegetables is 0.4

Work out the probability that John buys fruit or buys vegetables or buys both.

.....

(Total for Question 3 is 3 marks)

4 Steffi is going to play one game of tennis and one game of chess.

The probability that she will win the game of tennis is 0.6
The probability that she will win **both** games is 0.42

Work out the probability that she will **not** win either game.

.....

(Total for Question 4 is 4 marks)

5 There are three different types of sandwiches on a shelf.

There are

4 egg sandwiches,
5 cheese sandwiches
and 2 ham sandwiches.

Erin takes at random 2 of these sandwiches.

Work out the probability that she takes 2 different types of sandwiches.

.....

(Total for Question 5 is 5 marks)

6 Carolyn has 20 biscuits in a tin.

She has

12 plain biscuits
5 chocolate biscuits
3 ginger biscuits

Carolyn takes at random two biscuits from the tin.

Work out the probability that the two biscuits were **not** the same type.

.....

(Total for Question 6 is 4 marks)

7 Nomusa has 30 sweets.

She has

18 fruit sweets
7 aniseed sweets
5 mint sweets

Nomusa is going to take at random two sweets.

Work out the probability that the two sweets will **not** be the same type of sweet.
You must show all your working.

.....

(Total for Question 7 is 4 marks)

8 A box contains 15 counters.

There are 4 red counters, 5 green counters and the rest are yellow counters.

Niklas takes at random a counter from the box and writes down the colour of his counter.
He then puts the counter back into the box.

Sasha then takes at random a counter from the box and writes down the colour of her counter.

Work out the probability that the counters taken by Niklas and Sasha both have the same colour.

.....

(Total for Question 8 is 3 marks)

9 Fiza has 10 coins in a bag.
There are three £1 coins and seven 50 pence coins.

Fiza takes at random, 3 coins from the bag.

Work out the probability that she takes exactly £2.50

.....

(Total for Question 9 is 4 marks)

10 Shabeen has a biased coin.
The probability that the coin will land on heads is 0.6

Shabeen is going to throw the coin 3 times.

She says the probability that the coin will land on tails 3 times is less than 0.1

Is Shabeen correct?
You must show all your working.

(Total for Question 10 is 3 marks)

11 Barney has a biased coin.

When the coin is thrown once, the probability that the coin will land heads is 0.3

Barney throws the coin 4 times.

(a) Work out the probability that the coin will land heads exactly 3 times.

(3)

(b) Work out the probability that the coin will land heads at least once.

(2)

(Total for Question 11 is 5 marks)

12 There are n sweets in a bag.
6 of the sweets are orange.
The rest of the sweets are yellow.

Hannah takes at random a sweet from the bag.
She eats the sweet.

Hannah then takes at random another sweet from the bag.
She eats the sweet.

The probability that Hannah eats two orange sweets is $\frac{1}{3}$

(a) Show that $n^2 - n - 90 = 0$

(3)

(b) Solve $n^2 - n - 90 = 0$ to find the value of n.

.....

(3)

(Total for Question 12 is 6 marks)

13 Ciara throws **four** fair six-sided dice.

The faces of each dice are labelled with the numbers 1, 2, 3, 4, 5, 6

Work out the probability that at least one of the dice lands on an even number.

.....

(Total for Question 13 is 3 marks)

14 There are 16 sweets in a bowl.

4 of the sweets are blackcurrant.
5 of the sweets are lemon.
7 of the sweets are orange.

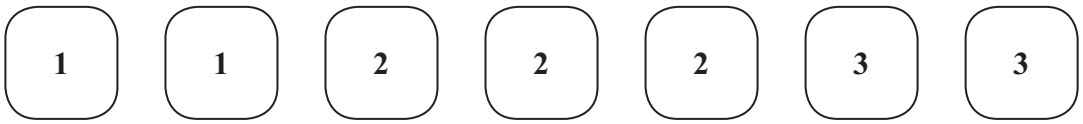
Anna, Ravi and Sam each take at random one sweet from the bowl.

Work out the probability that the 5 lemon sweets are still in the bowl.

.....

(Total for Question 14 is 4 marks)

15 Here are seven tiles.



Jim takes at random a tile.
He does **not** replace the tile.

Jim then takes at random a second tile.

(a) Calculate the probability that both the tiles Jim takes have the number 1 on them.

.....

(2)

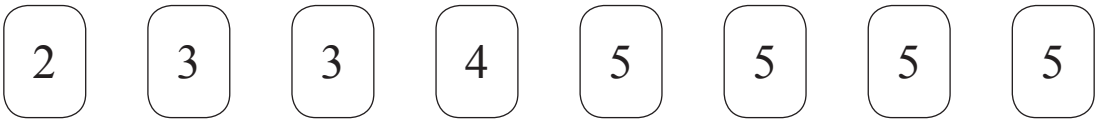
(b) Calculate the probability that the number on the second tile Jim takes is greater than the number on the first tile he takes.

.....

(3)

(Total for Question 15 is 5 marks)

16 Paul has 8 cards.
There is a number on each card.



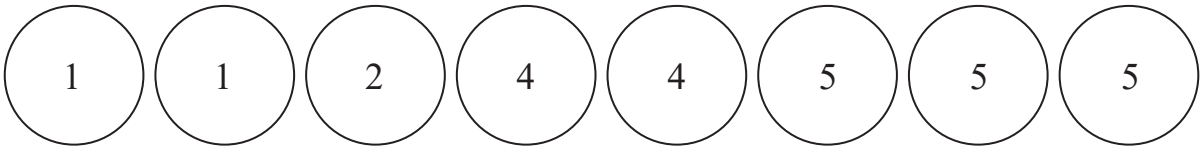
Paul takes at random 3 of the cards.
He adds together the 3 numbers on the cards to get a total T.

Work out the probability that T is an odd number.

.....

(Total for Question 16 is 4 marks)

17 There are 8 counters in a bag.
There is a number on each counter.



Fiona takes at random **three** of the counters.
She adds the numbers on the **three** counters to get her total.

Work out the probability that her total is an odd number.

.....

(Total for Question 17 is 4 marks)

18 Abraham is going to play a computer game.
Abraham can win the game, draw the game or lose the game.

For any game that Abraham plays

the probability that he wins the game is 0.3
the probability that he draws the game is 0.5
the probability that he loses the game is 0.2

When Abraham wins a game, he scores +10 points.
When Abraham draws a game, he scores 0 points.
When Abraham loses a game, he scores −5 points.

Abraham plays 3 games and the points he scores in each of the 3 games are added together to get his total score.

Work out the probability that when he has played 3 games his total score is 0 points.

.....

(Total for Question 18 is 4 marks)