Name: _____

GCSE Statistics

Tree Diagrams

Total marks available: 42

Total marks achieved: _____

Instructions
• Use black ink or ball-point pen.
• Fill in the boxes at the top of this page with your name,
Centre number and candidate number.
• Answer all questions.
• Answer the questions in the spaces provided
– There may be more space than you need.
• Scientific calculators may be used.
• You must show all your working out with your answer clearly identified
At the end of your solution.

Information
• The marks for each question are shown in brackets
– use this as a guide as to how much time to spend on each question.

Advice
• Read each question carefully before you start to answer it.
• Try to answer every question.
• Check your answers if you have time at the end.

Q1.

Claire buys packs of sports cards.

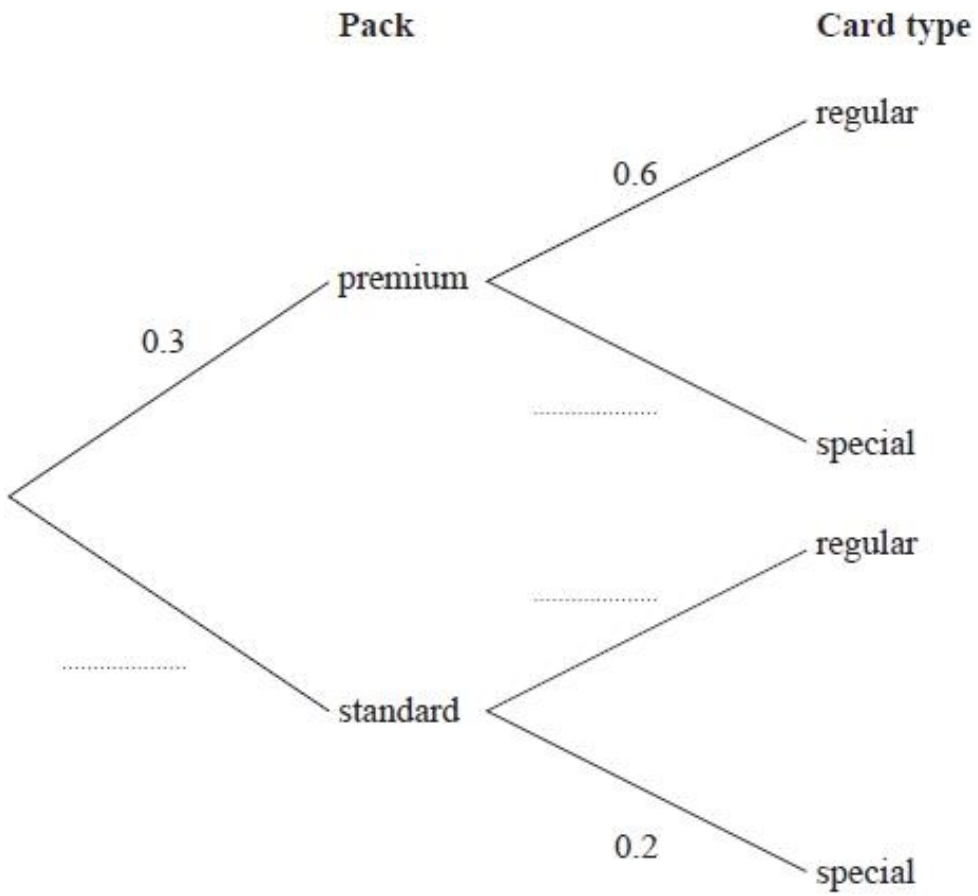
The cards can be bought in premium packs and in standard packs.

Of the packs that Claire buys, 30% are premium packs and 70% are standard packs.

In each premium pack there are 6 regular cards and 4 special cards.

In each standard pack there are 4 regular cards and 1 special card.

(a) Complete the probability tree diagram for this information.



(1)

Claire picks at random one of the packs she has bought, opens the pack and takes at random one card from the pack.

(b) Work out the probability that the card is a regular card.

.....

(3)

Given that the card is a regular card,

(c) work out the probability that it came from a premium pack.

.....

(2)

(Total for question = 6 marks)

Q2.

A farmer supplies both free-range eggs and barn eggs.

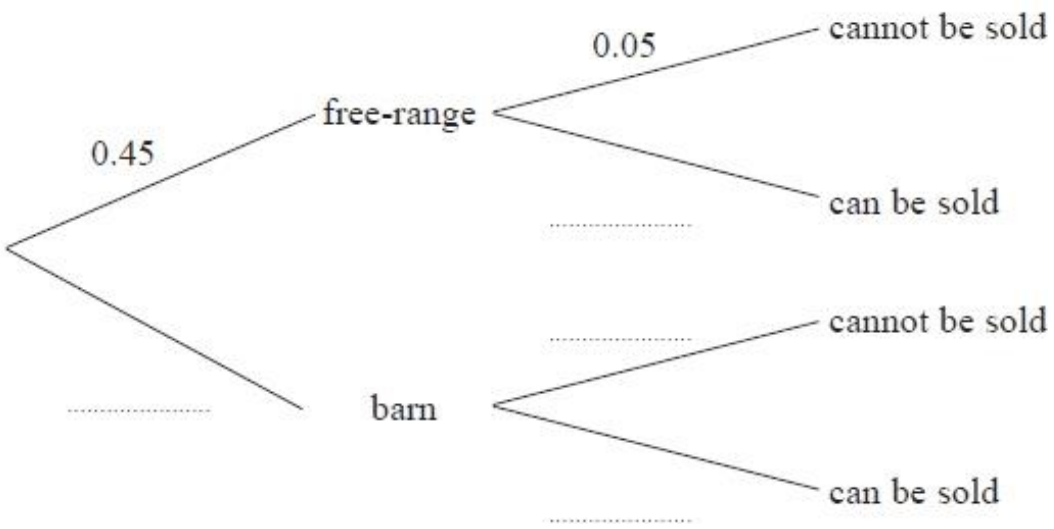
45% of the eggs are free-range. The rest are barn eggs.

An egg cannot be sold when it does not meet a particular standard.

5% of the free-range eggs cannot be sold.

8% of the barn eggs cannot be sold.

(a) Complete the probability tree diagram to show this information.



(2)

One egg is selected at random.

(b) Find the probability that it cannot be sold.

.....

(3)

One of the eggs that cannot be sold is selected at random.

(c) Find the probability that it is a free-range egg.

.....

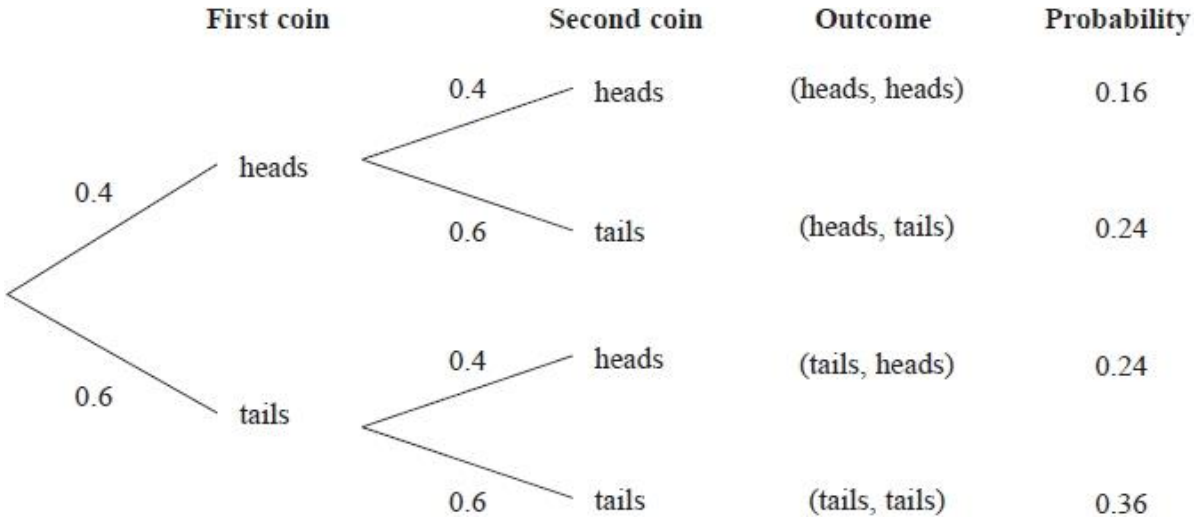
(2)

(Total for Question = 7 marks)

Q3.

Simon spins two identical biased coins.

He drew a tree diagram to help identify the possible outcomes.



(a) Show why the probability of the outcome (heads, heads) is 0.16

(1)

Simon says that the likelihood of getting one head and one tail is nearly evens.

(b) Show why Simon is correct.

(2)

Simon spins the two coins 100 times.

The outcome (tails, tails) happened 25 times.

(c) How does this compare with the expected outcome?

.....

.....

(2)

(Total for question = 5 marks)

Q4.

Claire buys packs of sports cards.

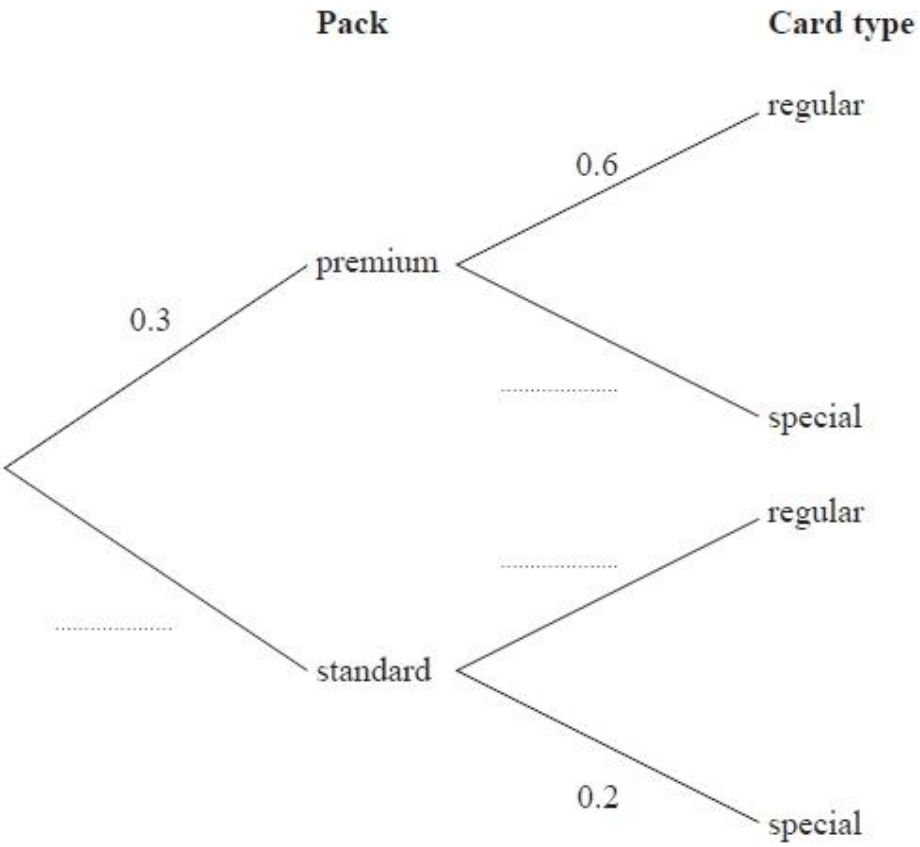
The cards can be bought in premium packs and in standard packs.

Of the packs that Claire buys, 30% are premium packs and 70% are standard packs.

In each premium pack there are 6 regular cards and 4 special cards.

In each standard pack there are 4 regular cards and 1 special card.

(a) Complete the probability tree diagram for this information.



(1)

Claire picks at random one of the packs she has bought, opens the pack and takes at random one card from the pack.

(b) Work out the probability that the card is a regular card.

.....

(3)

Given that the card is a regular card,

(c) work out the probability that it came from a premium pack.

.....

(2)

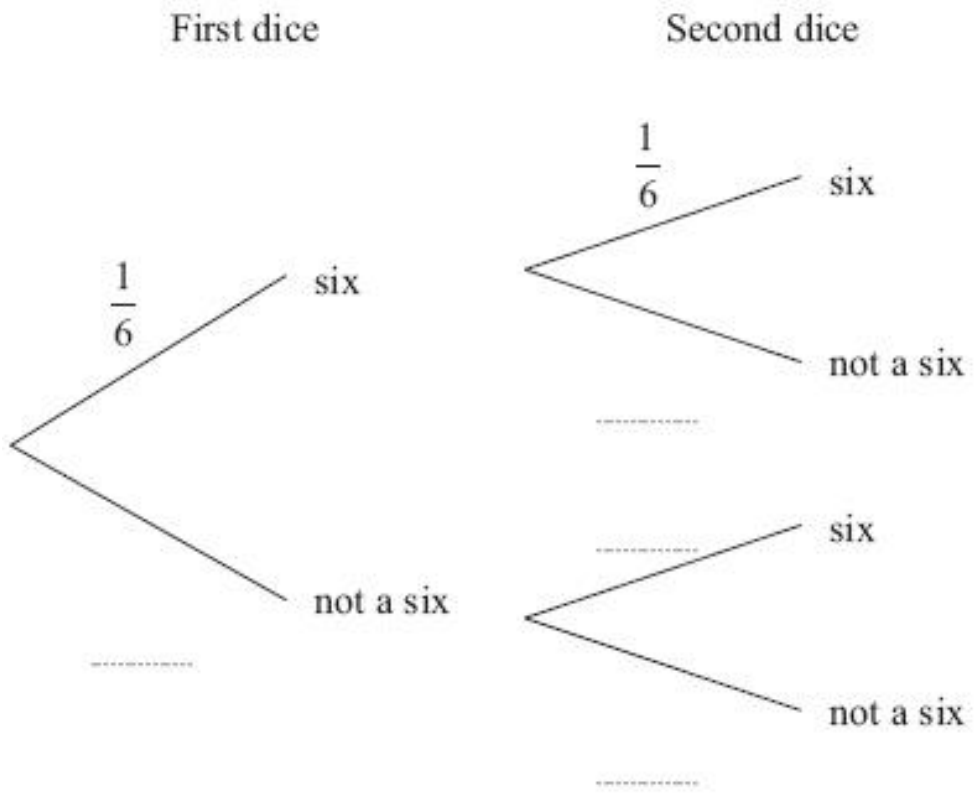
(Total for question = 6 marks)

Q5.

Janet has two fair six-sided dice.

To start a game Janet needs to throw two sixes.

(a) Complete the tree diagram to show the outcomes.



(2)

Janet says

"I am not likely to get two sixes on my first throw".

(b) Is Janet right?
Give a reason for your answer.

. . . .

. . . .

. . . . . .

. . . . . .

(2)

(Total for Question is 4 marks)

Q6.

When a biased coin is flipped the probability that it shows Heads is twice the probability that it shows Tails.

(a) Write down the probability that the coin shows Tails.

.....

(1)

The biased coin is flipped twice.

(b) Draw a probability tree diagram to show the possible outcomes.

Label your tree diagram to show the outcomes and write the probability on each branch.

(3)

The biased coin is flipped twice.

(c) Find the probability of getting two Tails.

.....

(2)

(Total for question = 6 marks)

Q7.

There are 10 marbles in a bag.

7 of the marbles are red.

3 of the marbles are blue.

One marble is taken at random from the bag.

The colour of the marble is recorded and the marble is put back into the bag.

This process is repeated until the colour of each of 5 marbles has been recorded.

(i) Write down the probability that the first marble taken from the bag is red.

.....

(ii) Calculate the probability that the first 2 marbles taken from the bag are both red.

.....

(3)

(Total for question = 3 marks)

Q8.

Koharu has a bag containing 2 red balls, 3 white balls and 4 blue balls only.

She takes out two balls at random, **without** replacing them.

Find the probability that the two balls are

(a) both red,

.....

(2)

(b) different colours.

.....

(3)

(Total for question = 5 marks)