Write your name here

Surname		Other names	

In the style of:
Pearson Edexcel
GCSE

Centre Number

Candidate Number

Mathematics

Probability

Higher Tier

GCSE style questions arranged by topic

Paper Reference
1MA0/2H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

Total Marks

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*.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out**.

Information

- The total mark for this paper is 80
- 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.
- Keep an eye on the time.
- Try to answer every question.
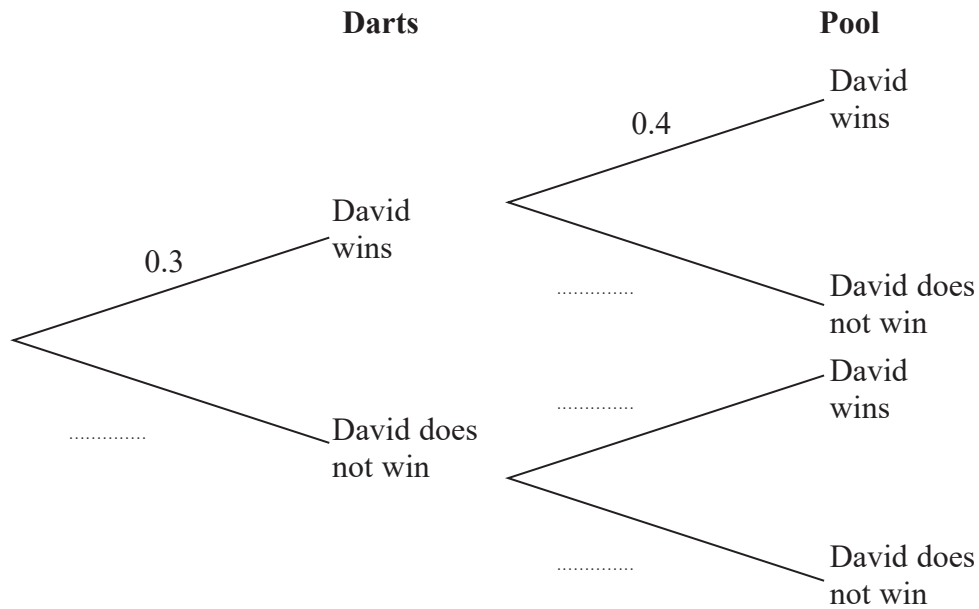- Check your answers if you have time at the end.

Turn over ▶

1 David goes to a club.
He has one go at Darts.
He has one go at Pool.

The probability that he wins at Darts is 0.3
The probability that he wins at Pool is 0.4

(a) Complete the probability tree diagram.

Darts   **Pool**


```
                                           0.4        David
                                                      wins
                          David
                0.3       wins
                                      ............    David does
                                                      not win
                                      ............    David
                                                      wins
       ............       David does
                          not win
                                      ............    David does
                                                      not win
```

(2)

(b) Work out the probability that David wins at Darts and also wins at Pool.
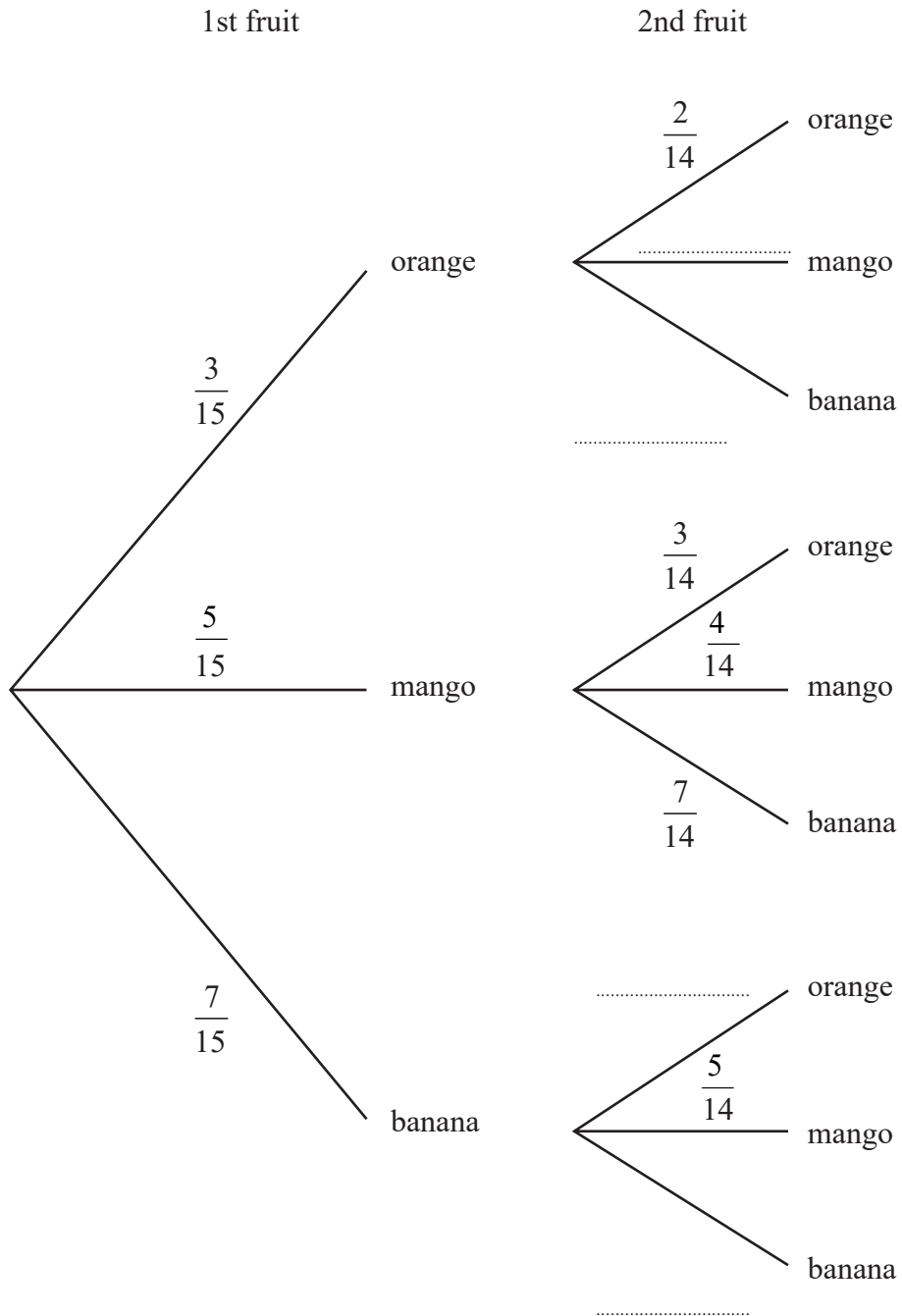
(2)

Total for Question 1 is 4 marks)

2 A bowl contains 3 oranges, 5 mangoes and 7 bananas.

One fruit is taken, at random, from the bowl and **not** replaced. Another fruit
is then taken, at random, from the bowl.

A tree diagram representing these two events is shown below.

1st fruit   2nd fruit

$\frac{2}{14}$ orange

orange ← .... mango

.... banana

$\frac{3}{15}$

$\frac{3}{14}$ orange

$\frac{4}{14}$

$\frac{5}{15}$ mango ← mango

$\frac{7}{14}$ banana

.... orange

$\frac{7}{15}$

$\frac{5}{14}$

banana ← mango

.... banana

(a) Complete the tree diagram representing these two events.

(2)

(b) Find the probability that both fruit are bananas. Give your answer as a simplified
fraction.

....
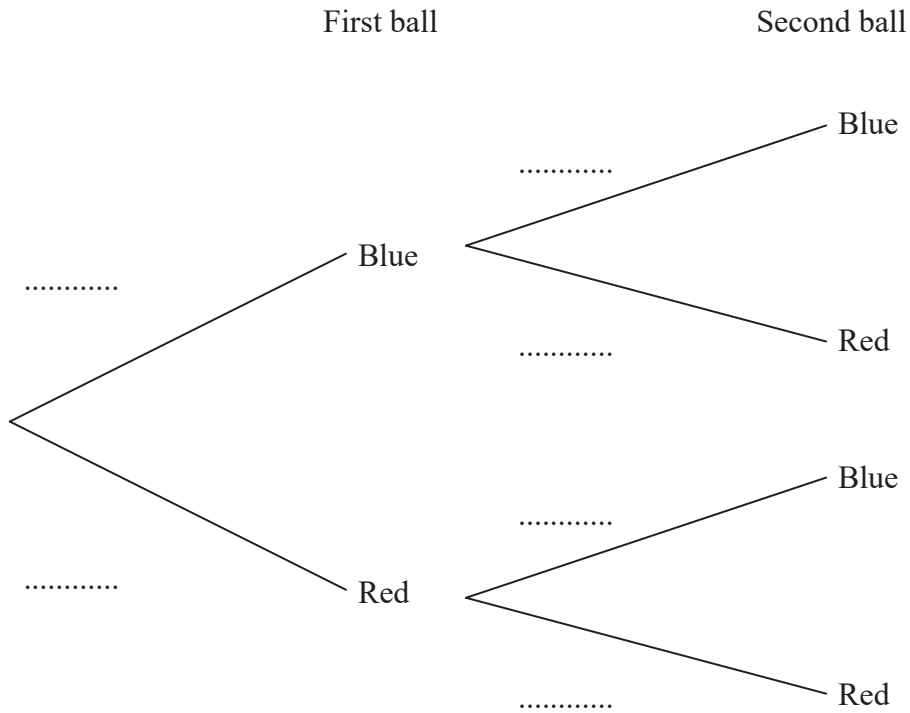
(2)

(Total for Question 2 is 4 marks)

3 Tara has 8 balls in a box.
5 of the balls are blue.
3 of the balls are red.

Tara takes at random a ball from the box and writes down its colour.
Tara puts the ball back in the box.

Then Tara takes at random a second ball from the box, and writes down its colour.

(a) Complete the probability tree diagram.

First ball   Second ball

                                          Blue
                    ....
              Blue
....
                                          Red

                                          Blue
                    ....
....   Red
                    ....
                                          Red

(2)

(b) Work out the probability that Tara takes exactly one ball of each colour from the box.

....

(3)

(Total for Question 3 is 5 marks)

4 In a game of chess, a player can either win, draw or lose.

The probability that Sophie wins any game of chess is 0.5

The probability that Sophie draws any game of chess is 0.2

Sophie plays 2 games of chess.

(a) Complete the probability tree diagram.

1st game   2nd game

                                    .... Win

                            Win <   .... Draw

                    0.5   Lose
                                    ....

                                    .... Win

                    0.2   Draw < .... Draw

                                                    Lose
                                    ....

            .... Win

                            Lose < .... Draw

                                                    Lose
                                    ....

(2)

(b) Work out the probability that Sophie will win both games.

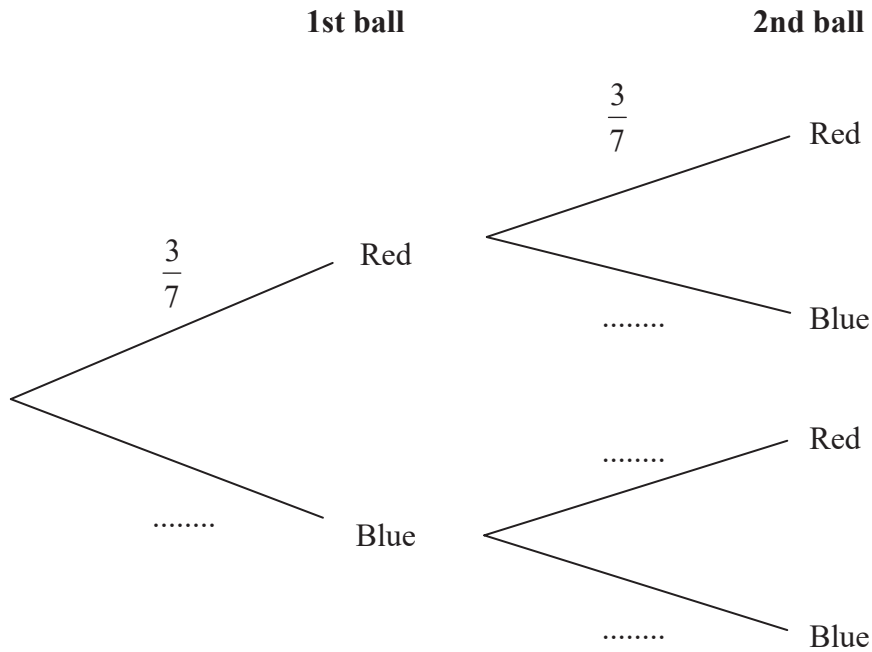.....................................

(2)

(Total for Question 4 is 4 marks)

5 Louis puts 3 red balls and 4 blue balls in a bag.
He takes at random a ball from the bag.
He writes down the colour of the ball.
He puts the ball in the bag again.
He then takes at random a second ball from the bag.

(a) Complete the probability tree diagram.

1st ball   **2nd ball**

$\frac{3}{7}$ Red

$\frac{3}{7}$ Red

.... Blue

.... Red

.... Blue

Blue

....

(2)

(b) Work out the probability that Louis takes two red balls.

....

(2)

(Total for Question 5 is 4 marks)

6 Helen and Anthony each take a medical.

The probability that Helen will pass the medical is 0.9 The

probability that Anthony will pass the medical is 0.7

(a) Complete the probability tree diagram.

Helen   **Anthony**

```
                                    0.7        Pass
                         Pass  <
            0.9   /            ............  Fail
                 /
                \
      ............ \
                    Fail  <  0.7    Pass
                               ............  Fail
```

(2)

(b) Work out the probability that both Helen and Anthony will pass the medical.

....

(2)

(c) Work out the probability that only one of them will pass the medical.

....

(3)

(Total for Question 6 is 7 marks)

7   There are 3 red sweets, 2 purple sweets and 5 orange sweets in a bag.

Georgina takes a sweet at random.
She eats the sweet.
She then takes another sweet at random.

Work out the probability that both the sweets are the same colour.

....
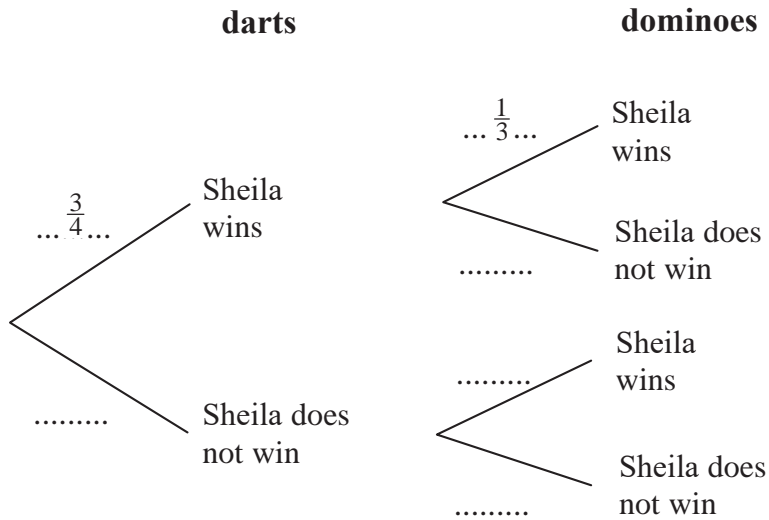
(Total for Question 7 is 4 marks)

8 Sheila is going to play one game of darts and one game of dominoes.

The probability that she will win the game of darts is $\frac{3}{4}$

The probability that she will win the game of dominoes $\frac{1}{3}$

is (a) Complete the probability tree diagram.

darts　　　　　　**dominoes**

```
                                    ...1/3...   Sheila
                                                wins
                        Sheila
              ...3/4... wins                    Sheila does
                                    .........   not win

                                                Sheila
                                    .........   wins
              .........   Sheila does
                          not win
                                    .........   Sheila does
                                                not win
```

(2)

(b) Work out the probability that Sheila will win **exactly** one game.

....
(3)

Sheila played one game of darts and one game of dominoes on a number of Fridays.
She won at **both** darts and dominoes on 21 Fridays.

(c) Work out an estimate for the number of Fridays on which Sheila did not win either game.

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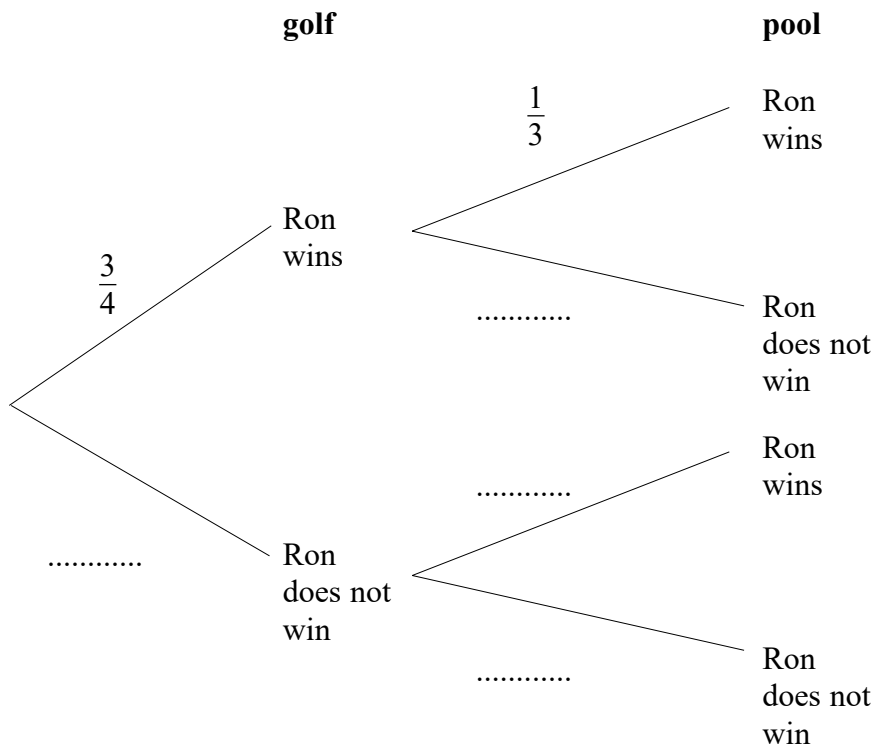(3)

(Total for Question 8 is 8 marks)

9 Ron plays one game of golf and one game of pool.

The probability that Ron will win at golf is $\frac{3}{4}$

The probability that Ron will win at pool is $\frac{1}{3}$

(a) Complete the probability tree diagram below.

golf   **pool**

$\frac{1}{3}$ Ron wins

Ron wins

....   Ron does not win

$\frac{3}{4}$

....   Ron wins

....

Ron does not win

....   Ron does not win

(2)

(b) Work out the probability that Ron wins both games.

.... (2)

(c) Work out the probability that Ron will win only one game.

.... (3)

(Total for Question 9 is 7 marks)