# Probability
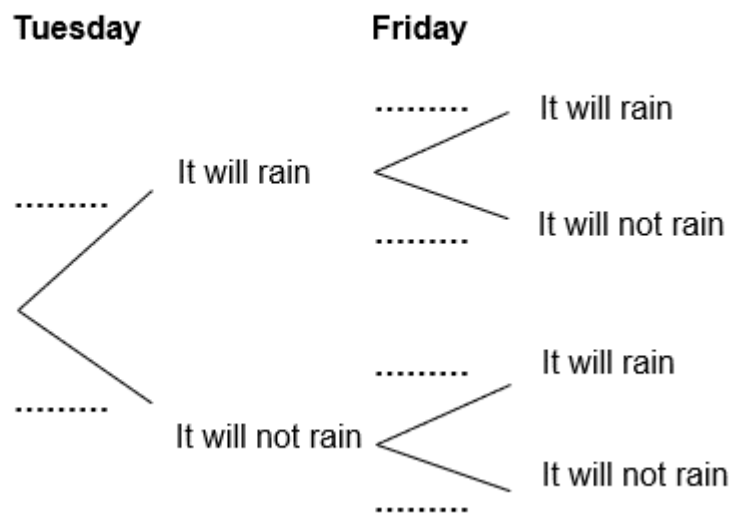
## Question 1 (Non-calculator Level 2) Probability Trees

The table below shows the probability that it will rain on each day of the week.

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| 0.3 | 0.5 | 0.2 | 0.6 | 0.7 | 0.8 | 0.5 |

The weather each day is independent.



(a) Complete the probability tree diagram

(b) Work out the probability that it will rain on Tuesday AND Friday.

**Question 2 (Level 2 Calculator) Two-Way Tables**

Rachel has two packs of coloured cards.

Each pack contains an equal number of the following colours

Red          Blue          Green          Yellow

She records the possible outcomes of picking one card at random from each pack.

(a) Complete the table

| | | Pack 2 | | | |
|---|---|---|---|---|---|
| | | Red | Blue | Green | Yellow |
| **Pack 1** | **Red** | RR | RB | | RY |
| | **Blue** | | | BG | |
| | **Green** | GR | | GG | |
| | **Yellow** | | YB | | YY |

Thomas picks one card at random from each pack.

(b) What is the probability that he picks two cards of the same colour.
Give your answer as a fraction in its simplest form.

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**Question 3 (Calculator Level 2)**

Susie and Ian want to listen to some music.

Susie has created two playlists each containing 100 songs.

| **Playlist 1** | |
|---|---|
| Songs by bands | 38 |
| Songs by solo artists | 62 |

| **Playlist 2** | |
|---|---|
| Songs by bands | 47 |
| Songs by solo artists | 53 |

Susie chooses a song at random from playlist 1.

Ian chooses a song at random from playlist 2.

Susie thinks the probability that one song is by a band and one song is by a solo artist will be greater than 0.5.

Is Susie correct?

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**Mark Scheme**

| Question | Process | Mark | Mark Ref | Evidence |
|---|---|---|---|---|
| **Q1(a)** | Begins to complete probability tree | 1 or | **A** | 2 of<br>Tuesday 0.5 will rain**,** will not rain**;** Friday 0.7 will rain; will not '0.3' **OR**<br>Correct values for incorrect days |
| | Fully correct probability tree | 2 | **AB** | Tuesday 0.5 will rain **AND** 0.5 will not rain **AND** Friday 0.7 will rain **AND** Friday 0.3 will not rain |
| **Q1 (b)** | Process to find probability | 1 or | **C** | '0.5' x '0.7' (=0.35)<br>Allow use of their figures from Q1(a) |
| | Accurate figure | 2 | **CD** | 0.35 |
| | **Total marks for question** | **4** | | |

| Question | Process | Mark | Mark Ref | Evidence |
|---|---|---|---|---|
| **Q2(a)** | Completes sample space table | 1 | **A** | RR  RB  RG  RY<br>BR  BB  BG  BY<br>GR  GB  GG  GY<br>YR  YB  YG  YY |
| **Q2 (b)** | Process to find probability | 1 or | **B** | 4/16 oe<br>Allow indicating RR  BB  GG  YY **AND** 16 |
| | Correctly simplified fraction | 2 | **BC** | ¼ |
| | **Total marks for question** | **3** | | |

| Question | Process | Mark | Mark Ref | Evidence |
|---|---|---|---|---|
| **Q3** | Begins process to find probabilities | 1 or | **A** | 0.38 **OR** 0.62 **OR** 0.47 **OR** 0.53 oe |
| | Begins process to find combined probability | 2 or | **AB** | 0.38 x 0.53 (=0.2..) **OR** 0.62 x 0.47 (=0.29..) |
| | Full process to find combined probability | 3 or | **ABC** | '0.2..' + '0.29..' (=0.49..) |

| | Valid decision and accurate figure | 4 | **ABCD** | No **AND** 0.49 oe |
|---|---|---|---|---|
| | **Total marks for question** | **4** | | |