

Probability

Difficulty: Hard

Question Paper 1

| | |
|------------|-------------------|
| Level | IGCSE |
| Subject | Maths (0580/0980) |
| Exam Board | CIE |
| Topic | Probability |
| Sub-Topic | Probability |
| Paper | Paper 2 |
| Difficulty | Hard |
| Booklet | Question Paper 1 |

Time allowed: 37 minutes

Score: /29

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

| A* | A | B | C | D | E |
|------|-----|-----|-----|-----|-----|
| >88% | 76% | 63% | 51% | 40% | 30% |

CIE IGCSE Maths (0980)

| 9 | 8 | 7 | 6 | 5 | 4 | 3 |
|------|-----|-----|-----|-----|-----|-----|
| >94% | 85% | 77% | 67% | 57% | 47% | 35% |

Question 1

Simon has two boxes of cards.

In one box, each card has one shape drawn on it that is either a triangle or a square.

In the other box, each card is coloured either red or blue.

Simon picks a card from each box at random.

The probability of picking a triangle card is t .

The probability of picking a red card is r .

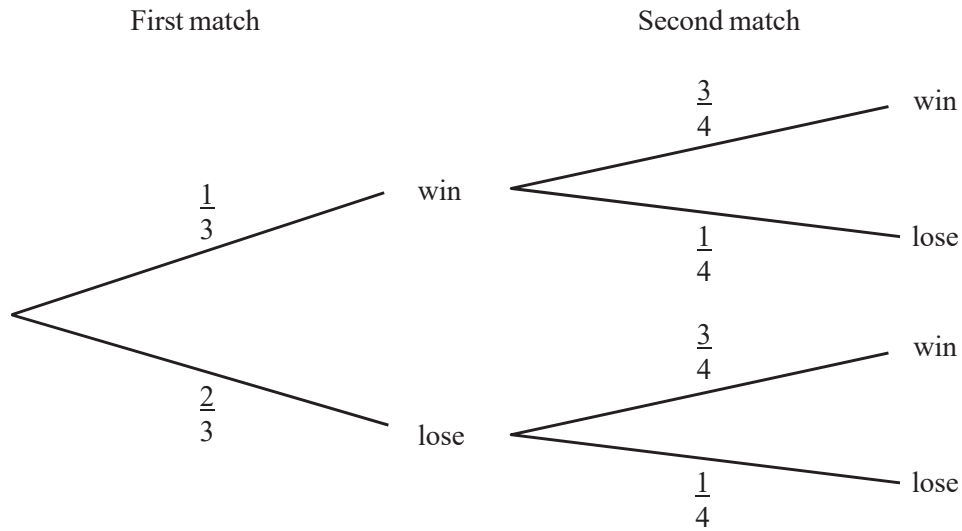
Complete the table for the cards that Simon picks, writing each probability in terms of r and t .

| Event | Probability |
|-------------------|-------------|
| Triangle and red | |
| Square and red | $(1 - t)r$ |
| Triangle and blue | |
| Square and blue | |

[3]

Question 2

The probability of a cricket team winning or losing in their first two matches is shown in the tree diagram.



Find the probability that the cricket team wins at least one match.

[3]

Question 3

Hattie has a box of coloured pens.
She takes a pen at random from the box.
The probability that she takes a red pen is 0.4 .

(a) Work out the probability that she does not take a red pen.

[1]

(b) The box contains only blue, red and green pens.
There are 15 blue pens and 15 green pens.

Complete the table.

| | | | |
|----------------|------|-----|-------|
| Colour of pen | Blue | Red | Green |
| Number of pens | 15 | | 15 |
| Probability | | 0.4 | |

[2]

Question 4

Dan either walks or cycles to school.
The probability that he cycles to school is $\frac{1}{3}$.

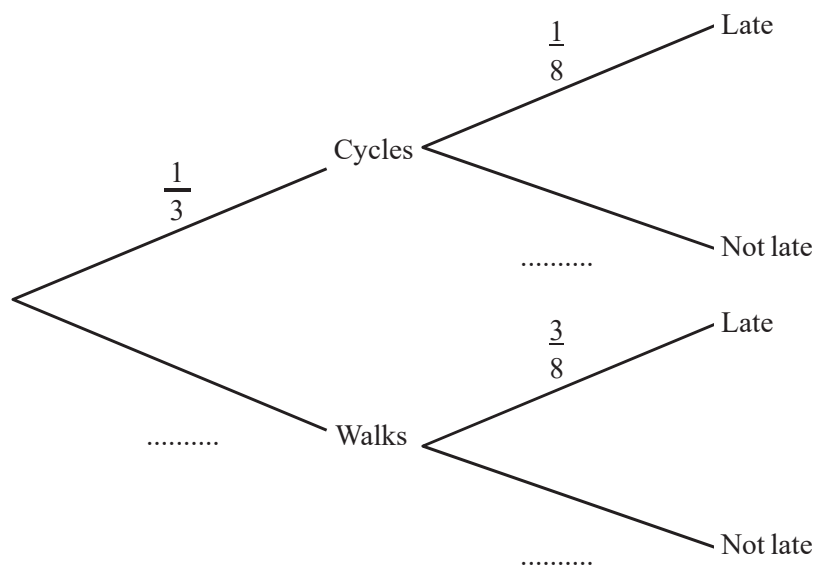
(a) Write down the probability that Dan walks to school.

[1]

(b) When Dan cycles to school the probability that he is late is $\frac{1}{8}$.

When Dan walks to school the probability that he is late is $\frac{3}{8}$.

Complete the tree diagram.



[2]

(c) Calculate the probability that

(i) Dan cycles to school and is late,

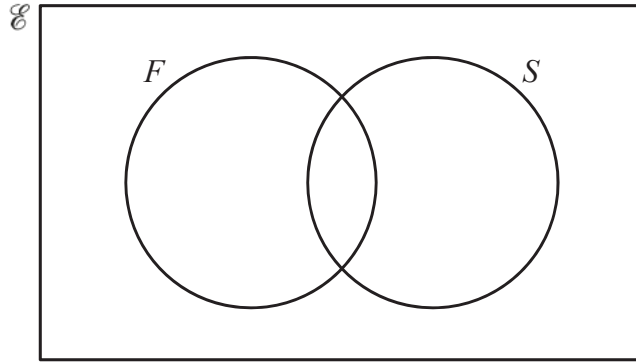
[2]

(ii) Dan is not late.

[3]

Question 5

(a) In this part, you may use this Venn diagram to help you answer the questions.



In a class of 30 students, 25 study French (F), 18 study Spanish (S). One student does not study French or Spanish.

(i) Find the number of students who study French and Spanish.

[2]

(ii) One of the 30 students is chosen at random.

Find the probability that this student studies French but not Spanish.

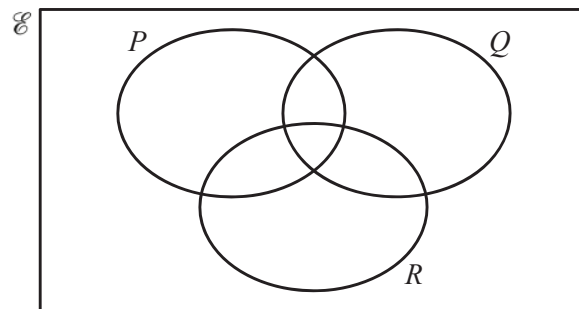
[1]

(iii) A student who does not study Spanish is chosen at random.

Find the probability that this student studies French.

[1]

(b)

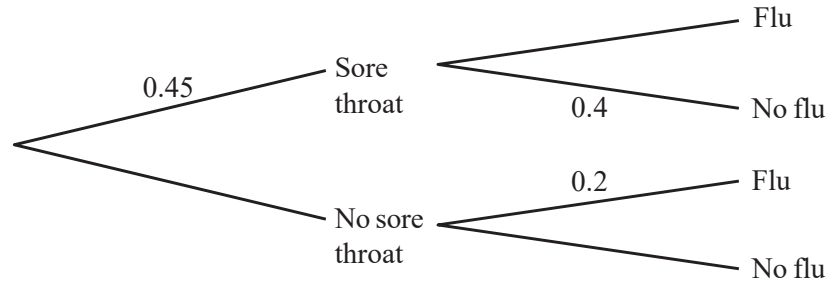


On this Venn diagram, shade the region $R \cap (P \cup Q)'$.

[1]

Question 6

In a flu epidemic 45% of people have a sore throat.
If a person has a sore throat the probability of not having flu is 0.4.
If a person does not have a sore throat the probability of having flu is 0.2.



Calculate the probability that a person chosen at random has flu.

[4]

Question 7

Rooms in a hotel are numbered from 1 to 19.
Rooms are allocated at random as guests arrive.

- (a) What is the probability that the first guest to arrive is given a room which is a prime number?
(1 is not a prime number.)

[2]

- (b) The first guest to arrive is given a room which is a prime number.
What is the probability that the second guest to arrive is given a room which is a prime number?

[1]