

Probability

Difficulty: Medium

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Probability
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 1

Time allowed: 92 minutes

Score: /80

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

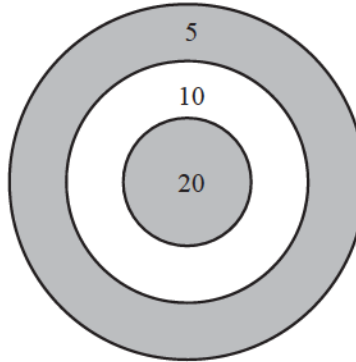
9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

Question 1

Kiah plays a game.

The game involves throwing a coin onto a circular board.

Points are scored for where the coin lands on the board.



If the coin lands on part of a line or misses the board then 0 points are scored.

The table shows the probabilities of Kiah scoring points on the board with one throw.

Points scored	20	10	5	0
Probability	x	0.2	0.3	0.45

(a) Find the value of x .

[2]

(b) Kiah throws a coin fifty times.

Work out the expected number of times she scores 5 points.

[1]

(c) Kiah throws a coin two times.

Calculate the probability that

(i) she scores either 5 or 0 with her first throw,

[2]

(ii) she scores 0 with her first throw and 5 with her second throw,

[2]

(iii) she scores a total of 15 points with her two throws. [3]

(d) Kiah throws a coin three times.

Calculate the probability that she scores a total of 10 points with her three throws. [5]

Question 2



- (a) One of these 7 cards is chosen at random.

Write down the probability that the card

- (i) shows the letter A , [1]
- (ii) shows the letter A or B , [1]
- (iii) does not show the letter B . [1]

- (b) Two of the cards are chosen at random, without replacement.

Find the probability that

- (i) both show the letter A , [2]
- (ii) the two letters are different. [3]

- (c) Three of the cards are chosen at random, without replacement.

Find the probability that the cards do not show the letter C . [2]

Question 3

In this question write any probability as a fraction.

Navpreet has 15 cards with a shape drawn on each card.

5 cards have a square, 6 cards have a triangle and 4 cards have a circle drawn on them.

- (a) Navpreet selects a card at random.

Write down the probability that the card has a circle drawn on it. [1]

- (b) Navpreet selects a card at random and replaces it.
She does this 300 times.

Calculate the number of times she expects to select a card with a circle drawn on it. [1]

- (c) Navpreet selects a card at random, replaces it and then selects another card.

Calculate the probability that

- (i) one card has a square drawn on it and the other has a circle drawn on it,

[3]

- (ii) neither card has a circle drawn on it.

[3]

- (d) Navpreet selects two cards at random, without replacement.

Calculate the probability that

- (i) only one card has a triangle drawn on it,

[3]

- (ii) the two cards have different shapes drawn on them.

[4]

Question 4

(a) A square spinner is biased.

The probabilities of obtaining the scores 1, 2, 3 and 4 when it is spun are given in the table.

Score	1	2	3	4
Probability	0.1	0.2	0.4	0.3

(i) Work out the probability that on one spin the score is 2 or 3. [2]

(ii) In 5000 spins, how many times would you expect to score 4 with this spinner? [1]

(iii) Work out the probability of scoring 1 on the first spin and 4 on the second spin. [2]

(b) In a bag there are 7 red discs and 5 blue discs.

From the bag a disc is chosen at random and not replaced.

A second disc is then chosen at random.

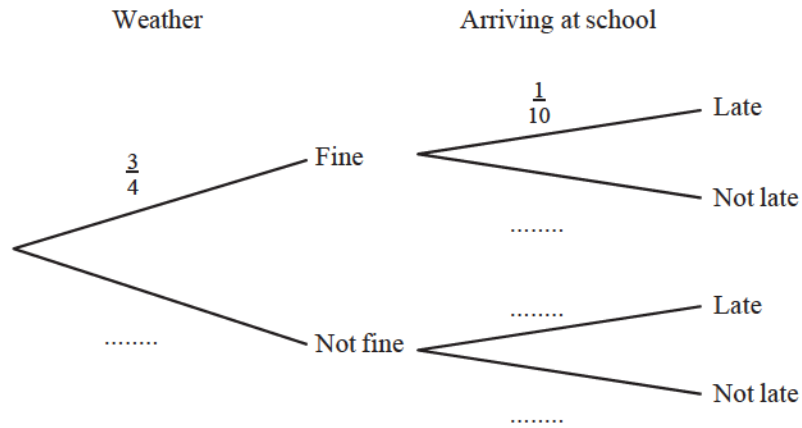
Work out the probability that at least one of the discs is red.

Give your answer as a fraction. [3]

Question 5

If the weather is fine the probability that Carlos is late arriving at school is $\frac{1}{10}$.
If the weather is not fine the probability that he is late arriving at school is $\frac{1}{3}$.
The probability that the weather is fine on any day is $\frac{3}{4}$.

(a) Complete the tree diagram to show this information. [3]



(b) In a school term of 60 days, find the number of days the weather is expected to be fine. [1]

(c) Find the probability that the weather is fine and Carlos is late arriving at school. [2]

(d) Find the probability that Carlos is not late arriving at school. [3]

(e) Find the probability that the weather is not fine on at least one day in a school week of 5 days. [2]

Question 6

In this question, give all your answers as fractions.



The letters of the word **NATION** are printed on 6 cards.

(a) A card is chosen at random.

Write down the probability that

(i) it has the letter **T** printed on it, [1]

(ii) it does not have the letter **N** printed on it, [1]

(iii) the letter printed on it has no lines of symmetry. [1]

(b) Lara chooses a card at random, replaces it, then chooses a card again.

Calculate the probability that only **one** of the cards she chooses has the letter **N** printed on it. [3]

(c) Jacob chooses a card at random and does not replace it.

He continues until he chooses a card with the letter **N** printed on it.

Find the probability that this happens when he chooses the 4th card. [3]

Question 7

In this question, give all your answers as fractions.

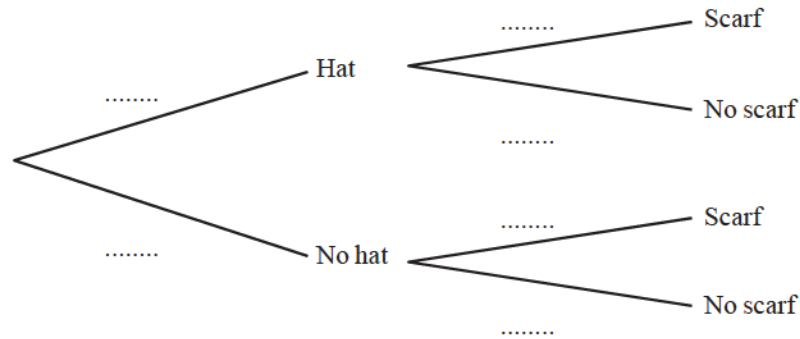
When Ivan goes to school in winter, the probability that he wears a hat is $\frac{5}{8}$.

If he wears a hat, the probability that he wears a scarf is $\frac{2}{3}$.

If he does not wear a hat, the probability that he wears a scarf is $\frac{1}{6}$.

(a) Complete the tree diagram.

[3]



(b) Find the probability that Ivan

(i) does not wear a hat and does not wear a scarf,

[2]

(ii) wears a hat but does not wear a scarf,

[2]

(iii) wears a hat or a scarf but not both.

[2]

(c) If Ivan wears a hat and a scarf, the probability that he wears gloves is $\frac{7}{10}$.

Calculate the probability that Ivan does **not** wear all three of hat, scarf and gloves.

[3]