GCSE Mathematics

Unit 1: Calculator *NOT* Allowed

Intermediate Tier

County Revision Paper 2A

(Topics Relating to ***Data & Probability***)

50 Minutes

School: _____

Student Name: _____

Question	Maximum Mark	Mark Awarded
1	5	
2	2	
3	3	
4	4	
5	6	
6	4	
7	8	
8	4	
9	7	
10	3	
11	4	

1. (a)   Pupils have a choice of a sandwich and a drink for lunch on a school trip.

    - They can choose a ham, cheese or salad sandwich.
    - To drink, they can choose water, milk or orange juice.

    Write down all the possible combinations of a sandwich and a drink that a pupil may have for lunch on the school trip.   [3]

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    (b)   What is the probability that a pupil selects a meat free sandwich with an orange juice drink?   [2]

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2.   A fair coin and a fair six-sided dice are thrown together.
          Calculate the probability of obtaining a head and a two.

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                                                                                                            [2]

3. Mr and Mrs Khan are beginning to think about their holiday plans for next year.
So far they have decided that

- the holiday will be in May or in September,

- it will be in the UK or in Ireland,

- it will be a single location holiday or a touring holiday.

Complete the table below to show **all** the possible combinations they might finally choose.
One of the possible combinations has been given for you.

Date	Destination	Type
May	UK	Single location

[3]

4. (a) In a game of Dungeons & Dragons, a fair, 12 sided dice is rolled.
        What is the probability that a prime number is shown on the dice?
        Circle your answer.   [1]

$$41\% \qquad \frac{12}{5} \qquad 5:12 \qquad 5.12 \qquad \frac{5}{12}$$

   (b) 280 raffle tickets were sold at a fete.

        Sian has a 15% chance of winning the top prize.

   How many tickets did Sian buy?   [1]

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   (c) A bag contains a mixture of blue beads, yellow beads and pink beads.

        One bead is taken at random from the bag.

        The probability that the bead is blue is $\frac{2}{5}$

        Which of the following sets of beads could have been in the bag?

        Circle your answers.   [2]

6 blue	5 blue	1 blue	5 blue	6 blue
6 yellow	5 yellow	1 yellow	5 yellow	3 yellow
3 pink	5 pink	5 pink	1 pink	6 pink

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5.

Nia has made up a game using two fair spinners. The faces of the spinners are shown below.
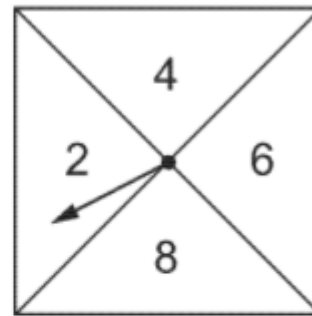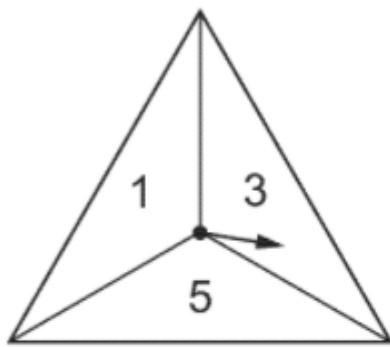
The first spinner is an equilateral triangle, with sections numbered 1, 3 and 5.

The second spinner is a square, with sections numbered 2, 4, 6 and 8.

Nia spins the triangular spinner first and then she spins the square spinner.

Her score is a two-digit number. The first digit is the number on the triangular spinner and the second digit is the number on the square spinner.

(a) Nia writes down all the possible scores she could obtain.
Some are done for you.
Complete the list of **all** the possible two-digit numbers she could get. [2]

12   14   16   18

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(b) (i) Write down the probability that Nia gets a score that is greater than 37. [2]

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(ii) Write down the probability that Nia gets a score that is less than 70. [1]

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(c) Nia says that she will always get even numbers for her results.
Is she correct? You must give a reason for your answer. [1]

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6.

The two spinners are spun.
The score is the total of the two numbers shown on the spinners.
The score shown above is eight.

There are two different game cards, card A and card B.
A game is played, crossing out the scores from the spinners on the game card as the spinners are spun repeatedly.
The first game card with all four scores crossed out is the winning card.

Game card A

3	2
9	10

Game card B

4	6
5	7

Which game card is more likely to be the winning card?
You must show your working and give a reason for your answer. [4]

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7. There are four balls numbered 1, 3, 5 and 7 respectively in machine A and four balls numbered 2, 4, 6 and 8 respectively in machine B. In a game, both machines A and B select one ball at random.

The score for the game is the product of these two numbers.

For example, if the number on the ball from machine A is 3 and the number on the ball from machine B is 4, the score is 3 × 4 which is 12.

(a) Complete the following table to show all the possible scores.

Machine A				
7	14	28	....	....
5	10	20	....	....
3	6	12	....	....
1	2	4	6	8
	2	4	6	8

Machine B

[2]

(b) A player wins a prize by getting a score of 12 or less.
It costs 80p to play the game once.
The prize for winning the game is £1.50.
If 160 people play the game once, find the expected profit.

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[6]

8. In a game a player rolls a coin onto a squared board. The squares on the board are coloured red, blue, green or yellow. If the coin lands entirely within one of these coloured squares the player wins a prize, otherwise the player loses.
The table below shows the probabilities of the coin landing entirely within the coloured squares.

Colour	Red	Blue	Green	Yellow	Player loses
Probability	0·15	0·09	0·05	0·06	0·65

(a) One day 200 people play this game. Approximately how many would you expect to win a prize?

[2]

(b) It costs 80p to play the game once. The prize for winning is £2. If the 200 people play the game once, approximately how much profit do you expect the game to make?

[2]

9. Tomas has one spin of the circular spinner shown below.
Two of the lines shown on the diagram are diameters of the circle.
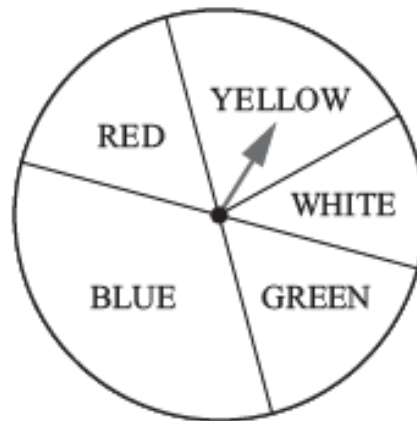
Diagram not drawn to scale

(a) The table below shows the probabilities of Tomas obtaining YELLOW, WHITE and GREEN with one spin of the spinner.
Complete the table.

Colour	YELLOW	WHITE	GREEN	RED	BLUE
Probability	0·2	0·12	0·18		

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[3]

(b) Find the probability of obtaining either WHITE or GREEN on the spinner.

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[2]

(c) Sasha has an identical spinner.

Tomas and Sasha each spin their spinners once.
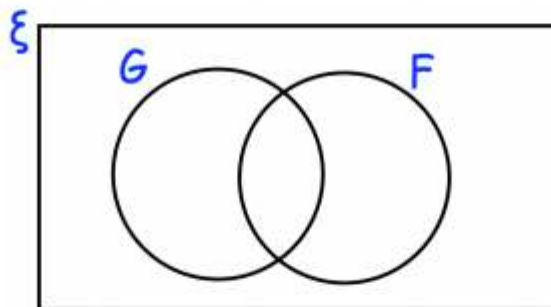
What is the probability that they both obtain YELLOW? [2]

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10.

There are 80 students in year 11.

9 students study French and German.
35 students only study French
2 students do not study French or German.

(a) Complete the Venn diagram

(2)

(b) Work out how many students study only German.

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(1)

11.

In a class of 24 students

12 students play the piano
13 students play the guitar
4 students play neither instrument.

(a) Represent this information on a Venn diagram

(3)

A student is selected at random.

(b) Work out the probability that the student only plays the guitar.

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(1)