This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls — Loueizeh - Baabda

Stage Exam 05
27APR2026

Do NOT write in this box. Your MARK will be placed here.

Subject :	A Level : Maths M0	
Class :	11A and 12A	
Teacher :	Mr. Farhan Batch	
Duration :	1 hour	
Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

№ 1 [4 marks]

5 teas and 4 biscuits have a total cost of £12.10.

3 teas and 2 biscuits have a total cost of £6.90.

Work out the cost of one tea and the cost of one biscuit.

№ 2 [3 marks]

A is the point with coordinates (3, 11). B is the point with coordinates (d, 17). The gradient of the line AB is 3. Work out the value of d

№ 3 [6 marks]

C is the curve with equation $y = x^2 - 6x + 6$. L is the straight line with equation $y = 2x - 9$.

L intersects C at two points, A and B.

Calculate the exact length of AB

№ 4 [5 marks]

Solve algebraically the simultaneous equations:

$$x^2 - 3y^2 = 6$$
$$2x + 5y = 1$$

№ 5 [4 marks]

80 people were asked if they prefer to go on holiday in Britain or in France or in Germany.

43 of the people were female. 12 of the 30 people who said Britain were male.

19 females said France. 4 males said Germany.

One person is chosen at random, what is the probability that this person is a male who said France?

№ 6 [3 marks]

There are only red cubes, white cubes and blue cubes in a box. The table shows the probability of taking at random a red cube from the box.

The number of white cubes in the box is the same as the number of blue cubes in the box.

Color	Red	White	Blue
Probability	0.4		

a) Copy and complete the table.

There are 15 blue cubes in the box.

b) Work out the total number of cubes in the box.

№ 7 [3 marks]

There are only black counters, white counters, green counters and yellow counters in a bag.

A counter is taken at random from the bag. The table shows the probability of getting a black counter or a white counter.

Color	Black	White	Green	Yellow
Probability	0.1	0.45	0.4	

a) Work out the probability of getting a yellow counter.
b) What is the least possible number of counters in the bag? You must give reason for your answer.

№ 8 [3 marks]

The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	1	2	3	4	5	6
Probability		0.18	0.15	0.13	0.08	0.2

Zack rolls the biased dice 200 times.

Work out an estimate for the total number of times will land 1 or 4.

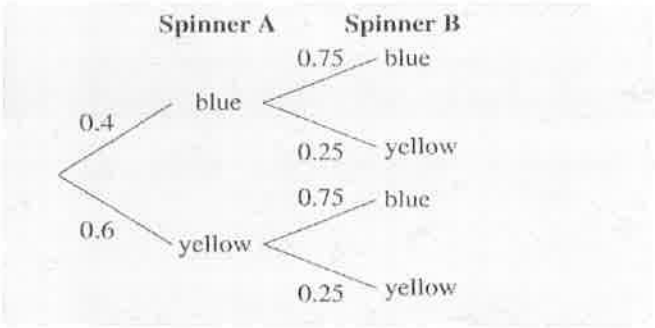
№ 9 [3 marks]

Bina has two spinners, spinner A and spinner B. each spinner can land on only blue or yellow.

The probability that spinner A will land on blue is 0.4.

The probability that spinner B will land on blue is 0.75.

The probability tree diagram shows this information.



Bina spins spinner A once and she spins spinner B once. She does this a number of times.

The number of times both spinners land on blue is 84.

Work out an estimate for the number of times both spinners land on yellow.

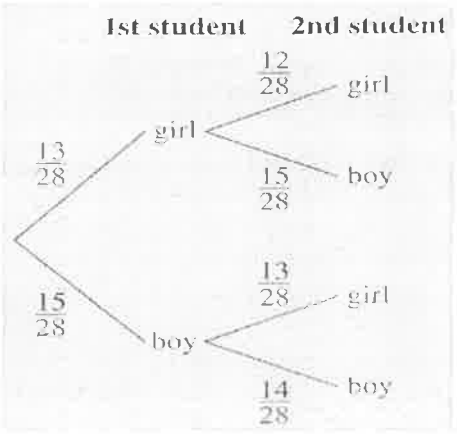
№ 10 [3 marks]

There are 28 students in Jack's class.

15 of the students are boys.

Two students from the class are chosen at random.

Jack draws this probability tree diagram for this information.



Write down one thing that is wrong with probability in this probability tree diagram

№ 11 [4 marks]

There are 9 balls in a bag. There are equal number of green balls, white balls, and pink balls in the bag. There are no other balls in the bag.

3 balls are taken at random from the bag.

a) Work out the probability of taking 3 green balls

The three balls are put back into the bag. We repeat with a total of 18 balls, 6 of each color.

b) Is it now less likely or equally likely or more likely that the 3 balls taken at random will be green? You must show how you get your answer.

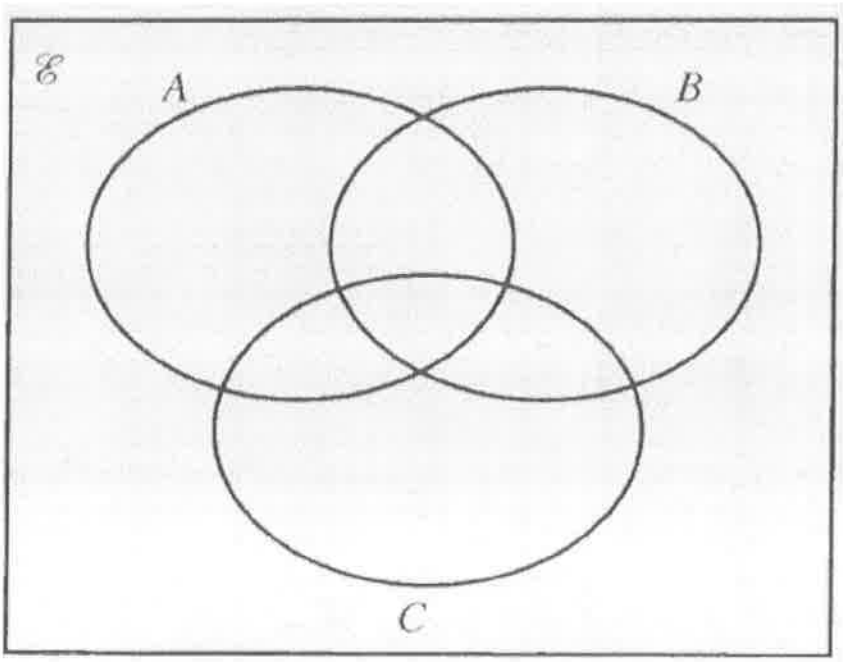
№ 12 [6 marks]

$\mathscr{E}$ = {odd numbers less than 20}

A = {1, 3, 5, 7}

B = {5, 9, 13, 17}

C = {1, 5, 15, 17}



a) Complete the Venn diagram for this information.

A number is chosen at random from $\mathscr{E}$

b) Find the probability that the number is a member of $A \cap C$

№ 1 [4 marks]

5 teas and 4 biscuits have a total cost of £12.10.

3 teas and 2 biscuits have a total cost of £6.90.

Work out the cost of one tea and the cost of one biscuit.

Let x be the cost of one tea, and y be the cost of one biscuit

$5x + 4y = 12.10$

$(-2)(3x + 2y = 6.90)$ (1)

$5x + 4y = 12.10$

$-6x - 4y = -13.80$ (1)

$-x = -1.70$, so $x = 1.70$ (1)

$3(1.70) + 2y = 6.90$

$2y = 6.90 - 5.10 = 1.80$

$y = 1.80 \div 2 = 0.90$ (1)

the cost of one tea is £1.70

the cost of one biscuit is £0.90

№ 2 [3 marks]

A is the point with coordinates (3, 11). B is the point with coordinates (d, 17). The gradient of the line AB is 3. Work out the value of d

gradient of line (AB) is 3

$\frac{y_B - y_A}{x_B - x_A} = \frac{3}{1}$ (1)

$\frac{17-11}{d-3} = \frac{3}{1}$ (1)

$3d - 9 = 6$

$3d = 15$

$d = 5$ (1)

№ 3 [6 marks]

C is the curve with equation $y = x^2 - 6x + 6$. L is the straight line with equation $y = 2x - 9$.

L intersects C at two points, A and B.

Calculate the exact length of AB

$y = y$

$x^2 - 6x + 6 = 2x - 9$ (1)

$x^2 - 8x + 15 = 0$

$x_1 = 5$; $x_2 = 3$ (1)

$y_1 = 2(5) - 9 = 1$; $y_2 = 2(3) - 9 = -3$ (1)

$A(5, 1)$; $B(3, -3)$ (1)

$AB = \sqrt{(x_B - x_A)^2 + (y_B - y_A)^2}$

$= \sqrt{(3-5)^2 + (-3-1)^2}$ (1)

$= \sqrt{2^2 + (-4)^2} = \sqrt{4 + 16}$

$= \sqrt{20} = 2\sqrt{5}$ (1)

№ 4 [5 marks]

Solve algebraically the simultaneous equations:

$$x^2 - 3y^2 = 6$$
$$2x + 5y = 1$$

$2x + 5y = 1$

$2x = 1 - 5y$

$x = \frac{1-5y}{2}$ (1)

$x^2 - 3y^2 = 6$

$\left(\frac{1-5y}{2}\right)^2 - 3y^2 = 6$

$\frac{1 - 10y + 25y^2}{4} - 3y^2 = 6$ (1)

$\frac{1 - 10y + 25y^2}{4} - \frac{12y^2}{4} = \frac{24}{4}$

$13y^2 - 10y - 23 = 0$ (1)

$y_1 = -1$; $x_1 = \frac{1 - 5(-1)}{2(13)} = 3$ (1)

$y_2 = \frac{23}{13}$; $x_2 = \frac{1 - 5\left(\frac{23}{13}\right)}{2(13)} = \frac{-51}{13}$ (1)

$(3, -1)$; $\left(\frac{-51}{13}, \frac{23}{13}\right)$

№ 5 [4 marks]

80 people were asked if they prefer to go on holiday in Britain or in France or in Germany.

43 of the people were female. 12 of the 30 people who said Britain were male.

19 females said France. 4 males said Germany.

One person is chosen at random, what is the probability that this person is a male who said France?

	Britain	France	Germany	Total
Female	18	19	6	43
Male	~~12~~	21	4	37
Total	30	40	10	80

(3)

$P(\text{Male}/\text{France}) = \frac{21}{40}$ (1)

№ 6 [3 marks]

There are only red cubes, white cubes and blue cubes in a box. The table shows the probability of taking at random a red cube from the box.

The number of white cubes in the box is the same as the number of blue cubes in the box.

Color	Red	White	Blue
Probability	0.4	0.3	0.3

a) Copy and complete the table.

There are 15 blue cubes in the box.

b) Work out the total number of cubes in the box.

a) blue and white have same number, so they have same probability

$p(b) = p(w) = \frac{1-0.4}{2} = \frac{0.6}{2} = 0.3$ (1)

b) blue cubes = 15 $P(b) = \frac{N(b)}{N} \rightarrow 0.3 = \frac{15}{N}$ (1)

$N = \frac{15}{0.3} = 50$ (1) total 50 cubes

№ 7 [3 marks]

There are only black counters, white counters, green counters and yellow counters in a bag.

A counter is taken at random from the bag. The table shows the probability of getting a black counter or a white counter.

Color	Black	White	Green	Yellow
Probability	0.1	0.45	0.4	

a) Work out the probability of getting a yellow counter.
b) What is the least possible number of counters in the bag? You must give reason for your answer.

a) $P(\text{yellow}) = 1 - (0.1 + 0.45 + 0.4) = 1 - 0.95 = 0.05$ (1)

b) $P(b) = 0.1 = \frac{1}{10}$; $P(w) = 0.45 = \frac{9}{20}$; $P(g) = 0.4 = \frac{2}{5}$; $P(y) = 0.05 = \frac{1}{20}$

least possible number $N = LCM(10, 20, 5, 20) = 20$ (2)

№ 8 [3 marks]

The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	1	2	3	4	5	6
Probability		0.18	0.15	0.13	0.08	0.2

Zack rolls the biased dice 200 times.

Work out an estimate for the total number of times will land 1 or 4.

$P(1) = 1 - (0.18 + 0.15 + 0.13 + 0.08 + 0.2) = 0.26$ (1)

$P(1 \text{ or } 4) = 0.26 + 0.13 = 0.39$ (1)

$N = 0.39 * 200 = 78$ times (1)

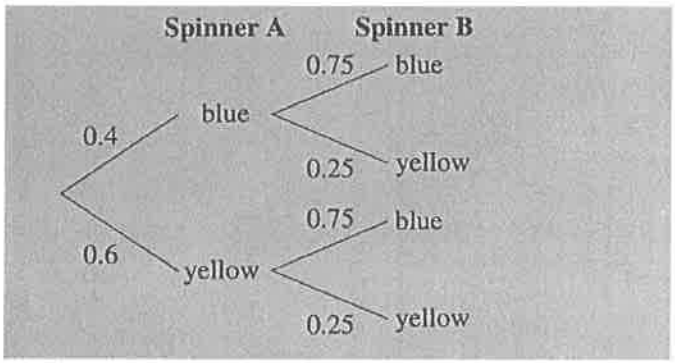
№ 9 [3 marks]

Bina has two spinners, spinner A and spinner B. each spinner can land on only blue or yellow.

The probability that spinner A will land on blue is 0.4.

The probability that spinner B will land on blue is 0.75.

The probability tree diagram shows this information.



Bina spins spinner A once and she spins spinner B once. She does this a number of times.

The number of times both spinners land on blue is 84.

Work out an estimate for the number of times both spinners land on yellow.

$P(\text{blue, blue}) = 0.4 \times 0.75 = 0.3 = \frac{84}{N}$ so $N = \frac{84}{0.3} = 280$ (1)

$P(\text{yellow, yellow}) = 0.6 \times 0.25 = 0.15$ (1)

$N_{yy} = 0.15 \times 280 = 42$ (1)

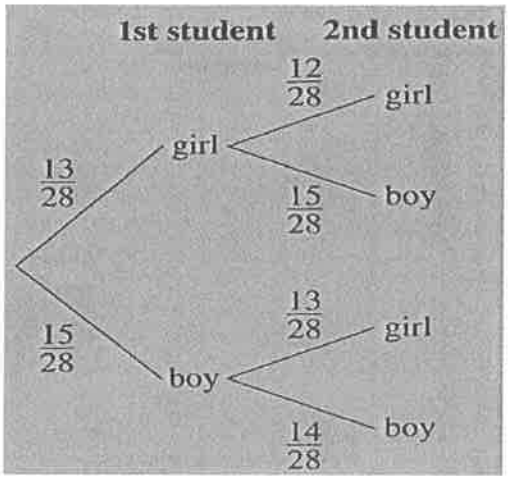
№ 10 [3 marks]

There are 28 students in Jack's class.

15 of the students are boys.

Two students from the class are chosen at random.

Jack draws this probability tree diagram for this information.



Write down one thing that is wrong with probability in this probability tree diagram

The probabilities for choosing the second student must have a denominator of 27 not 28 (3)

№ 11 [4 marks]

There are 9 balls in a bag. There are equal number of green balls, white balls, and pink balls in the bag. There are no other balls in the bag.

3 balls are taken at random from the bag.

a) Work out the probability of taking 3 green balls

The three balls are put back into the bag. We repeat with a total of 18 balls, 6 of each color.

b) Is it now less likely or equally likely or more likely that the 3 balls taken at random will be green? You must show how you get your answer.

a) $P(ggg) = \frac{3}{9} \times \frac{2}{8} \times \frac{1}{7} = \frac{1}{84} \approx 0,0119$ (1½)

b) $P(ggg) = \frac{6}{18} \times \frac{5}{17} \times \frac{4}{16} = \frac{5}{204} \approx 0.0245$ (1½)

It is more likely that the 3 balls will be green (1)

№ 12 [6 marks]

$\mathscr{E}$ = {odd numbers less than 20}

A = {1, 3, 5, 7}

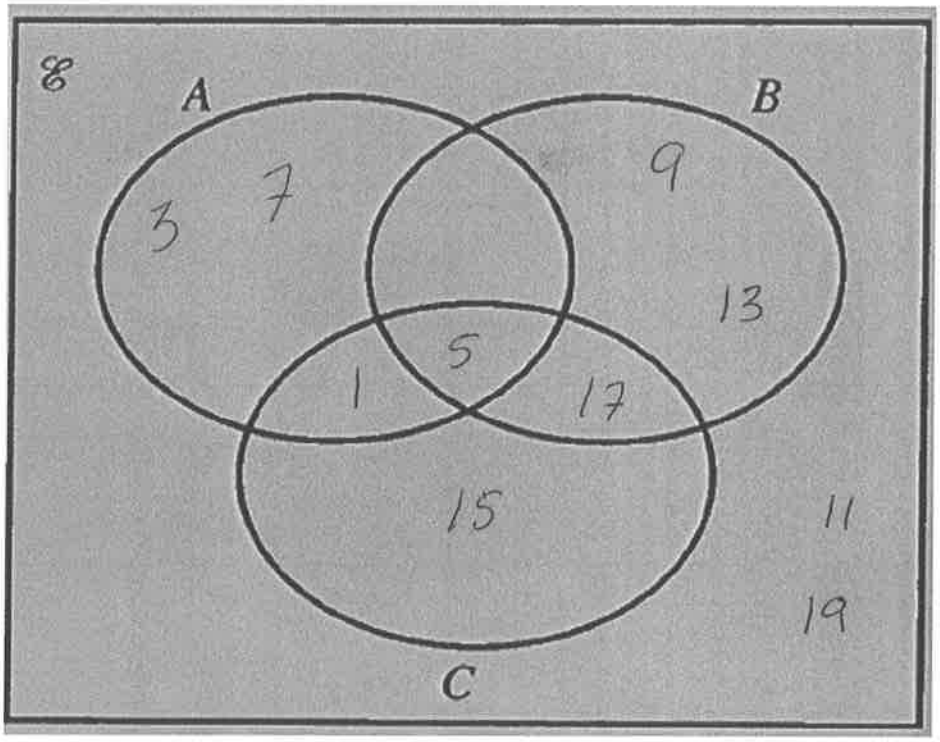
B = {5, 9, 13, 17}

C = {1, 5, 15, 17}

$A \cap B = \{5\}$ (1) $A \cap B \cap C = \{5\}$ (1)

$A \cap C = \{1, 5\}$ (1)

$B \cap C = \{5, 17\}$ (1)



(1)

a) Complete the Venn diagram for this information.

A number is chosen at random from $\mathscr{E}$

b) Find the probability that the number is a member of $A \cap C$

$P(A \cap C) = \frac{2}{10} = \frac{1}{5}$ (1)