



Coimisiún na Scrúduithe Stáit
State Examinations Commission

LEAVING CERTIFICATE APPLIED

2008

MARKING SCHEME

MATHEMATICAL APPLICATIONS

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MATHEMATICAL APPLICATIONS

GENERAL GUIDELINES FOR EXAMINERS

1. Penalties of three types are applied to candidates' work as follows:
- Blunders - mathematical errors/omissions (-3)
 - Slips - numerical errors (-1)
 - Misreadings (provided task is not oversimplified) (-1).

Frequently occurring errors to which these penalties must be applied are listed in the scheme. They are labelled as B1, B2, B3,....., S1, S2, S3,....., M1, M2, etc. Note that these lists are not exhaustive.

2. When awarding attempt marks, e.g. Att(3), it is essential to note that
- any correct relevant step in a part of a question merits *at least* the attempt mark for that part
 - if deductions result in a mark which is lower than the attempt mark, then the attempt mark must be awarded
 - a mark between zero and the attempt mark is never awarded.
3. Worthless work is awarded zero marks. Some examples of such work are listed in the scheme and they are labelled as W1, W2,.....etc.
4. The *same* error in the *same* section of a question is penalised *once* only.
5. Special notes relating to the marking of a particular part of a question are indicated by an asterisk. These notes immediately follow the box containing the relevant solution.
6. Particular cases, verifications and answers derived from diagrams (unless requested) qualify for attempt marks only.
7. The phrase “and stops” means that no more work of merit is shown by the candidate.

QUESTION 1

Part (a)	5 marks	Att 2
Part (b)	5 marks	Att 2
Part (c)	5 marks	Att 2
Part (d)	5 marks	Att 2
Part (e)	5 marks	Att 2
Part (f)	5 marks	Att 2
Part (g)	5 marks	Att 2
Part (h)	5 marks	Att 2
Part (i)	5 marks	Att 2
Part (j)	5 marks	Att 2

Part (a) **5 marks** **Att 2**

Find 21% of €648·42.

(a) **5marks** **Att 2**

(a)	$\begin{aligned} \text{€}648\cdot42 \times 21\% &= \text{€}136.1682 \\ &= \text{€}136.17 \end{aligned}$
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- * Accept answer in cent form but must indicate this.
- * Accept correct answer with no work.

Blunders(-3)

B1: Inverts 21%.(€3087.71)

B2: Inverts €648·42(€ 0.000323864)

B3: Misplaced decimal.

Slips (-1)

S1: Each numerical error to a max. of -3.

S2: Failure to round or incorrect rounding.

S3: Evaluates 121% (€784.59)

S4: Calculates 79% (€512.25)

Attempts(2 marks)

A1: 21 ± 648.42 (€669.42 or €627.42)

Part (b)

5 marks

Att 2

Three cheques were lodged into a current account. The cheques were for €26·74, €1043·29 and €236·28. Calculate the total lodged.

(b)

5 marks

Att 2

$$(b) \quad €26·74 + €1043·29 + €236·28 = €1306·31$$

* Accept correct answer with no work.

Blunders(-3)

B1: Subtracts instead of adds(€780·27).

B2: Misplaced decimal.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Failure to round or incorrect rounding.

S3: Omits one of the cheques when totaling.

Attempts(2)

A1: Multiplies the cheques (€6591638·93)

Worthless(0)

W1: Answer = one of the cheques only

Part (c)

5 marks

Att 2

The length of a side of a square is 4·6 m. Calculate the area of the square.

(c)

5marks

Att 2

$$(c) \quad \text{Area : } 4·6 \text{ m} \times 4·6 \text{ m} = 21·16 \text{ m}^2$$

* Accept correct answer with no work.

Blunders(-3)

B1: Incorrect length or width.

B2: Answer = $4·6 \times 4·6$ and stops + possible S2

B3: Misplaced decimal

B4: Calculates perimeter.(18.4 m)

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Incorrect or omitted units.

Attempts(2)

A1: Answer = $4·6 \pm 4·6$

A2: Answer = $\sqrt{4·6} = 2·144$

Worthless(0)

W1: $4·6 \div 4·6$.

Part (d)

5 marks

Att 2

$$\text{Calculate } 2\frac{1}{3} + \frac{5}{6} - \frac{1}{2}.$$

(d)

5marks

Att 2

(d)

$$\begin{aligned} 2\frac{1}{3} + \frac{5}{6} - \frac{1}{2} &= \frac{7}{3} + \frac{5}{6} - \frac{1}{2} = \frac{19}{6} - \frac{1}{2} = \frac{8}{3} = 2\frac{2}{3} \\ &= 2.66666667 \end{aligned}$$

* Accept correct answer with no work.

* Accept answer = $\frac{8}{3}$ or any equivalent of $\frac{8}{3}$

Blunders(-3)

B1: Omits one of the fractions

B2: Misplaced decimal.

B3: Incorrect common denominator.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Truncates decimal answer.

S3: Omits or mishandles the 2 when calculating

S4: Totals all three fractions ($3\frac{2}{3}$). ($2\frac{1}{3} + \frac{5}{6} + \frac{1}{2}$)

Attempts(2)

A1: Multiplies the fractions ($\frac{35}{36}$).

A2: Answer = $\frac{7}{3}$.

A3: Answer = $2\frac{5}{7}$

Worthless(0)

W1: Answer = $\frac{7}{7}$

Part (e)

5 marks

Att 2

A driver leaves Newbridge at 05:20 and arrives at his destination at 14:15. The stops he makes for breaks total 1.5 hours. Calculate his actual driving time.

(e)

5marks

Att 2

(e) $14:15 - 05:20 = 8 \text{ hrs and } 55 \text{ mins} - 1 \text{ hr and } 30 \text{ mins} = 7 \text{ hrs and } 25 \text{ mins}.$

- * Accept correct answer with no work
- * Accept answer in minutes (445 mins)
- * Accept answer = 7.4166666667 hours

Blunders(-3)

B1: 1 hour = 100 minutes.

B2: Adds rather than subtracts

B3: Misplaced decimal

B4: Minutes \neq correct decimal of an hour unless B1.

B5: $14:15 - 05:20 = 9 \text{ hrs } 5 \text{ mins}$ and continues

B6: Omits or mishandles the 1.5 hours.

Slips(-1)

S1: Answer = 07:25.

S2: Truncates decimal answer.

S3: Incorrect or omitted units.

S4: Each numerical error to a max of -3

Attempts(2)

A1: Answer = 8 hours or 8 hours plus any minutes, not covered above.

A2: Converts 1.5 hours to 1 hour and 30 minutes only

A3: Answer = 7 hours or 7 hours plus any minutes, not covered above

Worthless (0)

W1: Multiplies 05:20 by 14:15.

(f)

5 marks

Att 2

A bag of fertiliser weighs 25 kg. How many bags weigh 1 tonne.

(f)

5marks

Att 2

(f) 1 tonne = 1000 kg => number of bags = $1000 \div 25 = 40$ bags

* Accept correct answer with no work

Blunders(3)

B1: Misplaced decimal

B2: Incorrect conversion

B3: Multiplies rather than divides.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Failure to round or incorrect rounding.

Attempts(2)

A1: Attempt at conversion, correct or incorrect, and stops.

A2: Answer = 1000 ± 25 .

Worthless (0)

W1: Answer = 25 bags

W2: Answer = 26 bags.

Part (g)

5 marks

Att 2

A letter is picked at random from the word STATISTICS. What is the probability that the letter chosen is T?

(g)

5marks

Att 2

(g) $\frac{3}{10}$

* Accept answer written as 3:10, 3 in 10, 3 out of 10, or 0.3

Blunders(-3)

B1: No fraction or ratio set up.

B2: Answer = 3 + B1.

B3: Answer = 10 + B1.

B4: Answer = $\frac{10}{3}$

B5: Answer = $\frac{1}{10}$.

B6: Answer = 3 to 10.

Slips(-1)

S1: Truncates decimal answer.

Attempts(2)

A1: Any proper fraction other than $\frac{3}{10}$, $\frac{1}{10}$, $\frac{10}{3}$.

A2: Answer = 3 - 10

Part (h)**5 marks****Att 2**

A rugby team played 5 matches. Their scores were 22,17,33,20 and 7.
What was the median score?

(h)**5marks****Att 2**

(h) Median of 7, 17, 20, 22, 33 = **20**

* Accept correct answer with no work.

Blunders(-3)

B1: Ignores numerical order and answer = 33.

Slips(-1)

S1: Answer = 100(20 × 5).

S2: Incorrect or omitted units

S3: List evident...each score omitted to a max of -3.

S4: Truncates answer to 46 kg.

Attempts(2)

A1: Calculates the mean correct or incorrect (mean = 19.8).

Worthless(0)

W1: Answer = any other number other than 20 or 33 (from the given list).

W2: Answer = 5.

Part (i)**5 marks****Att 2**

A car travels 270 km in 5.4 hours. Calculate the average speed of the car.

Use the formula $S = \frac{D}{T}$

(i)**5marks****Att 2**

(i) $S = \frac{270}{5.4} = 50$ km per hour

* Accept correct answer with no work.

* Accept answer = 0.83333 km/min

Blunders(-3)

B1: $270 \times 5.4 = 1458$ km/hr.

B2: Inverts $\frac{270}{5.4}$ and continues.(0.02 km/hr)

B3: Misplaced decimal..

B4: Each incorrect substitution.

B5: Correct substitution and stops + possible S2.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Incorrect or omitted units.

S3: Truncates or rounds decimal answer

Attempts(2)

A1: One substitution correct/incorrect

A2: 270 ± 5.4

Part (j)

5 marks

Att 2

The scale on a map is 1:250. What distance does 6 cm represent?

(j)

5marks

Att 2

(j) $250 \times 6 \text{ cm} = 1500 \text{ cm.}$

* Accept correct answer with no work.

* Accept answer = 15 m

Blunders(-3)

B1: Divides by 6 (41.666667)

B2: Misplaced decimal.

B3: $1 \cdot 250 \times 6 = 7 \cdot 5 \text{ cm}$

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Incorrect or omitted units.

Attempts(2)

A1: 250 ± 6 .

Worthless(0)

W1: 6×100 and stops

W2: 250×100 and stops

W3: Incorrect answer with no work, not covered above.

QUESTION 2

Part (a)	10 marks	Att 3
Part (b)	5 marks	Att 2
Part (c)	10 marks	Att 3
Part (d)	10 marks	Att 3
Part (e)	5 marks	Att 2
Part (f)	10 marks	Att 3

Part (a) **10 marks** **Att 3**

Calculate the total of Patrick's essential expenses per week.

(a) **10 marks** **Att 3**

(a) €65 + €76 + €42 + €32 = €215

* Accept correct answer with no work

Blunders(-3)

B1: Each essential expense omitted to a max of -3.

B2: Subtracts instead of adds.

B3: Each excess cost included to a max of -3.

Slips(-1)

S1: Each numerical error to a max of -3.

Attempts(3)

A1: Answer = €65 or €76 or €42 or €32

A2: Multiplies the numbers.(€6639360)

Part (b) **5 marks** **Att 2**

Calculate his weekly discretionary income.

(b) **5 marks** **Att 2**

(b) Discretionary income = net income – essential expenses
= €397.80 – €215
= €182.80

* Accept correct answer without work

* Accept candidate's answer from part (a)

Blunders(-3)

B1: Adds instead of subtracting (€612.80)

B2: Answer = €1279.60 (€182.80 × 7).

B3: Each incorrect substitution.

B4: Correct substitution and stops.

B5: Misplaced decimal.

Slips(-1)

S1: Each numerical error to a max of -3.

Attempts(2)

A1: Answer = €397.60

A2: Answer = €215.

A3: Answer = *Discretionary expenses* totalled (€95.40), correct or incorrect.

Part (c)

10 marks

Att 3

How much does he spend on cigarettes in a week?

(b)

10 marks

Att 3

(b) $€7.20 \times 7 = €50.40$

* Accept correct answer with no work.

Blunders(-3)

B1: Divides by 7 (€1.03).

B2: Misplaced decimal.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Multiplies by 5 (€36.00)

Attempts(3)

A1: $€7.20 \pm 7$

Worthless(0)

W1: Answer = €7.20

Part (d)

10 marks

Att 3

What percentage of his discretionary income does he spend on cigarettes?

(d)

10marks

Att 3

(d) $\frac{50.40}{182.80} \times \frac{100}{1} = 27.571115\%$

* Accept correct answer without work

* Accept candidate's answers from parts (b) and (c).

Blunders(-3)

B1: Inverts $\frac{50.40}{182.80}$ and continues (362.698412%).

B2: Subtracts €50.40 from €182.80 and continues. (72.428884%)

B3: Misplaced decimal.

B4: Uses net weekly income instead of discretionary income and continues (12.669683%)

Slips(-1)

S1: Each numerical error to a max of -3.

S2: Uses cost of 1 pack of cigarettes in calculating (3.9387308%)

S3: Truncates or rounds answer.

Attempts(3)

A1: Answer = $€182.80 - €50.40 = €132.40$ and stops

A2: Answer = $€ 182.80 \times € 50.40$ and stops.

Part (e)

5 marks

Att 2

Calculate Patrick's weekly surplus after **all** the expenses are paid

(e)

5 marks

Att 2

$$\begin{aligned} \text{(e) All expenses} &= €65 + €76 + €46 + €32 + €20 + €50.40 + €25 \\ &= €215 + €95.40 \\ &= €310.40 \\ \Rightarrow \text{weekly surplus} &= €397.80 - €310.40 \\ &= €87.40 \end{aligned}$$

* Accept candidate's answers from parts (a) and (c)

* Accept correct answers with no work.

Blunders(-3)

B1: Mishandles €397.80 and €310.40 when calculating the weekly surplus.

B2: Each expense omitted in calculating the total expenses to a max of -3

B3: Answer = €611.80 (€87.40 × 7)

B4: Misplaced decimal

Slips(-1)

S1: Uses €7.20 when totaling. (€130.60)

S2: Each numerical error to a max of -3.

Attempts(2)

A1: Calculates total expenses only (€310.40)

Part (f)

10 marks

Att 3

Tax changes announced in the national budget result in Patrick's net income increasing by €4.20 per week. However, cigarettes will increase by 50 cent per pack. Calculate the change in Patrick's weekly surplus.

(f)

10 marks

Att 3

(f) Cigarettes' new cost = €7.70 \Rightarrow 7 packs = €53.90 *or* increase of $.50 \times 7 = €3.50$
 \Rightarrow New total expenses = €215 + €95.40 + €3.50 = €313.90
Patrick's net income increased to €402.
 \therefore New weekly surplus = €402 – €313.90
= €88.10 (\Rightarrow change in surplus is a €0.70 increase)

or

Change in surplus = €4.20 – €(.50 \times 7)}
= €4.20 – €3.50
= €0.70 (\Rightarrow new surplus is €88.10)

* Accept *either* the new surplus (€88.10) *or* the change in surplus (70 cent) as the answer

* Accept correct answer with no work

* Accept candidate's answer from parts (c) and part (e)

Blunders(-3)

B1: Adds €4.20 and €3.50 instead of subtracting.(€95.10)

B2: Misplaced decimal

B3: Failure to increase net income.(€397.80 - €313.90 = €83.90)

B4: Failure to increase the cost of cigarettes (€402 - €310.40 = €91.60)

B5: Subtracts increase from weekly surplus (€87.40 - €0.70 = €86.70)

B6: Answer = €113.30 (= €87.40 +7(€4.20 - €0.50) = €87.40 + €25.90)

B7: Each expense omitted to a max of -3

Slips(-1)

S1: Failure to calculate the cost for 7 packets of cigarettes and continues.(€91.10) or (€4.20 – 0.50 = €3.70)

Attempts(3)

A1: Answer = €7.70

A2: Answer = €402

Worthless(0)

W1: Answer = €4.20 \times 5 = €2.10.

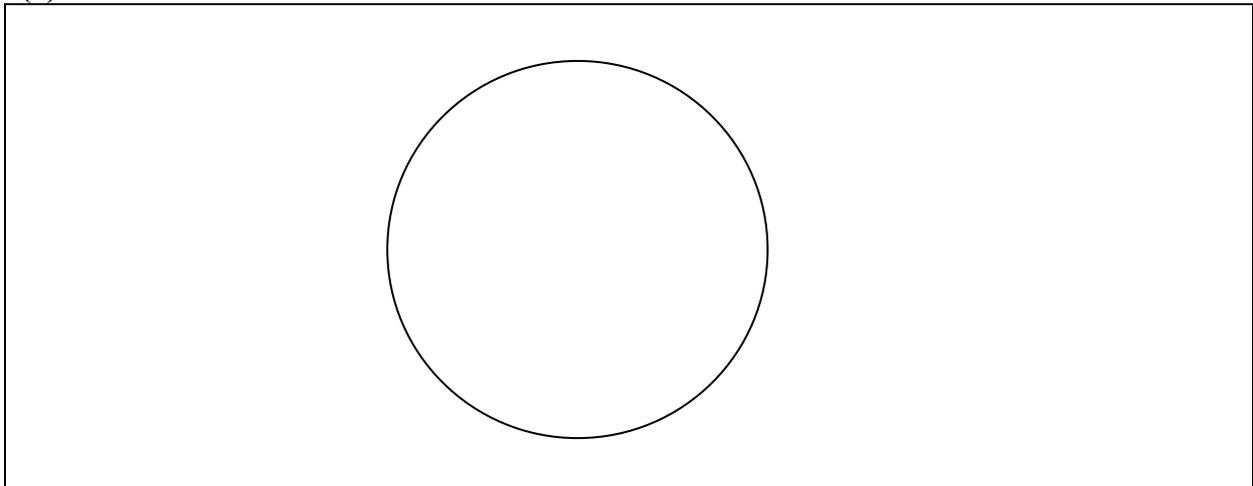
QUESTION 3

Part (a)	10 marks	Att 3
Part (b)	10 (5, 5) marks	Att (2,2)
Part (c)	10 marks	Att 3
Part (d)	5 marks	Att 2
Part (e)	5 marks	Att 2
Part (f)	10 marks	Att 3

Part (a) 10 marks Att 3

(a) Construct a circle of radius 2.5 cm in the box below

(a) 10marks Att 3



* Tolerance ± 0.1 cm

Blunders(-3)

B1: Uses radius outside tolerance of 0.5 cm.

Slips(-1)

S1: Radius between 0.1 and 0.5 cm.

S2: Incorrect units.

Misreadings(-1)

M1: Draws correct semi – circle

Attempts(3)

A1: Draws circle free hand

Part (b)

10 (5, 5) marks

Att (2,2)

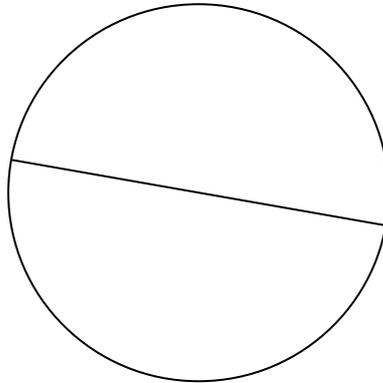
Draw a diameter in the circle and write down its length

(b) Draw diameter

5 marks

Att 2

(b) Any correct diameter
in candidate's circle



- * Accept correct diameter in candidate's circle.
- * Tolerance ± 0.1 cm

Blunders(-3)

B1: Draws non-diameter chord.

B2: Draws tangent

Slips(-1)

S1: Draws radius only.

S2: Extended diameter line (outside tolerance 0.1 cm) for answer.

Attempts(2)

A1: Draws a line segment not covered above.

A2: Draws in diameter in free hand drawn diagram

(b) Write down length

5 marks

Att 2

Length = 5 cm

- * Accept correct answer with no diameter drawn
- * Accept measurement of candidate's diameter
- * Tolerance ± 0.1 cm

Blunders(-3)

B1: Measurement outside tolerance of 0.5 cm

Slips(-1)

S1: Measurement between 0.1 cm and 0.5 cm.

S2: Incorrect or omitted units.

Worthless (0)

W1: Incorrect answer with no diagram.

Part (c)

10 marks

Att 3

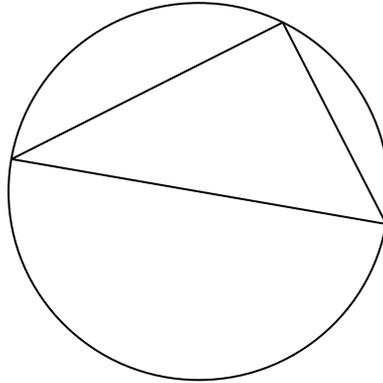
- (c) Construct a triangle with its three vertices on the circle such that:
- * the diameter you have drawn is one side of the triangle, and
 - * one side is 3 cm long

(c)

10marks

Att 3

(c)



* Accept candidate's answer for parts (a) and (b)

* Tolerance ± 0.1 cm

Blunders(-3)

B1: Side outside tolerance of 0.5 cm, once only

B2: Two correct sides drawn only + possible S2

B3: Constructs a triangle independent of candidate's diameter

Slips(-1)

S1: Each side outside tolerance of 0.1 cm unless B2.

S2: Each corner point of the triangle not on the circle

Attempts(3)

A1: One correct side drawn only

Part (d)

5 marks

Att 2

Write down the length of the third side.

(d)

5 marks

Att 2

(d) Length = 4 cm

- * Accept correct answer with no diagram drawn
- * Tolerance ± 0.1 cm
- * Accept measurement of candidate's triangle

Blunders(-3)

B1: Measurement outside tolerance of 0.5 cm, with triangle drawn.

Slips(-1)

S1: Measurement between 0.1 cm and 0.5 cm.

S2: Incorrect or omitted units

Worthless (0)

W1: Incorrect answer with no diagram.

Part (e)

5 marks

Att 2

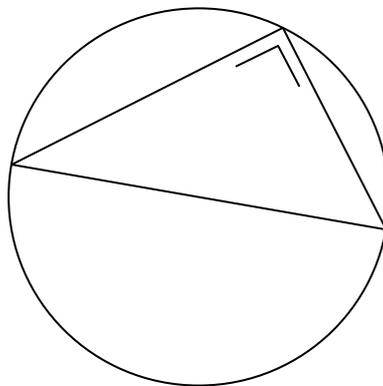
Mark the right angle on your diagram

(e)

5 marks

Att 2

(e)



- * Accept angle marked opposite candidate's diameter or relevant to candidate's diagram

Attempts (2)

A1: Constructs 90° angle not relevant to candidate's diagram

A2: States right angle = 90° only

A3: Candidate's states that in his diagram there is no right angle.

Worthless (0)

W1: The right angle indicated not opposite candidate's diameter unless * above.

Part (f)

10 marks

Att 3

Find the area of the circle, taking $\pi = 3.14$

(f)

10 marks

Att 3

$$\begin{aligned} \text{(f) Area of circle} &= \pi r^2 \\ \text{Area of circle} &= 3.14 \times (2.5)^2 \\ &= 3.14 \times 6.25 \\ &= 19.625 \text{ cm}^2 \end{aligned}$$

* Accept answer = 9.864600932 cm²

* Accept answer using $\pi = \frac{22}{7}$ (9.8685714 cm²)

Blunders(-3)

B1: Radius = diameter(78.5 cm²).

B2: Uses 2r for r².

B3: Correct substitution and stops + B2 + possible S2.

B4: Radius $\neq \frac{1}{2}$ (diameter) i.e. r = 3 or 4

B5: Failure to substitute for π and continues

B6: Area = πr and continues

B7: Misplaced decimal.

B8: Area = $\frac{\pi}{r^2}$ and continues (0.5024 cm²)

Slips(-1)

S1: Each numerical error to a max of -3

S2: Incorrect or omitted units.

S3: Truncates or rounds

S4: Uses $\pi = 3$ (18.75 cm²)

Attempts(3)

A1: Answer = 3.14 r² and stops.

A2: Answer = 3.14 + 2.5 + 2.5 = 8.14

QUESTION 4

Part (a)	10 marks	Att 3
Part (b)	10 marks	Att 3
Part (c)	10 marks	Att 3
Part (d)	10 marks	Att 3
Part (e)	10 marks	Att 3

Part (a) **10 marks** **Att 3**

How much does it cost for one adult to spend a day in *Funworld* on 20th March?

(a) **10 marks** **Att 3**

(a) €10

Blunders(-3)

B1: Incorrect row.

Slips(-1)

S1: Incorrect column.

Worthless(0)

W1: Incorrect answer not relevant to the given diagram.

Part (b) **10 marks** **Att 3**

There are two adults and four children in the Collins family.
The children are aged three, five, eleven and sixteen.
How much will it cost the family to spend a day in *Funworld* in July?

(b) **10 marks** **Att 3**

(b) Family Tkt + 1 adult +1 child = €40 + €16 + €10
= €40 + €26
= €66

* Accept correct answer with no work

Blunders(-3)

B1: Misplaced decimal.

B2: Ignores the family ticket $((€16 \times 3) + (€10 \times 3)) = €78$

B3: Incorrect row.

B4: Subtracts instead of adds $(€40 - €26 = €14)$

B5: Answer = €40 i.e. ignores extra two children + B4 + S2

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Extra 2 children at the incorrect rate $(€40 + €20 = €60)$

Attempts(3)

A1: Answer = €16 or €10 and stops.

Part (c)

10 marks

Att 3

The family needs to convert some sterling to euro.
Given that the exchange rate of £1 = €1.34, convert £550 to euro.

(c)

10 marks

Att 3

$$(c) \quad 550 \times 1.34 = \text{€}737$$

* Accept correct answer with no work

Blunders(-3)

B1: Misplaced decimal.

B2: Answer = $550 \div 1.34 = \text{€}410.45$.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Failure to round or incorrect rounding.

S3: Omitted or incorrect units

Attempts(3)

A1: Answer = $\text{£}550 \pm 1.34$

Worthless(0)

W1: Answer = €550.

Part (d)

10 marks

Att 3

Richard has a weekly income of €385. His tax rate is 20%. His tax credits are €52 per week.
How much tax does Richard pay per week?

(d)

10 marks

Att 3

$$\begin{aligned} (d) \text{ Tax} &= (\text{€}385 \times 20\%) - \text{€}52 \\ &= \text{€}77 - \text{€}52 \\ &= \text{€}25 \end{aligned}$$

* Accept correct answer with no work

Blunders(-3)

B1: Inverts 20% (€ 1873).

B2: Incorrect order $\{(\text{€}385 - \text{€}52) \times 20\%\} = \text{€}66.60$

B3: Adds rather than subtracts credits (€129)

B4: Misplaced decimal

B5: Answer = €77 + B3

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Failure to round or incorrect rounding.

Misreadings(-1)

M1: Answer = Answer = €360 (Net pay or take home pay)

Attempts(3)

A1: Answer = 385 ± 52 and stops

A2: Answer = $385 \times 20\%$ and stops

A3: Answer = $52 \times 20\%$ and stops

A4 Answer = 52 ± 20 and stops.

Part (e)

10 marks

Att 3

After paying his tax, what percentage of Richard's gross income is left?

(e)

10 marks

Att 3

$$\begin{aligned} \text{(e) Take home pay} &= €385 - €25 = €360 \\ \% \text{ of Gross income left} &= \frac{360}{385} \times 100 \\ &= 93.506493\% \end{aligned}$$

* Accept candidate's answer for part (d)

* Accept correct answer with no work

Blunders(-3)

B1: Inverts $\frac{360}{385}$ (106.94444%).

B2: Adds tax to get take home pay(106.4935%)

B3: Fails to get take home pay and continues + B2 + possible S2(6.4935%)

B4: Misplaced decimal

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Truncates or rounds.

Attempts(3)

A1: Answer = €385 ± €25 and stops

A2: Answer = 25 × 100 and stops

QUESTION 5

Part (a)	10 marks	Att 3
Part (b)	10 marks	Att 3
Part (c)	10 marks	Att 3
Part (d)	10 marks	Att 3
Part (e)	10 marks	Att 3

Part (a) **10 marks** **Att 3**

Calculate Mary's total class time on Monday.

(a) **10 marks** **Att 3**

(a)	Total class time = 9 classes \times 40 mins = 360 mins = 6 hours
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* Accept correct without work.

* Accept answer in minutes but must indicate this.

Blunders(-3)

B1: Divides instead of multiplies (4.444444 mins)

B2: 1 hour = 100 mins.

B3: Calculates the total time in school but ignores breaks (answer = 7 hours)

B4: Misplaced decimal.

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Truncates or rounds.

S3: Incorrect or omitted units

S4: Number of classes \neq 9 and continues.

Attempts(3)

A1: Answer = 9 and stops

Part (b)

10 marks

Att 3

How much more time is given to Mathematics classes than to History classes in the week?

(b)

10 marks

Att 3

(b) Mathematics classes = 5×40 mins = 200 mins = 3 hrs 20 mins
History classes = 3×40 mins = 120 mins = 2 hrs
 \Rightarrow Mathematics has 1 hr 20 mins more.

Or

Number of extra Mathematics = 2
 \Rightarrow 80 mins = 1 hr 20 mins

* Accept correct without work.

* Accept candidate's answer for part (a) (in relation to class length)

* Accept answer in mins but must indicate this

Blunders(-3)

B1: 1 hour = 100 minutes

B2: Adds rather than subtracts (5 hrs 20 mins).

B3: Answer = 2 + S5

Slips(-1)

S1: Each numerical error to a max. of -3.

S2: Failure to round or incorrect rounding.

S3: Number of Mathematics classes $\neq 5$ and continues.

S4: Number of History classes $\neq 3$ and continues

S5: Incorrect or omitted units

Misreadings(-1)

M1: Uses other subjects rather than Mathematics or History (each time)

Attempts(3)

A1: Answer = number of Mathematics classes only

A2: Answer = number of History classes only.

A3: Answer = 5×3 and stops.

A4: Indicates Math or/and History classes on given diagram only

NOTE:

Answer = 120 min (no work) S5 = 9 marks

Part (c)

10 marks

Att 3

Because of a staff meeting on Wednesday, all classes are shortened by 5 minutes. At what time will the students finish school on that day?

(c)

5 marks

Att 2

(c) $9 \text{ classes} \times 35 \text{ mins} = 315 \text{ mins} = 5\text{hrs } 15 \text{ mins}$
 $\Rightarrow \text{Students finish at } (9:00 + 5 \text{ hrs } 15 \text{ mins} + 1 \text{ hr (breaks)}) = 15:15$
or
 $9 \text{ classes} \times 5 \text{ mins} = 45 \text{ mins}$
 $\Rightarrow \text{Students finish at } 16:00 - 0:45 = 15:15$

- * Accept correct answer with no work
- * Accept quarter past three as answer
- * Accept candidate's answer from part (a)
- * Accept 3:15

Blunders(-3)

- B1: 1 hour = 100 mins.
- B2: Ignores or mishandles breaks when calculating.
- B3: Misplaced decimal.
- B4: Adds the 45 mins rather than subtracts (16:45)
- B5: Answer = 315 mins and stops + B2
- B6: Answer = 45 mins and stops + B4

Slips(-1)

- S1: Each numerical error to a max of -3.
- S2: Number of classes $\neq 9$
- S3: Incorrect or omitted units

Attempt(3)

- A1: Answer = 16:00 -5 and stops
- A2: Answer = 9 ± 5 and stops
- A3: No work and answer $< 16:00$, not covered above

NOTE:

- Answer = 3:15 with no work = 10 marks
- Answer = 315 minutes with no work = 4 marks cf B5
- Answer = 315 with no work = 4 marks as above

Part (d)**10 marks****Att 3**

Aine, Liam and Eoin take part in a quiz. To decide the order in which they answer questions, their names are drawn from a bag one at a time. List all the ways the names could be drawn.

(d)**10 marks****Att 3**

(d) 6 ways: Aine, Liam, Eoin
 Aine, Eoin, Liam
 Liam, Aine, Eoin
 Liam, Eoin, Aine
 Eoin, Aine, Liam
 Eoin, Liam, Aine.

* Accept correct answer in any order
 One selection correct = 3 marks
 Two selections correct = 6 marks
 Three selections correct = 7 marks
 Four selections correct = 8 marks
 Five selections correct = 9 marks
 Six selections correct = 10 marks

Attempt(3)

A1: Answer = 6 and stops.

A2: Lists all the ways for 2 people only.

Part (e)**10 marks****Att 3**

Write down the probability that Eoin is last

(e)**10 marks****Att 3**

(e) $\frac{2}{6}$ or $\frac{1}{3}$

* Accept answer as: 2:6, 1:3, 2 in 6, 1 in 3, 2 out of 6, 1 out of 3 or .333334 or 33.33333%.

* Accept candidate's answer for part (c)

Blunders(-3)

B1: No fraction or ratio set up.

B2: Answer = 2 + B1

B3: Answer = 6 + B1.

B4: Answer = $\frac{6}{2}$.B5: Answer = $\frac{1}{6}$.

B6: Answer = 2 to 6 or 1 to 3

Slips(-1)

S1: Truncates decimal answer.

S2: Answer = $\frac{2}{4}$.*Attempt(3)*A1: Any proper fraction other than $\frac{2}{6}, \frac{1}{3}, \frac{6}{2}, \frac{1}{6}, \frac{3}{1}$.

A2: Answer = 2 – 6 or 1 – 3.

MARCANNA BREISE AS UCHT FREAGAIRT TRÍ GHAEILGE (Bonus marks for answering through Irish)

Ba chóir marcanna de réir an ghnáthráta a bhronnadh ar iarrthóirí nach ghnóthaíonn níos mó ná 75% d'iomlán na marcanna don pháipéar. Ba chóir freisin an marc bónais sin a shlánú **síos**.

Is é 5% an gnáthráta agus is é 200 iomlán na marcanna. Mar sin, bain úsáid as an ghnáthráta 5% i gcás iarrthóirí a ghnóthaíonn 150 marc nó níos lú.
(e.g. $118 \text{ marc} \times 5\% = 5.9 \Rightarrow \text{bónas} = 5 \text{ marc.}$)

Má ghnóthaíonn an t-iarrthóir níos mó ná 150 marc, ríomhtar an bónas de réir na foirmle seo: $[200 - \text{bunmharc}] \times 15\%$, (agus an marc sin a shlánú **síos**). In ionad an ríomhaireacht sin a dhéanamh, is féidir úsáid a bhaint as an tábla thíos.

Bunmharc	Marc Bónais
151 – 153	7
154 – 160	6
161 – 166	5
167 – 173	4
174 – 180	3
181 – 186	2
187 – 193	1
194 – 200	0

TABLE OF CREDITS

The following table shows the mark range associated with each number of credits:

Credits	Mark range
10	180 – 200
9	162 – 179
8	144 – 161
7	126 – 143
6	108 – 125
5	90 – 107
4	72 – 89
3	54 – 71
2	36 – 53
1	18 – 35
0	0 – 17