



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Scéim Mharcála

An Ardeistiméireacht Fheidhmeach, 2005

Feidhmithe Matamaiticiúla

Marking Scheme

Leaving Certificate Applied, 2006

Mathematical Applications

**MARKING SCHEME
LEAVING CERTIFICATE APPLIED, 2006**

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 is shown by the candidate.

QUESTION 1

Each part	5 marks	Att 2
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Part (a)	5 marks	Att 2
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Find 52% of €632.69

(a)	5 marks	Att 2
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(a)	$\begin{aligned} \text{€}632.69 \times 52\% &= \text{€}328.9988 \\ &= \text{€}329. \end{aligned}$
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- * Accept answer in cent form but must indicate this.
- * Accept correct answer with no work.

Blunders(-3)

B1: Inverts 52%.(€1216.71)

B2: Inverts €632.69(€ 0.00082188)

B3: Misplaced decimal.

Slips (-1)

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

S2: Failure to round or incorrect rounding.

S3: Evaluates 152% (€961.69)

S4: Calculates 48% (€303.69)

Attempts(2 marks)

A1: 52 ± 632.69

Part (b)	5 marks	Att 2
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Paul's rate of pay is €12.60 per hour. Overtime is paid at 'time and a half'. How much will Paul get paid for 6 hours of overtime?

(b)	5 marks	Att 2
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(b)	$\begin{aligned} (\text{€}12.60 \times 1.5) \times 6 &= & \text{or } \text{€}12.60 + \text{€}6.30 &= \text{€}18.90 \times 6 \\ \text{€}18.90 \times 6 &= \text{€}113.40 & & = \text{€}113.40 \end{aligned}$
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- * Accept answer with no work
- * Accept answer on cent form but must indicate this.

Blunders(-3)

B1: Misplaced decimal.

B2: Mishandles or ignores 'time and a half'.

B3: Divides by 6 (€3.15)

Slips(-1)

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

S2: Failure to round or incorrect rounding.

Attempts(2)

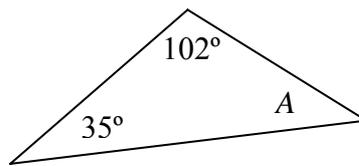
A1: Calculates the overtime rate only, correct or incorrect.

Part (c)

5 marks

Att 2

Calculate the size of the angle marked A in the given triangle.



(c)

5marks

Att 2

(c)	$A = 180^\circ - (102^\circ + 35^\circ)$
	$A = 180^\circ - 137^\circ$
	$A = 43^\circ$

* Accept correct answer with no work.

Blunders(-3)

B1: Answer = 137° and stops .

B2: Answer = $180^\circ - 35^\circ = 145^\circ$ and stops

B3: Answer = $180^\circ - 102^\circ$ and stops.

B4: Uses 360° and continues.

Slips(-1)

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

S2: Incorrect or omitted units.

Attempts(2)

A1: Answer = 180° and stops.

A2: Answer = $102^\circ - 35^\circ = 67^\circ$

Worthless(0)

W1: Answer = 35° and stops

W2: Answer = 102° and stops

W3: Answer = $2(35^\circ)$ and stops

W4: Answer = $2(102^\circ)$ and stops.

W5: Incorrect answer with no work.

Part (d)

5 marks

Att 2

Miriam is making an orange drink. She uses 4 parts water to 1 part orange squash. She wants to make 1500 ml of the drink. How much squash should she use?

(d)

5 marks

Att 2

(d) $1500 \text{ ml} \times \frac{1}{5} = 300 \text{ ml}$

* Accept correct answer with no work.

Blunders(-3)

B1: Inverts $\frac{1}{5}$ (7500 ml).

B2: Inverts $\frac{4}{5}$ + M1(1875 ml)

Slips(-1)

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

S2: Incorrect or omitted units.

Misreadings(-1)

M1: Answer = $1500 \text{ ml} \times \frac{4}{5} = 1200 \text{ ml}$.

Attempts(2)

A1: Answer = $1500 \text{ ml} \div 4 = 375 \text{ ml}$ and stops.

A2: Answer = $1500 \text{ ml} \times 4 = 6000 \text{ ml}$ and stops.

Worthless(0)

W1: Answer = $1500 \text{ ml} \pm 1$ stops

W2: Answer = $1500 \text{ ml} \pm 4$ stops

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

Calculate $(4.619)^3$, correct to 2 decimal places.

(e)**5marks****Att 2**

(e) $(4.619)^3 = 98.54710866$ $= 98.55$

* Accept correct answer with no work

Blunders(-3)

B1: Calculates $(4.619)^{\frac{1}{3}} = 1.66$.

B2: Answer = $4.619 \div 3 = 1.54$

B3: Misplaced decimal.

B4: Answer = $4.619 \times 4.619 \times 4.619$ and stops.

Slips(-1)

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

S2: Failure to round or incorrect rounding.

Misreadings(-1)

M1: Answer = $(4.619)^2 = 21.335161 = 21.33$

Attempts(2)

A1: Answer = $4.619 \times 3 = 13.857 = 13.86$

Worthless(0)

W1: Answer = 4.619 ± 3

W2: Answer = 461.9.

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

Given an exchange rate of €1 = £0.69 sterling, convert £250 to euro.

(f)**5marks****Att 2**

(f) $£250 \div €0.69 = €362.3188406$ $= €362.32$

* Accept correct answer with no work

Blunders(3)

B1: Answer = $€0.69 \times £250 = €172.50$.

B2: Inverts £250 (€0 .00276)

B3: Misplaced decimal.

Slips(-1)

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

S2: Failure to round or incorrect rounding.

S3: Incorrect units

Attempts(2)

A1: Answer = $£250 \pm 0.69$.

Worthless (0)

W1: Answer = €250.

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

A letter is chosen at random from the word PYTHAGORAS. What is the probability that the letter chosen is A?

(g)**5marks****Att 2**

(g) $\frac{2}{10}$ or $\frac{1}{5}$

* Accept answer written as 2:10, 1:5, 2 in 10, 1 in 5, 2 out of 10, 1 out of 5, or 0.2

Blunders(-3)

B1: No fraction or ratio set up.

B2: Answer = 2 + B1.

B3: Answer = 10+ B1.

B4: Answer = $\frac{10}{2}$.B5: Answer = $\frac{1}{10}$.

B6: Answer = 2 to 10 or 1 to 5

Slips(-1)

S1: Truncates decimal answer.

S2: Answer = $\frac{2}{8}$ *Attempts(2)*A1: Any proper fraction other than $\frac{2}{10}$, $\frac{1}{5}$, $\frac{10}{2}$, $\frac{5}{1}$, $\frac{1}{10}$.

A2: Answer = 2 -10 or 1 - 5

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

The length of a side of a square is 6.8 m. Calculate the perimeter of the square.

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

(h) Perimeter = $6.8 \text{ m} \times 4 = 27.2 \text{ m}$

* Accept correct answer with no work.

Blunders(-3)

B1: Misplaced decimal.

B2: Inverts 4 and continues(1.7 m).

B3: Calculates area (46.24 m²).

B4: Inverts 6.8 and continues(0.5882 m).

B5: Each side omitted to a max. of -6

B6: Answer = 6.8 + 6.8 + 6.8 +6.8 and stops.

Slips(-1)

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

S2: Incorrect or omitted units.

Worthless(0)

W1: Answer = 6.8 metres and stops.

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

Anna has a gross salary of €560 per week. Her deductions amount to €145.60. What percentage of her gross salary is this?

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

(i)
$$\frac{€145.60}{€560} \times \frac{100}{1} = \frac{14560}{560} = 26\%.$$

* Accept correct answer with no work.

Blunders(-3)

B1: Inverts $\frac{145.60}{560}$ and continues(384.6%)

B2: Subtracts €145.60 from €560 and continues (74%).

B3: Misplaced decimal.

Slips(-1)

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

Attempts(2)

A1: Answer = € 560 – €145.60 = € 414.40

A2: Answer = €145.60 × €560 and stops.

A3: Answer = €560 + € 145.60 = €705.60.

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

A train leaves Limerick Junction at 14:41 and arrives in Mallow at 15:16. How long does the journey take?

(j)**5marks****Att 2**

(j) $15:16 - 14:41 = 35 \text{ minutes}$

* Accept correct answer with no work.

* Accept answer = $\frac{7}{12}$ hour.

Blunders(-3)

B1: 1 hour = 100 minutes .

B2: Adds rather than subtracts (29 hours 57 minutes)

B3: Minutes ≠ correct decimal of an hour unless B1.

B4: 14:41 – 15:16 = 1hour 25 minutes

Slips(-1)

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

S2: Answer = 0:35.

S3: Truncates decimal answer.

S4: Incorrect or omitted units.

Attempts(2)

A1: If not covered above any answer between 24 mins and 1 hours 57 mins.

Worthless(0)

W1: Multiplies 14:41 by 15:16.

QUESTION 2

Part (a)	(5, 5, 5) marks	Att (2, 2, 2)
Part (b)	5 marks	Att 2
Part (c)	5 marks	Att 2
Part (d)	5 marks	Att 2
Part (e)	20 marks	Att 7

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

Fill in the three missing details on the final account.

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

First missing detail: Each student buys a further 6 shares at a reduced price of 10 cent each

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

(a)(i) $€4.80 \div €0.10 = 48$ shares **or** $200 - (112 + 40)$ **or** $8 \text{ students} \times 6 =$
 $200 - 152 = 48$ shares 48 shares

* Accept correct answer with no work.

Blunders(-3)

B1: Answer = $112 + 40 + 200 = 352$.

B2: Answer = $€4.80 \times .10 = 0.48$

B3: Misplaced decimal.

B4: $€4.80 \div 112 = 0.0428$.

B5: $€4.80 \div 8 = 0.60$

Slips(-1)

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

Attempts(2)

A1: Answer = 112 ± 40 and stops

A2: Answer = 14×6 (84) and stops

A3: Answer = 112×6 (672) and stops

A4: Answer = 6 and stops

A5: Answer = $112 \div €4.80 = 23.33$.

A6: Answer = 160 ($200 - 40$)

A7: Answer = 88 ($200 - 112$)

Worthless(0)

W1: Answer = 112 and stops

W2: Answer = 40 and stops

W3: Answer = 200 and stops.

Part (a)(ii)

5 marks

Att 2

Second missing detail: 1000 CARDS SOLD AT 15 CENT EACH

(a)(ii)

5 marks

Att 2

(a) (ii) $1000 \times 15 = 15000 \text{ cent} = \text{€}150$. or $\text{€}190 - \text{€}40 = \text{€}150$

- * Accept correct answer with no work
- * Accept answer in cent form but must indicate this.

Blunders(-3)

B1: Misplaced decimal.

B2: Divides by 15 (€6666.67)

B3: Answer = €190 + €40 = €230.

Slips(-1)

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

Misreading(-1)

M1: Answer = $1050 \times 15 = \text{€}157.50$

Attempts(2)

A1: Answer 1000 ± 15 and stops.

Worthless(0)

W1: Answer = €40 and stops

W2: Answer = €12.80 and stops

W3: Answer = €4.80 + €8.00 + €12.80 = €25.60.

Part (a)(iii)

5 marks

Att 2

Third missing detail: GRAND TOTALS ON 31 MAY 2006

(a)(iii)

5marks

Att 2

(a)(iii) $\text{€}12.80 + \text{€}190 = \text{€}202.80$ or $\text{€}4.80 + \text{€}8.00 + \text{€}150 + \text{€}40 = \text{€}202.80$

- * Accept candidate's answer from part (a)(ii)
- * Accept correct answer with no work.

NOTE: If evident from script that the announced correction was not applied (i.e. change the "Income" total to €12.80 from €12.60), DO NOT penalize.

Blunders(-3)

B1: Misplaced decimal.

B2: Subtracts rather than adds(€177.20).

B3: Includes Total Purchases (€245.40)

B4: Each excess amount to a max of -6.

Slips(-1)

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

Attempts(2)

A1: Answer = €190 and stops

A2: Answer = €12.80 and stops.

A3: Answer between €190 and €448.20 if not covered above.

Worthless(0)

W1: Answer = €42.60 and stops

Part (b)

5 marks

Att 2

Calculate the total profit of the company on 31 May 2006,(the final date).

(b)

5marks

Att 2

(b) $€202.80 - €42.60 = €160.20$ or $€12.80 + €190 - €42.60 = €160.20$

* Accept correct answer with no work

* Accept candidates answer from (a)(ii) and (a)(iii)

NOTE: If evident from script that the announced correction was not applied (i.e. change the “Income” total to €12.80 from €12.60), DO NOT penalize.

Blunders(-3)

B1: Adds instead of subtracts (€245.40).

B2: Answer = $€190 - €42.60 = €147.40$.

B3: Each excess deducted to a max of -6.

B4: Misplaced decimal.

Slips(-1)

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

Attempts(2)

A1: Answer = candidate’s answer for a(iii) and stops.

A2: Answer = €42.60 and stops

A3: Answer = €12.80 and stops.

A4: Answer = €190 and stops

Worthless(0)

W1: Answer = 200 and stops.

Part (c)

5 marks

Att 2

Calculate the Final Share Value of the company.

$$\text{Final Share Value} = \frac{\text{Total profit}}{\text{Total number of shares issued}}$$

(c)

5marks

Att 2

(c)

$$\text{Final Share Value} = \frac{€160.20}{200} = €0.801 = €0.80$$

- * Accept candidate's answer for (b)
- * Accept correct answer with no work
- * Accept answer in cent form but must indicate this

Blunders(-3)

B1: Misplaced decimal

B2: Inverts (€1.25)

B3: Each incorrect substitution to a max of -6

B4: Answer = $\frac{€160.20}{200}$ and stops.

B5: Multiplies instead of divides(€32040)

Slips(-1)

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

S2: Failure to round or incorrect rounding.

Attempts(2)

A1: One substitution correct/incorrect and stops.

Part (d)

5 marks

Att 2

A teacher bought five shares in the company. Calculate the profit the teacher made.

(d)

5marks

Att 2

(d) Cost = 5 shares \times 0.20 = €1.00	<i>or</i>	Profit per share = €0.80 - €0.20 = €0.60
Share Value = 5 shares \times 0.80 = €4.00		profit for 5 shares = €0.60 \times 5 = €3.00
=> profit = €4 - €1 = €3.00		

* Accept correct answer with no work

* Accept candidate's answer for (c)

Blunders(-3)

B1: Divides rather than multiplying(apply once only)

B2: Misplaced decimal

B3: Adds rather than subtracts for profit (€5)

B4: Ignores profit + B3.

B5: Incorrect share cost unless S3

Slips(-1)

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

S2: Failure to round or incorrect rounding.

S3: Uses 10 cent for share cost

Attempts(2)

A1: Answer = cost of shares only.

A2: Answer = share value only.

Worthless (0)

W1: Answer = 5 \times €202.80 and stops

W2: Answer = 5 \times €12.80 and stops

W3: Answer = 5 \times €42.60 and stops.

Part (e)

20 marks

Att 7

A carpenter prices a job: labour costs €495; materials cost €278; VAT is charged at 21%. Calculate the total cost of the job.

(e)

20 marks

Att 7

$$\begin{aligned} \text{(e) Cost} &= €495 + €278 + 21\%(€495 + €278) \\ &= €773 + 21\%(€773) \\ &= €773 + €162.33 \\ &= €935.33 \end{aligned}$$

* Accept correct answer with no work

Blunders(-3)

B1: Subtracts the VAT(€ 610.67)

B2: Misplaced decimal

B3: Subtracts materials cost from labour costs and continues(€262.57)

B4: Inverts 21%(€4453.95).

B5: Ignores VAT + B4 + B1.

B6: Omits one of the costs when calculating VAT.

B7: Calculates VAT only (€162.33).

B8: Gets 21%(€495) = €103.95 and stops + B1 + B6

B9: Gets 21%(€278) = €58.38 and stops + B1 + B6

Slips(-1)

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

S2: Failure to round or incorrect rounding.

Attempts(7)

A1: Answer = €495 + €278 and stops

A2: Answer = €495 ± 21 and stops

A3: Answer = €278 ± 21 and stops

Worthless(0)

W1: Answer = €495 and stops

W2: Answer = €278 and stops.

NOTE: If candidate calculates €162.33 the most marks they can lose after that is one blunder(-3).

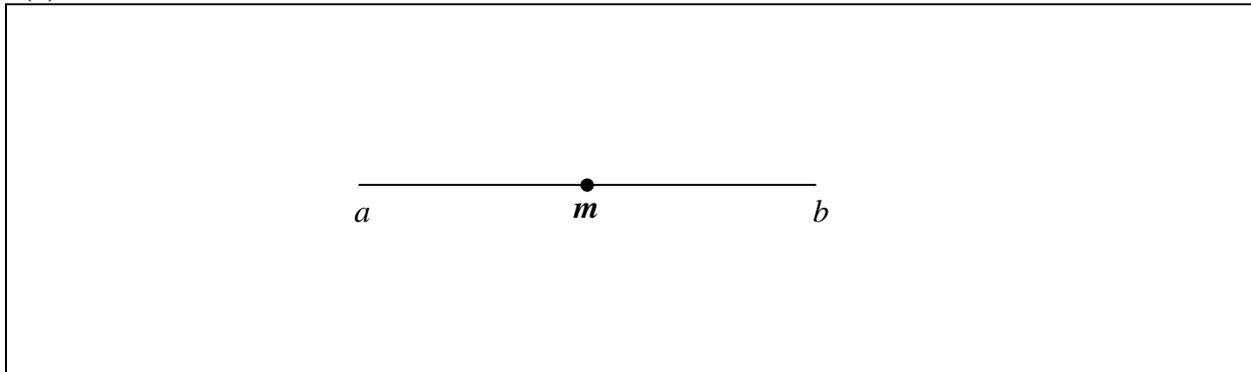
QUESTION 3

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

Part (a) 10 marks Att 3

(a) Mark the midpoint of this line segment and label the midpoint m

(a) 10 marks Att 3



* tolerance ± 0.1 cm

Blunders(-3)

B1: Midpoint outside tolerance of 0.5 cm unless A2 or A3.

B2: No dot but m or 3 written over the midpoint area.

Slips(-1).

S1: Midpoint between tolerance of 0.1 cm and 0.5 cm.

S2: Midpoint marked but not labeled

Attempts(3)

A1: $m = a$

A2: $m = b$.

Worthless(0)

W1: $m \notin [a,b]$.

Part (b)

10 marks

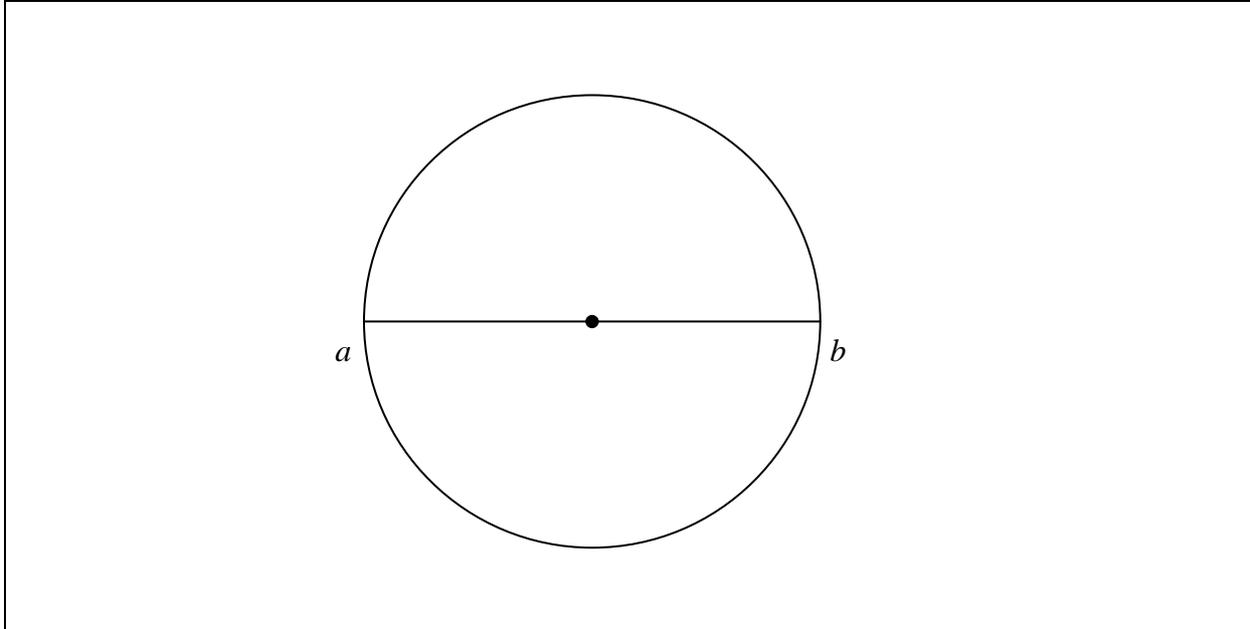
Att 3

(b) In the box above construct a circle with m as the centre and with $[ab]$ as the diameter

(b)

10marks

Att 3



* Accept candidate's answer from part (a).

* Accept tolerance of ± 0.1 cm

Blunders(-3)

B1: Ignores m and uses a or b as centre.

B2: Radius outside tolerance of 0.5 cm.

Slips(-1)

S1: Radius between tolerance 0.1 cm and 0.5 cm.

S2: Incorrect units

Misreading(-1)

M1: Draws a semi – circle

Attempts(3)

A1: Draws a circle free hand.

A2: Labels m as centre and stops.

Worthless(0)

W1: Constructs triangle.

Part (c)

5 marks

Att 2

(c) Write down the length of the radius of the circle

(c)

5marks

Att 2

Radius = 3 cm

- * Accept measurement of candidate's radius.
- * Accept correct answer with no work.
- * Tolerance ± 0.1 cm.

Blunders(-3)

B1: Radius measured outside tolerance of 0.5 cm.

Slips(-1)

S1: Radius measured between tolerance 0.1 cm and 0.5 cm.

S2: Incorrect or omitted units.

Worthless (0)

W1: Incorrect answer with no diagram.

Part (d)

10 marks

Att 3

(d) Calculate the length of the circle, taking $\pi = 3.14$

(d)

10 marks

Att 3

Length = $2\pi r$
= 2 (3.14) (3)
= 18.84 cm

- * Accept candidate's answer from part (c)
- * Accept correct answer with no work
- * Accept answer using $\pi = \frac{22}{7}$.

Blunders(-3)

B1: Radius = diameter.

B2: Adds rather than multiplies (8.14 cm)

B3: Correct substitution and stops + B2.

B4: Failure to substitute for π and continues.

B5: Mishandles or ignores 2.

B6: Each incorrect substitution to a max of -6, and continues.

B7: Misplaced decimal.

Slips(-1)

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

S2: Truncates or rounds answer.

S3: Incorrect or omitted units.

Attempts(3)

A1: Answer = $2 \times 3.14 \times r$ and stops.

Part (e)

5 marks

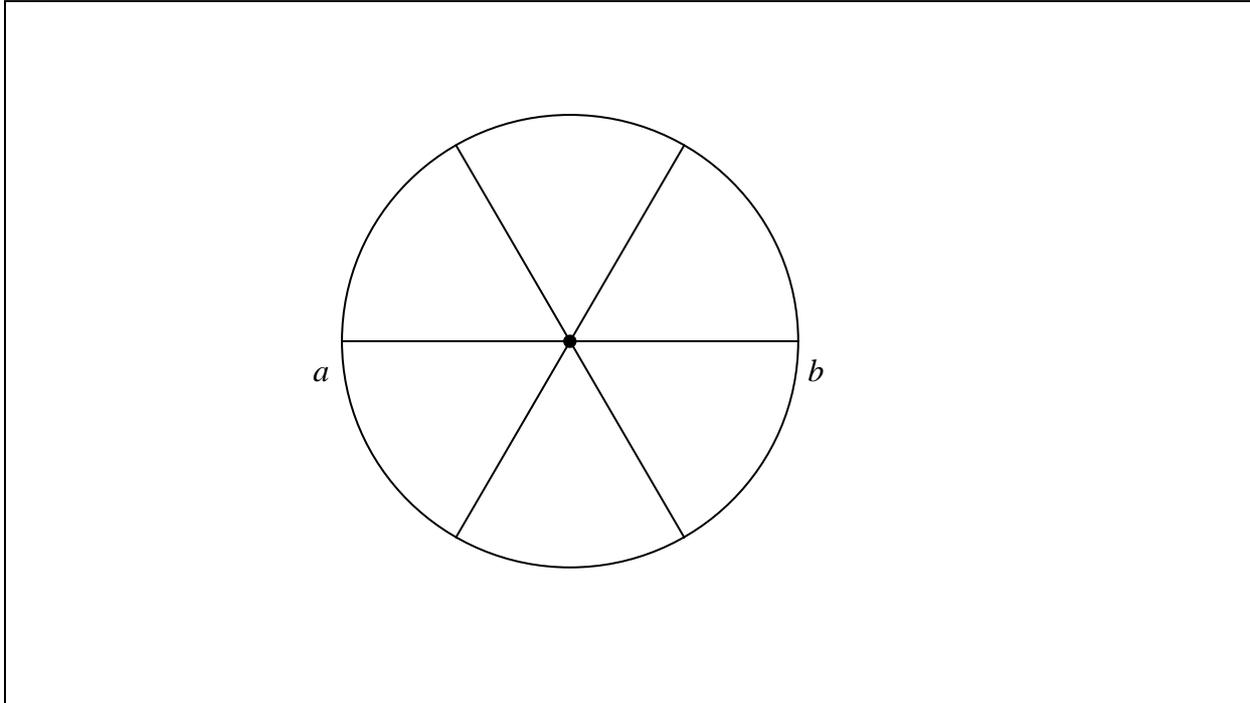
Att 2

Divide the circle into six equal parts.

(e)

5 marks

Att 2



* Accept any 3 diameters at intervals of 360° (i.e. don't have to use $[ab]$).

* Accept candidate's answer for part (b).

* Accept tolerance $\pm 5^\circ$.

Blunders(-3)

B1: Each diameter angle outside tolerance of 10° to a max of -6.

Slips(-1)

S1: Angle between tolerance of 5° and 10° .

Misreadings(-1)

M1: Divides into equal parts > 6 .

Attempts(2)

A1: Uses parallel line to divide the circle into equal parts.

A2: One correct diameter $\neq [ab]$ drawn only

A3: One sector only drawn and within tolerance

Worthless(0)

W1: Lines drawn outside the circle.

NOTE:

- Candidate may have a vertical line arising from constructing the mid-point in part (a) – do not penalise this in marking part (e).
- Three sectors correct = 4 marks.

Part (f)

10 marks

Att 3

Jason has a gross weekly income of €400. His tax rate is 20%. His tax credits are €48 per week. How much tax does Jason pay per week?

(f)

10 marks

Att 3

$$\begin{aligned} \text{(f) Tax:} &= (\text{€}400 \times 20\%) - \text{€}48 \\ &= \text{€ } 80 - \text{€}48 \\ &= \text{€ } 32. \end{aligned}$$

* Accept correct answer with no work..

Blunders(-3)

B1: Inverts 20% (€1952)

B2: Incorrect order $\{(\text{€}400 - \text{€}48) \times 20\%\}$ (€70.40)

B3: Adds rather than subtracts tax credits.

B4: Mislplaced decimal.

B5: Answer €80 + B3.

Slips(-1)

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

S2: Failure to round or incorrect rounding.

Misreadings(-1)

M1: Answer = €368.(Net Pay or take home pay)

Attempts(3)

A1: Answer = 400 ± 48 and stops

A2: Answer = $400 \times 20\%$ and stops.

A3: Answer = $48 \times 20\%$ and stops.

A4: Answer = 48 ± 20 and stops.

QUESTION 4

Part (a)	5, 5marks	Att 2, 2
Part (b)	(5, 5) marks	Att 2,2
Part (c)	20 marks	Att 7
Part (d)	10marks	Att 3

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

Calculate the price per litre on the purchase of **one bag** of bark chips from each store

(a)(i) 5 marks Att 2

(a)(i) GREENE'S..... $\text{€}7.99 \div 100 = \text{€}0.0799$
 $= \text{€} 0.08$

- * Accept correct answer with no work
- * Accept answer in cent form but must indicate this.

Blunders(-3)

- B1: Misplaced decimal.
- B2: Divides by the number of bags.($\text{€}2.66$ or $\text{€}4.00$)
- B3: Multiplies rather than divides($\text{€}799.00$)
- B4: Inverts($100 \div \text{€}7.99 = \text{€}12.51$)

Slips(-1)

- S1:Each numerical error to a max. of -3.
- S2: Failure to round or incorrect rounding.

Attempts(2)

A1: Answer = $100 \pm \text{€}7.99$ and stops.

(a)(ii) 5 marks Att 2

(a)(ii) PACIFIC..... $\text{€}6.79 \div 75 = \text{€} 0.0905$
 $= \text{€}0.09$

- * Accept correct answer with no work
- * Accept answer in cent form but must indicate this.
- * NOTE: do not apply the Blunders below if same already applied in part (a)(i).
- * NOTE : Decimal error can only be considered “same error” if moved same number of places in the same direction.

Blunders(-3)

- B1: Misplaced decimal.
- B2: Divides by the number of bags.($\text{€}3.39$ OR $\text{€}3.40$)
- B3: Multiplies rather than divides($\text{€}509.25$)
- B4: Inverts($75 \div \text{€}6.79 = \text{€}11.04$)

Slips(-1)

- S1:Each numerical error to a max. of -3.
- S2: Failure to round or incorrect rounding.
- S3: Divides by 100.

Misreadings(-1)

M1: Answer for PACIFIC given for GREENE'S and vice versa (apply once only)

Attempts(2)

A1: Answer = $75 \pm \text{€}6.79$ and stops.

Part (b)

(5, 5) marks

Att 2, 2

Which store offers the best value per litre on the purchase of 300 litres of bark chips.

(b) (i) Calculations

5 marks

Att 2

(b)(i) **GREENE'S**: 300 litres = €7.99 × 2 (bags) = €15.98 => €15.98 ÷ 300 = €0.05326

GREENE'S = €0.053... per litre

PACIFIC: 300 litres = €6.79 × 2 (bags) = €13.58 => €13.58 ÷ 300 = €0.0452666

PACIFIC = €0.045... per litre

* Accept answers in cent form but must indicate this.

Blunders(-3)

B1: Miscalculates the number of bags each time.

B2: Misplaced decimal.

B3: Ignores one of the stores + B1.

B4: Divides by the number of bags, apply once only.

Slips(-1)

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

Attempt(2)

A1: Divides the cost of one bag by 300 and stops.

A2: Ignores special offers.

Worthless(0)

W1: Incorrect answer with no work.

W2: Answer = €7.99 or €6.79

(b) (ii) Conclusion

5 marks

Att 2

(b)(ii) **PACIFIC** offers the best value.

NOTE: Correct conclusion = 5 marks

Incorrect conclusion = att 2 marks.

No conclusion = 0 marks.

Part (c)**20 marks****Att 7**

John wants to spread bark chips on a rectangular section of the garden. This section measures $4\text{ m} \times 5\text{ m}$. He needs 30 litres of bark chips per square metre. How many litres does he need in total?

(c)**20 marks****Att 7**

(c) $4\text{ m} \times 5\text{ m} = 20\text{ m}^2 \times 30\text{ litres} = 600\text{ litres}$

* Accept correct answer with no work.

Blunders (-3)

B1: Answer = $(4 \times 30) \times (5 \times 30) = 120 \times 150 = 18000$ litres

B2: Adds dimensions to get area and continues.

B3: $4^2 \times 5^2 \times 30 = 12000$ litres

B4: $4 \times 5 \times 30^2 = 18000$ litres.

B5: Adds rather than multiplies by litres. ($4 \times 5 + 30 = 50$ litres)

B6: Misplaced decimal.

B7: Gets area only + B5.

Slips (-1)

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

Attempt (7)

A1: Answer = 4 ± 30 and stops

A2: Answer = 5 ± 30 and stops.

Worthless (0)

W1: No Work and answer = 300 litres and stops.

W2: Answer $4\text{ m} \times 5\text{ m}$ and stops.

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

How much will John's bark chips cost in the cheaper store.

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

(d) PACIFIC @ $\text{€}6.79 \times 4 = \text{€}13.58 \times 2 = \text{€}27.16$

* Accept candidate's answers for part (b) and part (c).

* Accept answer in cent form but must indicate this.

Blunders (-3)

B1: Miscalculates the number of bags.

B2: Answer = $\text{€}13.58$ and stops.

B3: Misplaced decimal

Slips (-1)

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

S2: Chooses the dearer store ($\text{€}31.96$)

Attempt (3)

A1: Ignores special offers in calculating the cost of the bark chips.

QUESTION 5

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

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

What is the time of the latest bus from Mitchelstown to Dublin

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

(a) 1850

* Accept use of the 12 hour clock but must indicate am or pm.

Blunders(-3)

B1: Incorrect column.

B2: Incorrect row.

Slips(-1)

S1: Uses the 12 hour clock and omits am or pm.

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

Emma lives in Cashel and she needs to be in Dublin for 2:00 pm. At what time should she get the bus?

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

(b) 0935

Blunders(-3)

B1: Incorrect column

B2: Incorrect row

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

How many hours and minutes does it take the bus to get from Cashel to Dublin.

(c)**5 marks****Att 2**(c) $12:25 - 09:35 = 2$ hours 50 minutes.

* Accept correct answer with no work

* Accept answer using any column.

Blunders(-3)

B1: 1 hour = 100 minutes

B2: $09:35 - 12:25 = 3$ hours 10 minutes.

B3: Adds instead of subtracts (22 hours)

Slips(-1)

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

S2: Answer = 170 minutes

S3: Answer = $2\frac{5}{6}$ hours.*Misreadings(-1)*

M1: Uses incorrect row.

Attempt(2)

A1: Answer = arrival time in Dublin only.

A2: Any answer between 2 hrs 10 min and 3 hrs and 35 min unless mentioned above.

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

For how long does the bus stop at Portlaoise?

(d)**5 marks****Att 2**(d) $11:30 - 10:55 = 35$ minutes

* Accept correct answer with no work

* Accept answer using any column

Blunders(-3)

B1: 1 hour = 100 minutes.

B2: $10:55 - 11:30 = 1$ hour 25 minutes.

B3: Adds instead of subtracts(22 hours 25 minutes)

Slips(-1)

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

S2: Answer = $\frac{7}{12}$ hour.

S3: Omits or incorrect units

Misreadings(-1)

M1: Incorrect row.

Attempt(2)

A1: Any answer between 20 minutes and 1 hour 35 minutes unless mentioned above.

A2: Answer = arrival at Portlaoise and stops

A3: Answer = Departure from Portlaoise and stops.

Part (e)

10 marks

Att 3

A salesperson working for a paint company travelled 3082 km by car in a month. The car used 1 litre of petrol for every 11.5 km travelled. How many litres of petrol did the car use in the month?

(e)

10 marks

Att 3

$$(e) \quad \frac{3082}{11.5} = 268 \text{ litres}$$

* Accept correct answer with no work

Blunders(-3)

B1: Multiplies (35443 litres)

B2: Misplaced decimal.

B3: Inverts (0.0037313).

Slips(-1)

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

Attempt(3)

A1: Answer = 3082 ± 11.5 and stops.

Part (f)

10 marks

Att 3

The cost of the petrol that month was 102.9 cent per litre. Calculate the cost of the petrol for the month.

(f)

10 marks

Att 3

$$(f) \quad \begin{aligned} 268 \text{ litres} \times 102.9 \text{ cent} &= 27577.2 \text{ cent} \\ &= \text{€}275.772 \\ &= \text{€}275.77 \end{aligned}$$

* Accept candidate's answer for part (e)

* Accept correct answer with no work

* Accept answer in cent form but must indicate this.

Blunders(-3)

B1: Divides rather than multiplies (2.06044 cent)

B2: Misplaced decimal

Slips(-1)

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

S2: Failure to round or incorrect rounding.

Attempt(3)

A1: Answer = 268 ± 102.9 and stops.

Worthless(0)

W1: Answer = 102.9 cent.