

DIVINE EDUCATION CENTRE

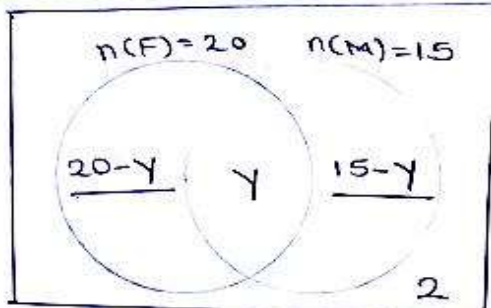
P.7 MTC MID TERM ONE MARKING GUIDE.

QN	SOLUTION	MKS	PROFESSIONAL ADVISE
1.	$\begin{array}{r} 3 \\ 4 \ 15 \\ - 1 \ 7 \\ \hline 2 \ 8 \end{array}$	B ₂	Award B ₂ for 28
2.	Fourteen thousand - 14,000 forty $\begin{array}{r} = + 40 \\ 14,040 \end{array}$	B ₂	Award B ₂ for 14,040
3.	$3W - (W - 2)$ $3W - W + 2$ $2W + 2$	m ₁ A ₁	Award m ₁ for removing brackets. A ₁ for 2W + 2
4.	$\begin{array}{r} 0 \ t \ h \\ 4 \cdot 4 \ 6 \\ + 0 \cdot 1 \leftarrow \\ \hline 4 \cdot 5 \end{array}$ $\therefore 4 \cdot 46 \approx 4 \cdot 5$	m ₁ A ₁	Award m ₁ for adding 0.1 at the right place value. Award A ₁ for 4.5 Reject +1
5.	$2p + 20^\circ + 30^\circ + 90^\circ = 180^\circ$ $2p + 140^\circ = 180^\circ$ $2p + 140^\circ - 140^\circ = 180^\circ - 140^\circ$ $2p = 40^\circ$ $\frac{2p}{2} = \frac{40^\circ}{2}$ $p = 20^\circ$	m ₁ A ₁	Award m ₁ for correct formation of the equation. Award A ₁ for the value of P as 20°.
6.	At 1:25pm OR At twenty five minutes past one in the afternoon. OR At 1325 hours	B ₂ B ₂	Award B ₂ for the correct time in 12 hour clock system or 24 hour clock system. Reject; 1:25 1:25a.m

7.	$\frac{\text{Sum of data}}{\text{No of data}} = \text{mean}$ $\frac{7+5+3+2}{4} = 3$ $\frac{(7+10) \times 4}{4} = 3 \times 4$ $7+10 = 12$ $7+10-10 = 12-10$ $7 = 2$	m_1 A_1	<p>Award m_1 for the correct working.</p> <p>Award A_1 for the value of γ as 2.</p>															
8.	$M_+ = \{4, 8, 12, 16, 20, 24, \dots\}$ $M = \{4, 8, 12, 16\}$ <u>Number of Subsets.</u> 2^n (where $n=4$) 2^4 $2 \times 2 \times 2 \times 2$ 16 Subsets	B_1 B_1	<p>Award B_1 for correct identification or listing of the members of set M.</p> <p>Award B_1 for 16 subsets. Accept 16 silent.</p>															
9.	<table border="1"> <thead> <tr> <th>Base</th> <th>No</th> <th>Rem</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>8</td> <td></td> </tr> <tr> <td>2</td> <td>4</td> <td>0</td> </tr> <tr> <td>2</td> <td>2</td> <td>0</td> </tr> <tr> <td></td> <td>1</td> <td>0</td> </tr> </tbody> </table> <p>$\therefore 8_{\text{ten}} = 1000_{\text{two}}$</p>	Base	No	Rem	2	8		2	4	0	2	2	0		1	0	m_1 A_1	<p>Award m_1 for the correct working.</p> <p>Award A_1 for 1000_{two} Accept 1000_2 Reject 1000</p>
Base	No	Rem																
2	8																	
2	4	0																
2	2	0																
	1	0																
10		C_1 C_1	<p>Award C_1 for all the arcs leading to 45°.</p> <p>Award C_1 for correct location of 135°.</p>															

11.	<p>3kg cost sh. 7500 $\frac{2500}{3}$ 1kg costs sh. 2,500 <u>Weight of the sack</u> $\left(\frac{\text{sh. } 2500}{\text{sh. } 2500} \right)$ kg 5 50kg</p>	B ₁	Award B ₁ for sh. 2,500								
12.	<p>C.p = S.p + Loss Sh. 90,000 + Sh. 30,000 <u>Sh. 120,000</u></p>	m ₁ A ₁	<p>Award m₁ for addition. Award A₁ for sh. 120,000</p>								
13.	<p>$a = \frac{1}{3}b$, $b = 2$</p> <table border="1"> <tr> <td>$a + b$</td> <td>$\frac{1}{3} \times 2 + 2$</td> </tr> <tr> <td>$\frac{1}{3}b + b$</td> <td>$\frac{2}{3} + \frac{2}{1}$</td> </tr> <tr> <td>$\frac{1}{3} \times 2 + 2$</td> <td>$\frac{2+6}{3}$</td> </tr> <tr> <td></td> <td>$\frac{8}{3} = 2\frac{2}{3}$</td> </tr> </table>	$a + b$	$\frac{1}{3} \times 2 + 2$	$\frac{1}{3}b + b$	$\frac{2}{3} + \frac{2}{1}$	$\frac{1}{3} \times 2 + 2$	$\frac{2+6}{3}$		$\frac{8}{3} = 2\frac{2}{3}$	m ₁ A ₁	<p>Award m₁ for correct Substitution. Award A₁ for $2\frac{2}{3}$.</p>
$a + b$	$\frac{1}{3} \times 2 + 2$										
$\frac{1}{3}b + b$	$\frac{2}{3} + \frac{2}{1}$										
$\frac{1}{3} \times 2 + 2$	$\frac{2+6}{3}$										
	$\frac{8}{3} = 2\frac{2}{3}$										
14.	<p>Total chances = $\frac{7+5}{12}$ probability = $\frac{n(E)}{n(T.C)}$ $\frac{7}{12}$</p>	B ₁ B ₁	<p>Award B₁ for 12 Award B₁ for $\frac{7}{12}$</p>								
15.	<p>G.C.F of 12 and 15 $\sqrt{3} \mid 12 \mid 15$ 4 5 3 pupils</p>	m ₁ A ₁	<p>Award m₁ for correct working. Award A₁ for 3 pupils</p>								

<p>Decrease</p> $\begin{array}{r} \text{Sh. } 5000 \\ - \text{Sh. } 4000 \\ \hline \text{Sh. } 1000 \end{array}$	<p>% decrease</p> $\frac{\text{decrease} \times 100\%}{\text{O.P}}$ $\frac{\text{Sh. } 1000 \times 100\%}{\text{Sh. } 5000}$ <p>20%</p>	<p>m₁ A₁</p>	<p>Award m₁ for the correct working.</p> <p>Award A₁ for 20%.</p>
<p>7. Distance in km</p> <p>10m to km</p> $1000\text{m} = 1\text{ km}$ $1\text{m} = \frac{1}{1000}\text{ km}$ $10\text{m} = \left(\frac{1}{1000} \times 10\right)\text{ km}$ $= \frac{1}{100}\text{ km}$ <p>Speed = $D \div T$</p> $\frac{1}{100}\text{ km} \div \left(\frac{1}{3600}\text{ hr}\right)$ $\frac{1}{100}\text{ km} \times \frac{3600}{1\text{ hr}}$ $36\frac{\text{km}}{\text{hr.}}$	<p>Time in hr.</p> <p>1sec to hr</p> $3600\text{sec} = 1\text{ hr}$ $1\text{sec} = \frac{1}{3600}\text{ hr}$	<p>m₁ A₁</p>	<p>Award m₁ for correct substitution in the formula for speed.</p> <p>Award A₁ for 36 $\frac{\text{km}}{\text{hr}}$.</p> <p>Reject wrong units.</p>
<p>18. Let the old temperature be γ.</p> $\gamma - 3^{\circ}\text{C} = -5^{\circ}\text{C}$ $\gamma - 3^{\circ}\text{C} + 3^{\circ}\text{C} = -5^{\circ}\text{C} + 3^{\circ}\text{C}$ $\gamma = -2^{\circ}\text{C}$ <p>\therefore The old temperature of Juice was -2°C.</p>	<p>m₁ A₁</p>	<p>Award m₁ for correct formation of the equation or for any correct working.</p> <p>Award A₁ for -2°C.</p>	
<p>19. Distance = (No. of trees - 1) \times Int.</p> $(100 - 1) \times 600\text{ cm}$ $99 \times 600\text{ cm}$ 59400 cm $59400\cancel{\text{ cm}}$ $100\cancel{\text{ cm}}$ 594 metres	<p>B₁ B₁</p>	<p>Award B₁ for 59400cm</p> <p>Award B₁ for 594m.</p>	

<p>20. Base area $\times H$ = Volume $40\text{cm}^2 \times h$ = 200cm^3 $\frac{40\text{cm}^2}{40\text{cm}^2} \times h$ = $\frac{200\text{cm}^3}{40\text{cm} \times \text{cm}}$ h = $\frac{200\text{cm} \times \cancel{\text{cm}}}{40\cancel{\text{cm}} \times \cancel{\text{cm}}}$ h = 5cm \therefore The height is 5cm</p>	<p>m_1 Award m_1 for correct working. A_1 Award A_1 for 5cm as height of the box.</p>
SECTION B. (60 MARKS)	
<p>21. a)</p> 	<p>B_1 for $20-y$ B_1 for $15-y$</p>
<p>b) <u>Value of y</u> $20-y + y + 15-y + 2 = 34$ $20 + 15 + 2 - y = 34$ $37 - y = 34$ $37 - 37 - y = 34 - 37$ $-y = -3$ $\frac{-y}{-1} = \frac{-3}{-1}$ $y = 3$</p> <p><u>Find complement</u> $(15-y) + 2$ $(15-3) + 2$ $12 + 2$ 14 guests</p>	<p>m_1 Award m_1 for correct formation of the equation. A_1 Award A_1 for the value of y as 3. B_1 Award B_1 for 14 guests.</p>

<p>22 a)</p> <div style="display: flex; align-items: center; justify-content: center;"><div style="text-align: center;">$\begin{array}{c} 4 \\ \\ 406 \\ +60 \end{array}$</div><div style="margin: 0 20px;">106</div><div style="text-align: center;">$\begin{array}{c} 604 \\ \\ 640 \end{array}$</div></div> <p>$\therefore$ All the possible 3-digit numbers are 406, 460, 604 and 640.</p>	<p>B_2 Award B_2 for all the 3-digit numbers formed.</p> <p>Each number formed carries $\frac{1}{4}$ mark.</p>								
<p>b)</p> <div style="display: flex; justify-content: space-between;"><div><p>largest = 640</p><p>Smallest = 406</p><hr/><p>Sum = 1046</p></div><div><p>m_1 Award m_1 for correct working (addition)</p><p>A_1 Award A_1 for 1046</p></div></div>									
<p>23 a)</p> <table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th>1st no</th><th>2nd no</th><th>3rd no</th><th>Sum</th></tr></thead><tbody><tr><td>K</td><td>K+1</td><td>K+2</td><td>24</td></tr></tbody></table> <div style="margin-top: 10px;">$K + K + 1 + K + 2 = 24$$K + K + K + 1 + 2 = 24$$3K + 3 = 24$$3K + 3 - 3 = 24 - 3$$3K = 21$$\frac{3K}{3} = \frac{21}{3}$$K = 7$</div>	1st no	2nd no	3rd no	Sum	K	K+1	K+2	24	<p>m_1 Award m_1 for the correct formation of the equation.</p> <p>Award A_1 for the correct value of K as 7.</p> <p>A_1</p>
1st no	2nd no	3rd no	Sum						
K	K+1	K+2	24						
<p>b)</p> <div style="text-align: center;">$\text{1st no} = \frac{\text{LCM} \times \text{GCF}}{\text{2nd no}}$$\frac{12}{36} \times 6$$\frac{12}{3} \times 1$$12 \times 1 = 12$</div> <p>$\therefore$ The first number is 12</p>	<p>m_1 Award m_1 for the correct working.</p> <p>Award A_1 for 12.</p> <p>A_1</p>								
<p>24. a) (i) $y = -4$ (ii) $w = +5$ (iii) $x = -9$</p>	<p>B_1 Award B_1 for -4 B_1 Award B_1 for +5 B_1 Award B_1 for -9</p>								
<p>b) <u>Mathematical sentence.</u></p> <div style="display: flex; justify-content: space-between;"><div>$w + x = y$$+5 + -9 = -4$</div><div><p>$m_1$ Award m_1 for $w+x=y$</p><p>A_1 Award A_1 for the correct sentence.</p></div></div>									

25.

P. 7	P. 6	P. 5
3	5	2

More ratio

$$5 - 3 = 2$$

2 parts rept 18 pupils

1 part repts $\frac{18}{2}$ pupils

1 part repts 9 pupils.

P. 7	P. 6	P. 5
3×9	5×9	2×9
27 pupils	45 pupils	18 pupils

B₁B₁ for 2B₁ for $\frac{18}{2}$ (division)M₁B₁ for 9:B₁B₁ for 27B₁ for 45B₁ for 18B₁B₁B₁

26.

a)

$$2^{3k} \div 8 = 1$$

$$2^{3k} \div 2^3 = 2^0$$

$$2^{3k-3} = 2^0$$

$$3k - 3 = 0$$

$$3k - 3 + 3 = 0 + 3$$

$$\frac{3k}{3} = \frac{3}{3}$$

$$k = 1$$

$$\begin{array}{r} 8 \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ 2 \overline{) 1} \end{array}$$

M₁Award M₁ for correct workingAward A₁ for the value of k as 1.A₁

b)

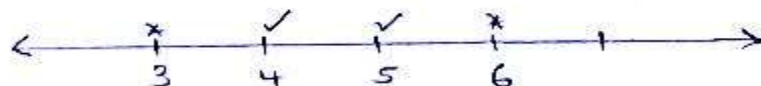
$$7 < 3p - 2 < 16$$

$$7 + 2 < 3p - 2 + 2 < 16 + 2$$

$$9 < 3p < 18$$

$$\frac{9}{3} < \frac{3p}{3} < \frac{18}{3}$$

$$3 < p < 6$$



Solution set = { 4, 5 }

M₁Award M₁ for collecting like terms correctly.A₁Award A₁ for $3 < p < 6$ B₁Award B₁ for the correct solution set.

27. a)	Meat	Sugar	Soap
	Sh. $7500 \times \frac{3}{2}$	Sh. 4800	Sh. 49500
	Sh. 7500	Sh. 4400	Sh. 6500
	$\times 3$	$\frac{3}{1}$	$+3$
	Sh. 22,500	Sh. 4,800	3 bars

Total Expenditure

Sh. 14,400

Sh. 19,500

+ Sh. 22,500

Sh. 56,400

b) Money she had at first

Sh. 56,400

+ Sh. 3,600

Sh. 60,000

B₁ Award B₁ for each correct entry of

B₁ - Sh. 22,500

B₁ - Sh. 4,800

B₁ - 3 bars of Soap.

NB. Remove one mark for a pupil who worked out very well and failed to enter the data in the table.

B₁ Award B₁ for Sh. 56,400.

M₁ Award M₁ for addition.

A₁ Award A₁ for Sh. 60,000.

28. Radius = $\frac{D}{2}$

Radius = $\frac{70cm}{2}$

Radius = 35cm

35000

$\times 11$

35000

+ 35000

385000

Volume = Base area \times H.

$\pi r^2 \times H$

$\frac{22}{7} \times 35cm \times 35cm \times 100cm$

$\frac{22}{7} \times 35cm \times 35cm \times 100cm$

110cm \times 3500cm²

385000cm³

M₁ Award M₁ for correct working.

A₁ Award A₁ for 385000cm³.

Full Capacity

1 litre = 1000cc

($\frac{385000}{1000}$)

385 litres

B₁ Award B₁ for 385 litres

Water needed to fill the tank

$\frac{5}{5} - \frac{4}{5}$

$\frac{1}{5} \times 385$ litres

$\frac{5-4}{5}$

77 litres of water.

$\frac{1}{5}$

\therefore 77 litres are needed to fill the tank.

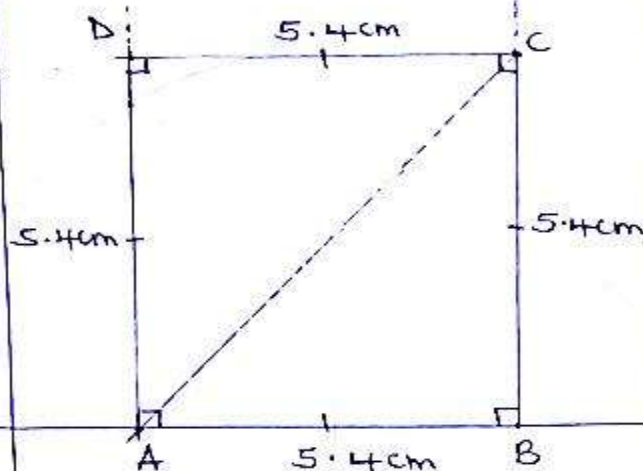
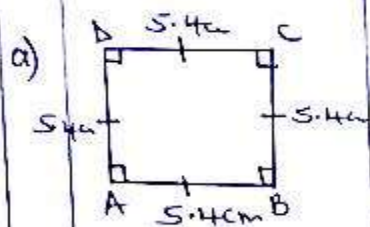
M₁ Award M₁ for correct working.

A₁ Award A₁ for 77 - litres

Reject wrong units.

<p>29. a) <table border="1" style="display: inline-table; vertical-align: top;"> <tr> <th>Bad eggs</th> <th>Good eggs</th> <th>Total</th> </tr> <tr> <td>20%</td> <td>(100-20) = 80%</td> <td>100%</td> </tr> <tr> <td></td> <td>36</td> <td>45</td> </tr> </table></p> <p>100% rept 45 eggs 1% rept $\frac{45}{100}$ egg</p> <p>Good eggs</p> $\begin{array}{r} 45 \\ - 9 \\ \hline 36 \end{array}$ <p>36 good eggs</p>	Bad eggs	Good eggs	Total	20%	(100-20) = 80%	100%		36	45	<p>B_1 Award B_1 for 80% or $\frac{4}{5}$</p> <p>Award m_1 for correct working.</p> <p>m_1 Award A_1 for 36.</p> <p>A_1</p>
Bad eggs	Good eggs	Total								
20%	(100-20) = 80%	100%								
	36	45								
<p>b) <table border="1" style="display: inline-table; vertical-align: top;"> <tr> <td>45 eggs</td> <td>$\frac{9}{45}$</td> </tr> <tr> <td>- 36 good eggs</td> <td>$\frac{45}{5}$</td> </tr> <tr> <td>9 bad eggs</td> <td>$\frac{1}{5}$</td> </tr> </table></p>	45 eggs	$\frac{9}{45}$	- 36 good eggs	$\frac{45}{5}$	9 bad eggs	$\frac{1}{5}$	<p>B_1 B_1 for 9 bad eggs</p> <p>B_1 B_1 for $\frac{1}{5}$</p>			
45 eggs	$\frac{9}{45}$									
- 36 good eggs	$\frac{45}{5}$									
9 bad eggs	$\frac{1}{5}$									
<p>30. Consider the cost of a pencil as W.</p> <table border="1" style="margin-left: 20px;"> <tr> <th>Pencil</th> <th>pen</th> <th>book</th> </tr> <tr> <td>W</td> <td>$2W$</td> <td>$2W + \text{sh. } 1200$</td> </tr> </table> <p>$W + 2W = \text{sh. } 900$</p> <p>$3W = \text{sh. } 900$</p> <p>$\frac{3W}{3} = \frac{\text{sh. } 900}{3}$</p> <p>$W = \text{sh. } 300$</p> <p>Cost of 2 books</p> <p>$(2W + \text{sh. } 1200) \times 2$</p> <p>$(2 \times \text{sh. } 300 + \text{sh. } 1200) \times 2$</p> <p>$(\text{sh. } 600 + \text{sh. } 1200) \times 2$</p> <p>$\text{sh. } 1800 \times 2$</p> <p>$\text{sh. } 3,600$</p>	Pencil	pen	book	W	$2W$	$2W + \text{sh. } 1200$	<p>Award B_1 for the correct table.</p> <p>B_1</p> <p>Award m_1 for the correct formation of the equation.</p> <p>m_1</p> <p>Award A_1 for sh. 300</p> <p>A_1</p> <p>Award m_1 for correct working.</p> <p>m_1</p> <p>Award A_1 for sh. 3,600</p> <p>A_1</p>			
Pencil	pen	book								
W	$2W$	$2W + \text{sh. } 1200$								

31 Sketch



S_1 \bar{S}_1 for sketch showing all the information.

L_1 L_1 for 5.4 cm

C_1 for area of 90°

C_1 for area of 90°

B_1 for 7.7 cm or 7.8 cm or 7.6 cm

b) $AC = 7.7^{+0.1}_{-0.1}$ cm

Accept 7.7 cm } we only accept 7.6 cm
7.6 cm } or 7.8 cm if every
7.8 cm } information on the
accurate diagram is correct.

32. a) Distance before the Jam.

$$D = S \times T$$

$$D = 50 \frac{\text{km}}{\text{hr}} \times 2 \text{ hrs}$$

$$D = 100 \text{ km}$$

$$\text{Time 2} = 1 \frac{1}{2} \text{ hrs}$$

Distance from traffic Jam to town.

$$D = S \times T$$

$$\frac{16}{32} \frac{\text{km}}{\text{hr}} \times \frac{5}{2} \text{ hrs}$$

$$80 \text{ km}$$

Scale on y-axis

2 boxes rept 20 km

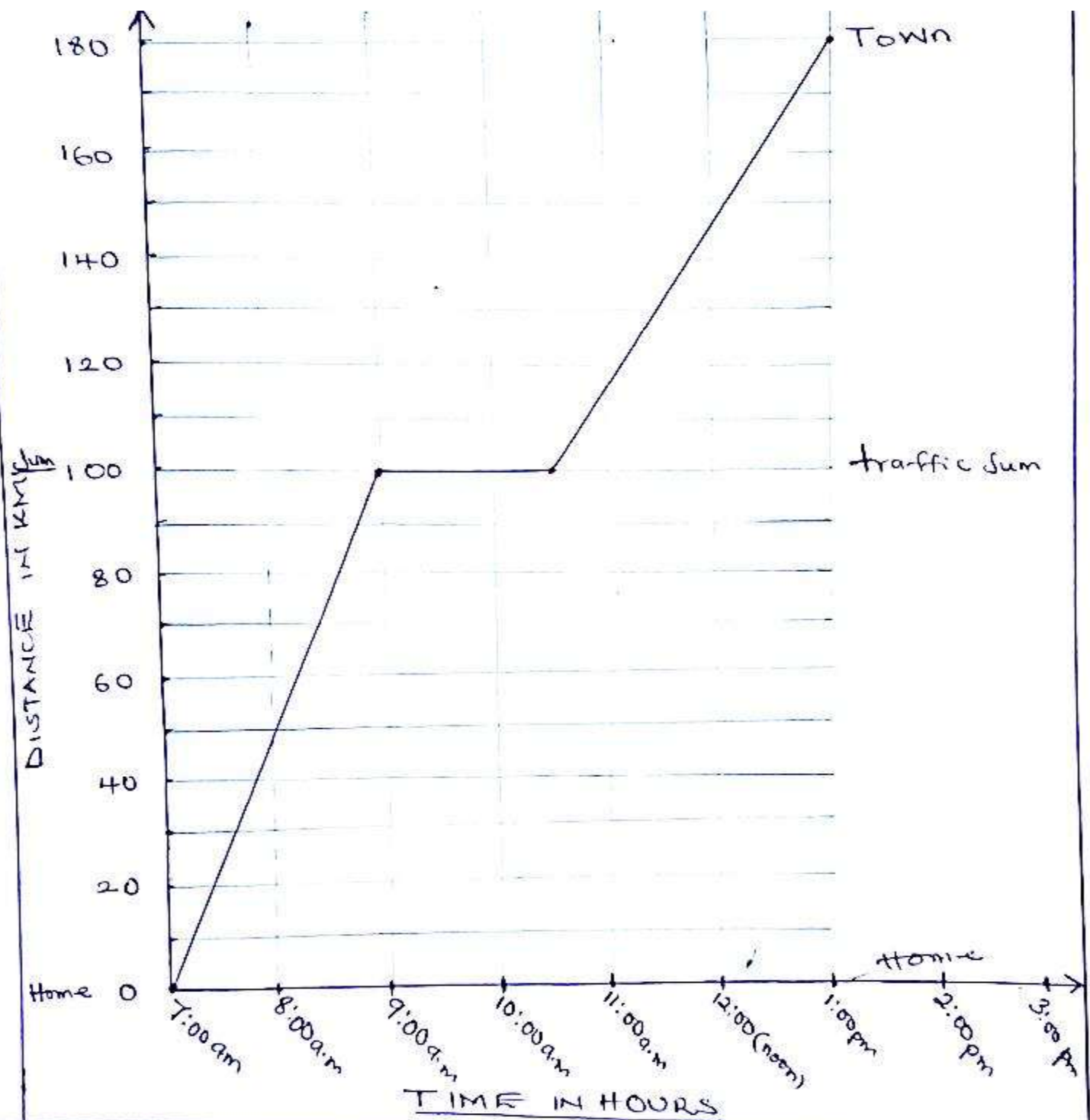
1 box rept $\frac{20}{2}$ km

1 box rept 10 km

5 small boxes rept 10 km

1 small box rept $\frac{10}{5}$ km

1 small box rept 2 km



b) Average speed

$$\frac{\text{T.O.C}}{\text{T.T.T}}$$

$$\frac{100 \text{ km} + 80 \text{ km}}{2 \text{ hrs} + 1\frac{1}{2} \text{ hrs} + 2\frac{1}{2} \text{ hrs}}$$

$$\frac{180 \text{ km}}{6 \text{ hrs}}$$

$$\frac{30}{180 \text{ km}}$$

$$\frac{1}{6 \text{ hrs}}$$

$$\frac{30 \text{ km}}{\text{hr}}$$

M1

for correct working.

A1

for 30 km/hr.

END