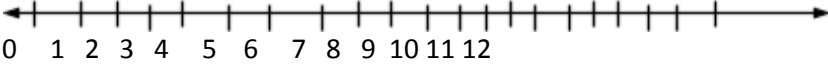


Mathematics form 1 MS 2021 November

No.	Working	Marks																																				
1.	$4800 - 4000 = 800$ Let the bus fare be x. $\frac{1}{2}x = 800$ $x = 800 \times 2 = 1600$ Train fare $4000 - 1600 = 2400$	✓ ✓ ✓ 3																																				
2.	Let the number be x $19346 = 841 \text{ rem } 3$ x $19346 = x(841) + 3$ $19346 = 841x + 3$ $19346 - 3 = 841x$ $19343 = 841x$ $x = 23$	✓ ✓ ✓ 3																																				
3.	<table border="1"><tr><td>2</td><td>48</td><td>60</td></tr><tr><td>2</td><td>24</td><td>30</td></tr><tr><td>2</td><td>12</td><td>15</td></tr><tr><td>2</td><td>6</td><td>15</td></tr><tr><td>3</td><td>3</td><td>15</td></tr><tr><td>5</td><td>1</td><td>5</td></tr></table> L.C.M= $2^4 \times 3 \times 5$ Area = $240 \times 240 = 57600$ $\frac{57600}{10000} = 5.76 \text{ m}^2$	2	48	60	2	24	30	2	12	15	2	6	15	3	3	15	5	1	5	✓ ✓ ✓ 3																		
2	48	60																																				
2	24	30																																				
2	12	15																																				
2	6	15																																				
3	3	15																																				
5	1	5																																				
4.	$\frac{1470^2}{\sqrt{7056}}$ <table><tr><td>2</td><td> </td><td></td></tr><tr><td>1470</td><td> </td><td></td></tr><tr><td>3</td><td> </td><td>735</td></tr><tr><td>5</td><td> </td><td>245</td></tr><tr><td>7</td><td> </td><td>49</td></tr><tr><td>7</td><td> </td><td>7</td></tr></table> $1470^2 = (2 \times 3 \times 5 \times 7^2)^2$ $7056 = 2^4 \times 3^2 \times 7^2$ <table><tr><td>2</td><td>7056</td></tr><tr><td>2</td><td>3528</td></tr><tr><td>2</td><td>1764</td></tr><tr><td>2</td><td>882</td></tr><tr><td>3</td><td>441</td></tr><tr><td>3</td><td>147</td></tr><tr><td>7</td><td>49</td></tr><tr><td>7</td><td>7</td></tr><tr><td></td><td>1</td></tr></table>	2			1470			3		735	5		245	7		49	7		7	2	7056	2	3528	2	1764	2	882	3	441	3	147	7	49	7	7		1	✓ ✓
2																																						
1470																																						
3		735																																				
5		245																																				
7		49																																				
7		7																																				
2	7056																																					
2	3528																																					
2	1764																																					
2	882																																					
3	441																																					
3	147																																					
7	49																																					
7	7																																					
	1																																					

$$\frac{1470^2}{\sqrt{7056}}$$

	$= \frac{2^2 \times 3^2 \times 5^2 \times 7^4}{2^4 \times 3^2 \times 7^2}$ $\frac{2^2 \times 3^2 \times 5^2 \times 7^4}{2^2 \times 3 \times 7} = 3 \times 5^2 \times 7^3$	✓ ✓ 4
5.	Numerator $\frac{1}{2} \times \frac{7}{2} + \frac{3}{2} \left(\frac{5}{2} - \frac{2}{3} \right)$ $\frac{7}{4} + \frac{3}{2} \left(\frac{11}{6} \right)$ $\frac{7}{4} + \frac{11}{4} = \frac{18}{4} = \frac{9}{2}$ Denominator $\frac{3}{4} \text{ of } 2\frac{1}{2} \div \frac{1}{2}$ $\frac{3}{4} \times \frac{5}{2} \times \frac{2}{1} = \frac{15}{4}$ $\frac{9}{2} \div \frac{15}{4}$ $\frac{9}{2} \times \frac{4}{15}$ $= 1\frac{1}{5}$	✓ ✓ ✓ 4
6.	 $6 - (-4) = 10$	✓ ✓ 2
7.	$X = 4 \quad y = -6$ $6x - 3xy$ $6(4) - 3(4)(-6)$ $24 + 72$ $= 96$	✓ ✓

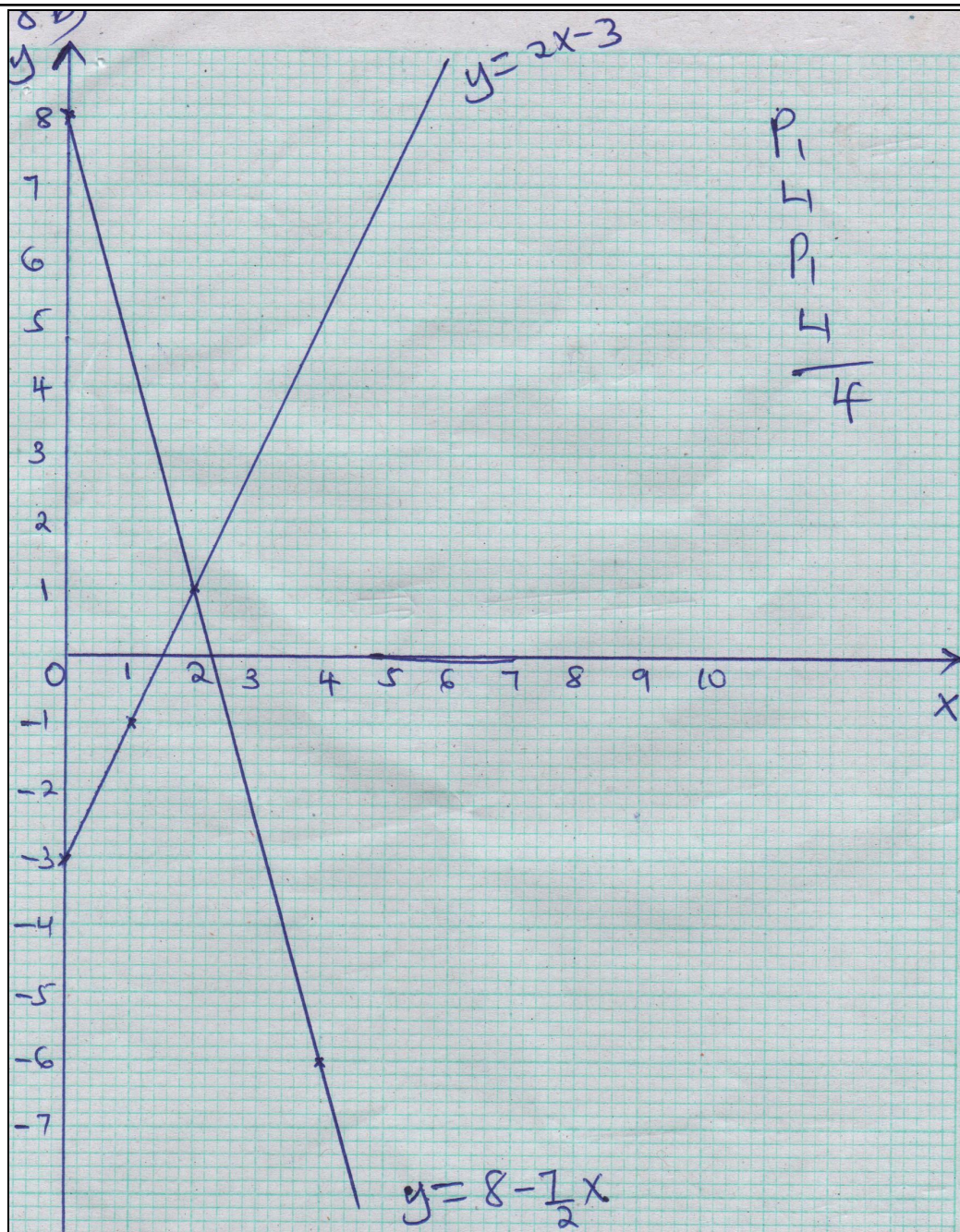
		✓ <u>3</u>
8.	$\frac{a+b-2a-b}{2 \quad 3}$ $\frac{3(a+b)-2(2a-b)}{6}$ $\frac{3a+3b-4a+2b}{6}$ $\frac{5b-a}{6}$	✓ ✓ ✓ <u>3</u>
9.	B : G T 2 : 3 5 $\frac{2}{5} \Rightarrow 160$ $\frac{3}{5} \Rightarrow$ $\frac{3x-160}{2}$ = 3 x 80 = 240 girls	✓ ✓ ✓ <u>3</u>
10.	a : b = 7 : 1 b : d = 1 : 2 d : c = 2 : e a : b : d : c = 7 : 1 1 : 2 2 : e a : b : d : c = 7 : 1 : 2 : e a : c = 7 : e	✓ ✓ ✓ ✓ <u>4</u>
11	C = 2 πr $\frac{2\pi r}{2} + 2r = 14.28$ πr + 2r = 14.28	✓

	$r(\pi + 2) = 14.28$ $r(3.142 + 2) = 14.28$ $r(5.142) = 14.28$ $r = \frac{14.28}{5.142}$ $r = 2.777\text{cm}$	✓ ✓ <u>3</u>
12.	$A = 38.5 \text{ cm}^2$ $\Theta = 90^\circ$ $A = \frac{\Theta}{360} \times \pi r^2$ $38.5 = \frac{90}{360} \times \frac{22}{7} \times r^2$ $r^2 = \frac{38.5 \times 360 \times 7}{90 \times 22}$ $r^2 = 49$ $r = 7$	✓ ✓ ✓ <u>3</u>
13.	$V = \pi r^2 h$ $V = \frac{22}{7} \times \frac{17.5}{2} \times \frac{17.5}{2} \times 10$ $V = 2406.25 \text{ cm}^3$ $m = 2\text{kg}$ $m = 2 \times 1000 = 2000\text{g}$ $\rho = \frac{m}{v} = \frac{2000}{2406.25}$ $\rho = 0.8312 \text{ g/cm}^3$	✓ ✓ ✓ <u>3</u>
14a)	$\frac{36.7892}{1000}$ $= 36.8$	✓
b)	0.09854 $= 0.0985$	✓
c)	$345204 = 345000$	✓ <u>3</u>

15.	$\sqrt{0.001952}$ $\sqrt{0.001952} = \sqrt{19.52 \times 10^{-4}}$ $\sqrt{19.52 \times 10^{-4}} = \sqrt{19.52} \times \sqrt{10^{-4}}$ $= 4.4159$ $\begin{array}{r} +23 \\ \hline 4.4182 \end{array}$ $= 4.4182 \times 10^{-2}$ $= 4.8182 \times \frac{1}{100}$ $= 0.044182$	✓ ✓ ✓ 3
16	$2\frac{7}{8}, \frac{14}{5}, 3, \frac{17}{9}$ $\frac{23}{8}, \frac{14}{5}, 3, \frac{17}{9}$ $L:C:M = 8 \times 5 \times 9 = 360$ $\frac{23}{8} \times 360 = 1035$ $\frac{14}{5} \times 360 = 1008$ $3 \times 360 = 1080$ $\frac{17}{9} \times 360 = 680$ $\frac{17}{9}, \frac{14}{5}, 2\frac{7}{8}, 3$	✓ ✓ ✓ 3
17.	 18cm 12cm Reduced by 2cm Length = $18 - 2 = 16\text{cm}$ Width = $12 - 2 = 10\text{cm}$ Perimeter = $2(18 + 12)$ $= 60\text{cm}$ New Perimeter = $2(16 + 10) = 52$ $\% = \frac{(60 - 52)}{60} \times 100$ $= \frac{8}{10} \times 100 = 13.33\%$	✓ M 1 ✓ M 1

		✓ A1 3
(ii)	Original area = $2 (18 \times 12)$ $= 2 \times 216$ $= 432 \text{cm}^2$ New = $2(16 \times 10) = 320 \text{cm}^2$ % change = $\frac{(432 - 320)}{432} \times 100$ $= 25.93\%$	✓ ✓ ✓
(b)	12cm  18cm Length = $\frac{98}{100} \times 18 = 17.64 \text{ cm}$ Width = $\frac{98}{100} \times 12 = 11.76 \text{ cm}$ Original area = $18 \times 12 = 216 \text{cm}^2$ New area = $17.64 \times 11.76 = 207.4464 \text{ cm}^2$ % change = $\frac{(216 - 207.4464)}{216} \times 100$ $= 3.96\%$	✓ ✓ ✓ ✓ 4

18a)	$2x - y = 3$ $y = 2x - 3$ <table border="1"><tr><td>x</td><td>0</td><td>1</td><td>2</td></tr><tr><td>y</td><td>-3</td><td>1</td><td>1</td></tr><tr><td>x</td><td>0</td><td>2</td><td>4</td></tr><tr><td>y</td><td>8</td><td>1</td><td>-6</td></tr></table> B_1B_1	x	0	1	2	y	-3	1	1	x	0	2	4	y	8	1	-6	$7x + 2y = 16$ $\frac{2}{2} y = \frac{16}{2} - \frac{7}{2} x$
x	0	1	2															
y	-3	1	1															
x	0	2	4															
y	8	1	-6															
b)																		
c)	B_1B_1 Graph  Point of intersection = (2,1) X= 2, y = 1	$P_1L_1P_1L_1$ B_1B_1																



19

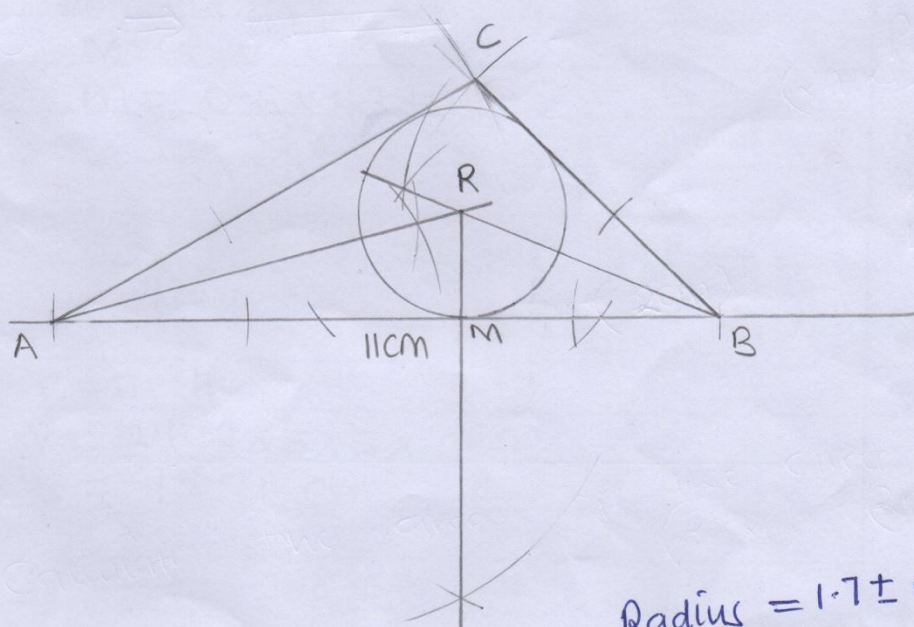
construct

✓
✓

Bisectors

✓
✓

Perpendicular



Radius = 1.7 ± 0.1 cm

e) Area of the circle

$$A = \pi r^2$$

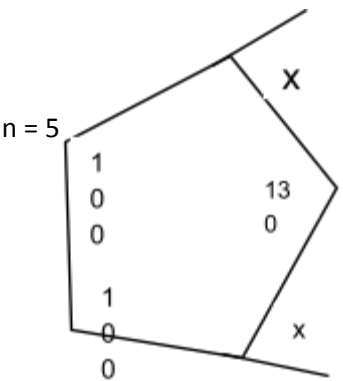
$$A = 3.142 \times 1.7 \times 1.7$$

$$A = 9.08038 \text{ cm}^2$$

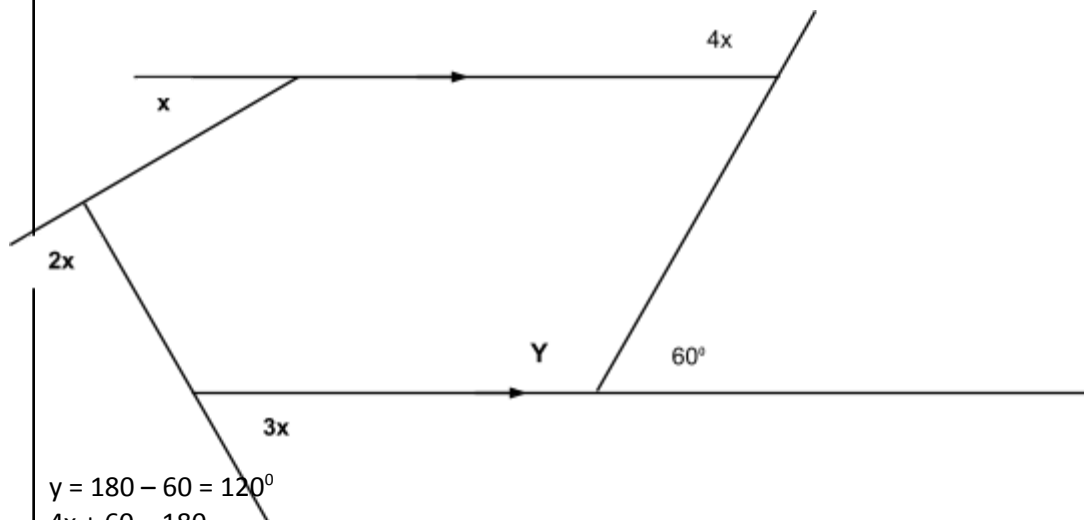
$$A = 9.080 \text{ cm}^2$$

M1

A1

20ai) . ii) b) i) ii)	Internal volume = $150 \times 80 \times 40$ $= 480000 \text{ cm}^3$ External Volume = $152 \times 82 \times 42$ $= 523,488 \text{ cm}^3$ Volume of wood = $523,488 - 480,000 =$ $= 43488 \text{ cm}^3$ Mass of the box $m = \rho \times v$ $m = 0.6 \times 4388$ $= 26092.8\text{g}$ $\frac{26092.8}{10000} = 26.0928\text{kg}$ $= 26.1\text{kg (1dp)}$ $V = \pi r^2 h$ $3.142 \times 5 \times 5 \times 20$ $V = 1571 \text{ cm}^3$ Number of tins = $\frac{480000}{1571}$ $= 305.54$ $= 305 \text{ tins}$ Total mass of the box with tins $= 26.0928 + \frac{(120 \times 305)}{1000}$ $= 26.0928 + 36.6$ $= 62.6928\text{kg}$	✓ ✓ ✓ ✓ ✓ M 1 ✓ ✓ ✓ ✓ A 1
21a)	 $(2n - 4)90$ $(2(5) - 4)90$ $(10 - 4)90$ $6 \times 90 = 540$ $2(180 - x) + 100 + 130 = 540$ $360 - 2x + 330 = 540$ $690 - 2x = 540$ $- 2x = -150$ $x = 75^\circ$	B1

b)



$$y = 180 - 60 = 120^\circ$$

$$4x + 60 = 180$$

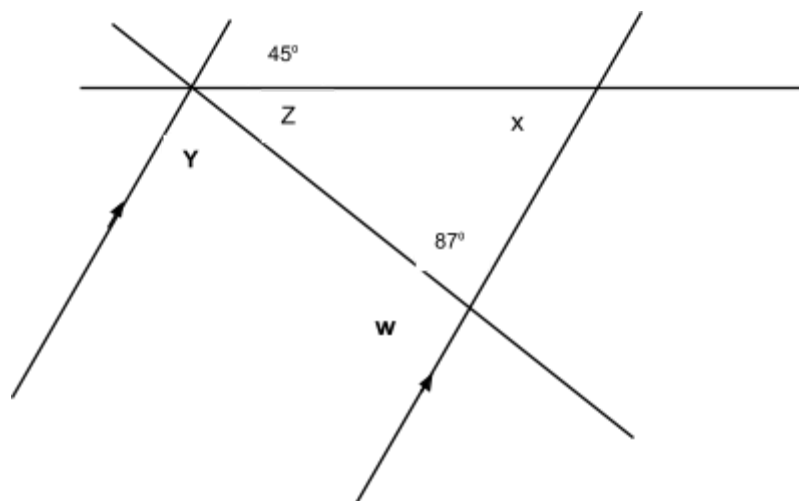
$$4x = 120^\circ$$

$$x = 30^\circ$$

$$2x = 2(30) = 60^\circ$$

$$3x = 3(30) = 90^\circ$$

$$4x = 4(30) = 120^\circ$$



$$y = 87$$

$$w = 180 - 87 = 93^\circ$$

$$z = 180 - (87 + 45) = 48^\circ$$

$$x = 180 - (87 + 45) = 48^\circ$$

B1

B1

B1

B1

B1

B1

B1

B1

		B1																																																				
22																																																						
a)	G.C.D = 8 = 2³ L.C.M = 360 = 2³ x 3² x 5 X = 72 = 2³ x 3² y = ? = 2³ x 5 y = 40	✓ ✓ ✓ A1																																																				
b)	<table><tr><td>2</td><td>2</td><td>3</td><td>4</td></tr><tr><td></td><td>4</td><td>4</td><td>0</td></tr><tr><td>2</td><td>1</td><td>1</td><td>2</td></tr><tr><td></td><td>2</td><td>7</td><td>0</td></tr><tr><td>2</td><td>6</td><td>1</td><td>1</td></tr><tr><td></td><td></td><td>7</td><td>0</td></tr><tr><td>3</td><td>3</td><td>1</td><td>5</td></tr><tr><td></td><td></td><td>7</td><td></td></tr><tr><td>5</td><td>1</td><td>1</td><td>5</td></tr><tr><td></td><td></td><td>7</td><td></td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>7</td><td></td><td>7</td><td></td></tr><tr><td></td><td>1</td><td>1</td><td>1</td></tr></table> L.C.M = 2³ x 3 x 5 x 17 = 2040 Value of u= 240 + 5 u= 245	2	2	3	4		4	4	0	2	1	1	2		2	7	0	2	6	1	1			7	0	3	3	1	5			7		5	1	1	5			7		1	1	1	1	7		7			1	1	1	✓ ✓ ✓ A1
2	2	3	4																																																			
	4	4	0																																																			
2	1	1	2																																																			
	2	7	0																																																			
2	6	1	1																																																			
		7	0																																																			
3	3	1	5																																																			
		7																																																				
5	1	1	5																																																			
		7																																																				
1	1	1	1																																																			
7		7																																																				
	1	1	1																																																			
c)																																																						
i)																																																						
ii)	<table><tr><td>2</td><td>1</td><td>1</td><td>1</td></tr><tr><td></td><td>2</td><td>5</td><td>8</td></tr><tr><td>2</td><td>6</td><td>1</td><td>9</td></tr><tr><td></td><td></td><td>5</td><td></td></tr><tr><td>3</td><td>3</td><td>1</td><td>9</td></tr><tr><td></td><td></td><td>5</td><td></td></tr><tr><td>3</td><td>1</td><td>5</td><td>3</td></tr><tr><td>5</td><td>1</td><td>5</td><td>1</td></tr></table>	2	1	1	1		2	5	8	2	6	1	9			5		3	3	1	9			5		3	1	5	3	5	1	5	1	✓ ✓ ✓																				
2	1	1	1																																																			
	2	5	8																																																			
2	6	1	9																																																			
		5																																																				
3	3	1	9																																																			
		5																																																				
3	1	5	3																																																			
5	1	5	1																																																			

	L.C.M = $2^2 \times 3^2 \times 5 = 180$ mins = 3hrs 10: 00 + <u>3. 00</u> 13:00 - <u>1200</u> <u>1:00 pm</u>	✓ A1 <u>10</u>
--	---	--------------------------------------