

SUNRISE MATHEMATICS MARKING SCHEME 2021

121/1	MARKING SCHEME
1. 1.33×0.51 0.19×0.0017 $\frac{133^7 \times 51^3 \times 100}{19 \times 17}$ (Removing d.p in denominator) M_1 $2100 m_1$ $\underline{\underline{2.1 \times 10^3 A_1}}$ 2. LCM of 15, 25, 50 $15 = 3 \times 5$ $25 = 5^2$ $50 = 2 \times 5^2$ $LCM = 2 \times 3 \times 5^2 = 150 \text{ min } M_1$ Time of day $\Rightarrow 6.45 \text{ am}$ $150 \text{ min} \Rightarrow 2 \text{ hrs } 30 \text{ mins } M_1$ $\begin{array}{r} 6.45 \\ + 2.30 \\ \hline 9.15 \text{ am } A_1 \end{array}$	3. $V.S.f = \frac{1920}{810} = \frac{64}{27}$ $L.S.f = \sqrt[3]{\frac{64}{27}} = \frac{4}{3} M_1$ $A.S.f = \left(\frac{4}{3}\right)^2 = \frac{16}{9} m_1$ $\frac{16}{9} = \frac{x}{300} M_1$ $x = \frac{16 \times 300}{9} = 533.\bar{3}$ or $533\frac{1}{3} \text{ cm}$ 4. $(3^{2x})^3 = 81 \times 9^4$ $3^{6x} = 3^4 \times 3^8 M_1$ $3^{6x} = 3^{12}$ $6x = 12 M_1$ $x = 2 A_1$

5) New ratio 24 : 30

$$\frac{24}{30} = \frac{x}{75} \text{ ml}$$

$$\frac{24}{30} \times 75 = x.$$

$$x = 60 \text{ A}_1$$

$$\text{Volume} = 300 \text{ ml} = 300 \text{ cm}^3$$

$$\text{Density} = 1.1 \text{ g/cm}^3$$

$$\text{Mass of liquid} = 1.1 \times 300 \text{ ml} \\ = 330 \text{ g}$$

$$\text{Mass of bottle} = 330 + 270 \text{ ml} \\ = \underline{\underline{600 \text{ g A}_1}}$$

7.

$$11) (0.06458)^{1/2} + \left(\frac{2}{0.4327} \right)^2.$$

$$(6.458 \times 10^{-2})^{1/2} + 2 \left(\frac{1}{4.327 \times 10^{-1}} \right) \text{ ml}$$

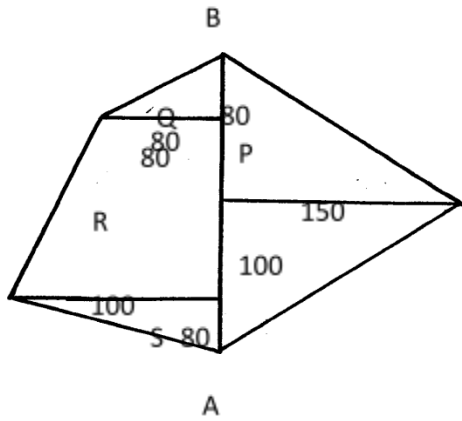
$$(2.5415 \times 10^{-1}) + 2 (0.2311 \times 10) = (4.622)^2$$

$$0.25415 + 21.363 = \underline{\underline{21.61715}}$$

8.

$$(2n - 4) 90$$

$$(2 \times 18 - 4) = 2880$$



$$\text{Area p} = \frac{1}{2} \times 300 \times 150 = 22500 \text{ m}^2$$

$$\text{Area q} = \frac{1}{2} \times 80 \times 80 = 3200 \text{ m}^2$$

$$\text{Area r} = \frac{1}{2} \times 140 \times 180 = 12600 \text{ m}^2$$

$$\text{Area s} = \frac{1}{2} \times 80 \times 100 = 4000 \text{ m}^2$$

$$\text{Total} = 42300$$

$$\text{Area in hectares} = \frac{42300}{1000}$$

$$= 4.23 \text{ ha}$$

9.

10.

Number	Std. form	log.
16.92^2	1.692×10^1	$\begin{array}{r} 327.5 \\ 1.2284 \\ \times 2 \\ \hline 2.4568 \end{array}$
$\sqrt{0.6318}$	6.318×10^{-1}	$\begin{array}{r} 1.8006 \\ 2. \\ \hline 1.9003 + \\ \hline 2.3571 - \text{Number} \\ 2.6151 \\ \hline 1.8420 \end{array}$
327.5	3.275×10^2	
6.95×10^{-1}		

←

Workings

$$\frac{1.8006}{2} = \frac{1}{2} + \frac{0.9003}{1}$$

$$\frac{1.9003}{2} = \frac{1}{2} + \frac{0.9003}{2}$$

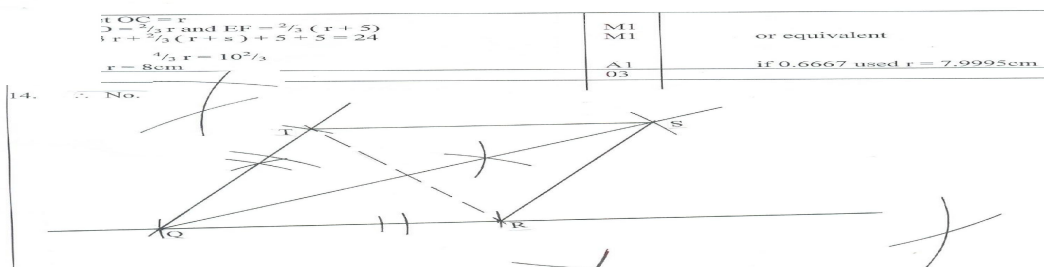
$$+ \frac{2.4568}{2} = \frac{2.3571}{1}$$

Ans = 0.695 ✓

Cost of a pen Sh. 9

$$y - 4x + 7 = 0$$

13.



03

$$\begin{aligned} & \frac{\frac{4}{11}x\frac{14}{20}}{\frac{10}{3}\div\frac{11}{10}} \\ & \frac{\frac{4}{55}}{\frac{100}{33}} = \frac{4}{55}x\frac{33}{100} \\ & = \frac{3}{125} \end{aligned}$$

i)	19, 171, 311
ii)	300

$$\begin{aligned} & -\frac{14}{1} + \frac{4}{3} \\ & \underline{-6 + -20} \\ & \quad \underline{-38} \\ & \quad \quad \underline{3} \\ & = -26 \\ & \quad \underline{-38} \quad \frac{1}{-26} \\ & = \frac{3}{-26} \end{aligned}$$

$$\frac{38}{3}x\frac{1}{26}=\frac{19}{39}$$

17.

(a) At x-axis $y=0$

$$y = \frac{2}{3}x - \frac{2}{3}$$

$$\frac{2}{3}x - \frac{2}{3} = 0$$

$$\frac{2}{3}x = \frac{2}{3}$$

$$x = 1 \checkmark R(1, 0) \checkmark$$

B₁

B₁

(b) L₂

$$m_1 \times m_2 = -1$$

$$\frac{2}{3}m_2 = -1$$

$$m_2 = -\frac{3}{2} \checkmark$$

$$\frac{y-0}{x-1} = -\frac{3}{2} \checkmark$$

$$2(y-0) = -3(x-1)$$

$$2y = -3x + 3$$

$$y = -\frac{3}{2}x + \frac{3}{2} \checkmark$$

B₁

B₁

B₁

(c) L₁ & L₃ are parallel

$$L_3 \text{ } m = \frac{2}{3} \checkmark$$

$$\frac{y-1}{x+4} = \frac{2}{3} \checkmark$$

$$3(y-1) = 2(x+4)$$

$$3y - 3 = 2x + 8$$

$$3y = 2x + \frac{11}{3}$$

$$y = \frac{2}{3}x + \frac{11}{9} \checkmark$$

B₁

B₁

B₁

B₁

B₁

(d) L₃ & L₂ intersect at S

$$\frac{2}{3}x + \frac{11}{9} = -\frac{3}{2}x + \frac{3}{2} \checkmark$$

$$\frac{2}{3}x + \frac{3}{2}x = \frac{3}{2} - \frac{11}{9}$$

$$\frac{4x+9x}{6} = \frac{9-22}{6}$$

$$\frac{13x}{6} = -\frac{13}{6}$$

x = -1 when x = -1 y:

$$-\frac{3}{2}(-1) + \frac{3}{2} = \frac{6}{2} = 3$$

$$S(-1, 3) \checkmark$$

18.

a) *km tonnes amount*

28 48 24000

49 96 ?

$$= \frac{49}{28} \times \frac{96}{48} \times 24000$$

$$= 84,000$$

b) 8 tonnes $\equiv$ 3000

$$96 \text{ tonnes} \equiv \frac{96 \times 3000}{8}$$

$$= 36,000$$

$$\text{total profit} = 84000 - 36000$$

$$= 48000$$

c) *km tonnes amount*

28 48 24000

84 48 ?

$$\frac{48}{48} \times \frac{84}{28} \times 24000$$

$$= 72000$$

144% rep 72000

100% rep ?

$$= \frac{100 \times 72000}{144}$$

$$= 50,000$$

19.

a)

b)

$$\text{area of squares} = 8 \times 8 \times 5 = 320$$

$$\text{area of triangles} = \frac{1}{2} \times 8 \times 3 \times 4 = 48$$

$$\text{sum} = 368 \text{cm}^3$$

c)

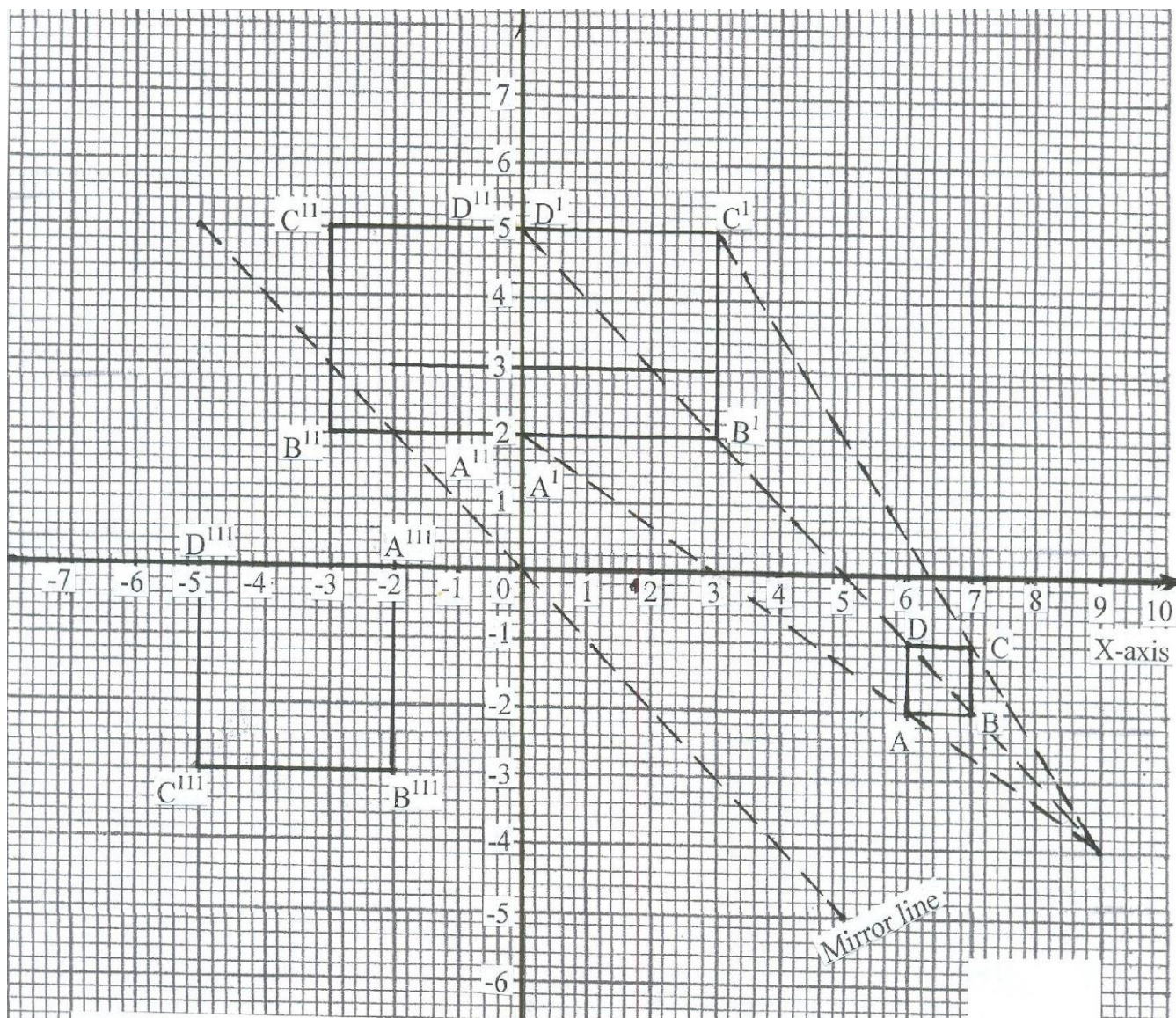
$$\frac{1}{10,000} = \frac{368}{x}$$

$$x = 3680,000 \text{cm}^2$$

$$10000 \text{cm}^2 = 1 \text{m}^2$$

$$3680000 \text{cm}^2 = \frac{3680000 \times 1}{10000}$$

$$= 368 \text{m}^2$$



- (a) ABCD correctly drawn using a ruler and labeled
- (b) (i) Centre identified and used
 $A^1B^1C^1D^1$ correctly drawn and labeled
 (ii) $A^{11}B^{11}C^{11}D^{11}$ correctly drawn and labeled
 (iii) $A^{111}B^{111}C^{111}D^{111}$ correctly drawn and labelled
- (c) Reflection on line $y = -x$

B1

B1B1

B1

B1B1

B1B1

B1B1

10

