

1.	Let the other number be x $LCM = \frac{\text{Product of the two numbers}}{GCD \text{ of the numbers}}$ $140 = \frac{20 \times x}{7}$ $x = \frac{140 \times 7}{20}$ $= 49$	M1	
		A1	

2

-5 x 6 ÷ 2 + (-5)

-12 -3 = 4

4 x 4 + 15

Numerator 16 + 15 = 31

Denominator -5 x 3 + -5 = 31

-15 + -5

-15 + -5

= -20

$\frac{31}{-20}$

= -1 $\frac{11}{20}$

3	2.181818 × 100 = 218.1818 2.181818 × 1 = 2.1818 Difference = 216 Difference of multipliers = 100 – 1 = 99 Fraction $= \frac{216}{99} = \frac{72}{33} = \frac{24}{11}$	B1	
		M1A1	
		3	

4.	$\sqrt[3]{\frac{0.064}{0.512}}$	M1	
	$\sqrt[3]{\frac{64}{512}}$		
	$\sqrt[3]{\frac{1}{8}}$		
	$\frac{1}{2}$	A1	

$$5.3 \times \frac{1}{1.36 \times 10^{-2}} - 2 \times \frac{1}{13.84}$$

$$\begin{aligned} &= 3 \times 8.575 - 2 \times 0.07224 \\ &= 25.725 - 0.14448 \\ &= \underline{25.58052} \\ &= \underline{25.58} \end{aligned}$$

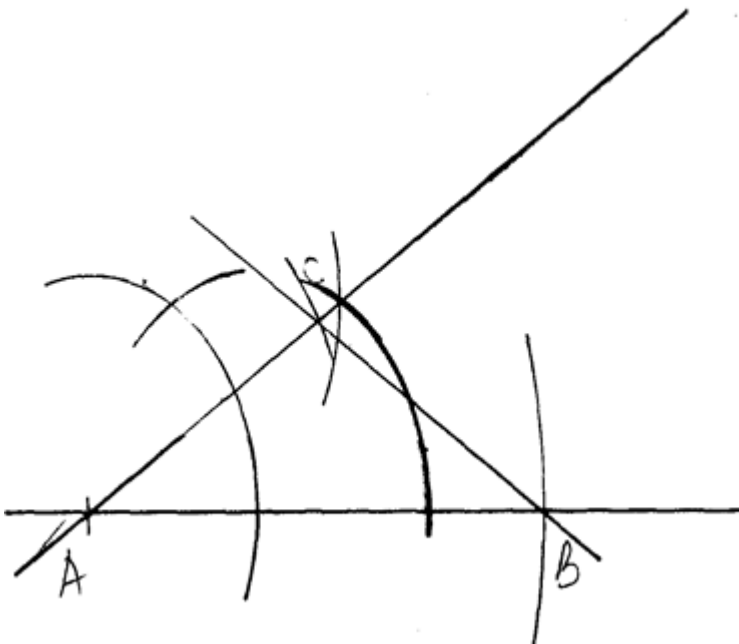
$$\begin{aligned} 6. \quad & \frac{3(x+y) - (x-y)}{x^2 - y^2} \\ &= \frac{3x + 3y - x + y}{x^2 - y^2} \\ &= \frac{2(x+2y)}{x^2 - y^2} \end{aligned}$$

7.	Download this <table><thead><tr><th>M</th><th>Hrs</th><th>Days</th></tr></thead><tbody><tr><td>15</td><td>8</td><td>24</td></tr><tr><td>16</td><td>?</td><td>20</td></tr></tbody></table> Number of hours reduces in ratio 15:16 from increase in the number of men. No. of hrs increase in ratio 24:20 from reduction in the days $\frac{15}{16} \times \frac{24}{20} \times 8$ 3×3 $= 9 \text{ hrs}$	M	Hrs	Days	15	8	24	16	?	20	M 1	Both ratio
		M	Hrs	Days								
15	8	24										
16	?	20										
M 1 A1												
8.	LSF 1 cm rep 50000cm 1cm rep 500m ASF 1cm ² rep 250000m ²	B1	ASF given									

	$\text{Area} = \left(\frac{6.16 \times 250000}{10000} \right)$ $= 154\text{ha}$		M1	
			A1	
7	9	$-3x + 2 < x + 6$ $x > 1$ $x + 6 \leq 17 - 2x$ $x \leq 3\frac{2}{3}$ $2, 3$	B_1 B_1 B_1 3	
10	1 \$ Kshs. 77.43 $5600\$ = (5600 \times 77.43)$ $= 433608$ Spent 201,367 $\text{Remainder} = (433608 - 201367)$ $= 232241$ 1SR <u>shs.9.51</u> $\left(\begin{array}{r} \text{Shs.232241} \\ 1 \times 232241 \end{array} \right)$ 9.51 a) = shs.24420.715			
11				
12	$2x + 40 + x - 25$ $3x + 15 + 9 = 180$ $3x + 15 = 29$ $9 = \frac{1}{2} (3x + 15)$ $3x + \underline{3x} = 180 - \underline{15} - \underline{15}$ $2 \qquad \qquad 2$			

	$x = 35^\circ$ $x = 35 = 10^\circ$ $\frac{1}{2} (10 + 110) = 60^\circ$ b)		
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$BC = 3.5 \text{ cm} \pm 0.1$ B_1
 B_1 construction of $\angle CAB$.
 B_1 completion of triangle.

14

$$\begin{aligned} L/S.F &= \frac{2.2}{3.3} = \frac{2}{3} \\ \frac{4.8}{4.8 + h} &= \frac{2}{3} \\ h &= 2.4 \end{aligned}$$

volume of smaller cone

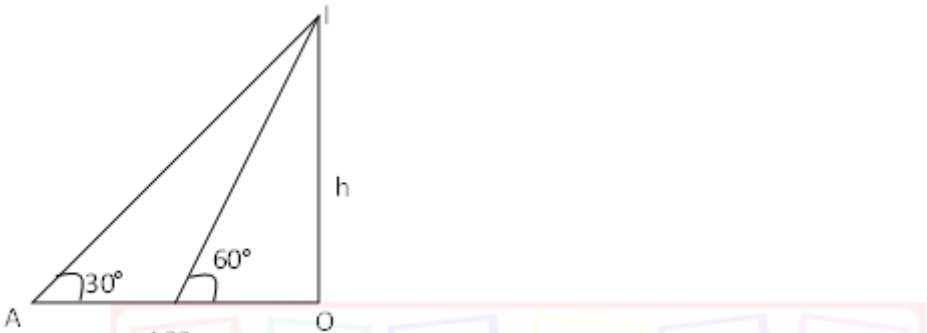
$$\begin{aligned} \frac{1}{3} \times \frac{22}{7} \times 2.2 \times 2.4 \\ = 12.169 \end{aligned}$$

Volume of large cone

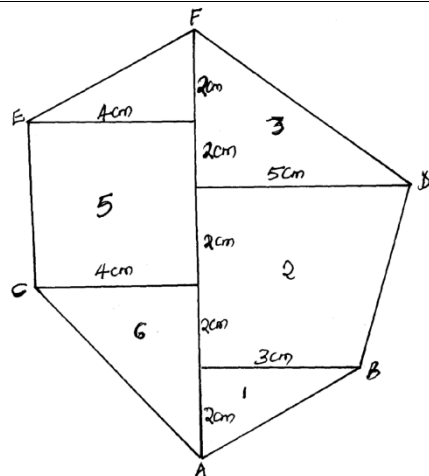
$$\frac{1}{3} \times \frac{22}{7} \times 3.3 \times 3.3 (4.8 + 2.2)$$

$\therefore V$ of frustum

$$82.14 - 12.17 = 69.97 \text{ cm}^3$$

15	Area scale factor = 12: 108 = 1: 9 Linear scale factor = $\sqrt{1} : \sqrt{9}$ = 1 : 3 Volume scale factor = $1^3 : 3^3$ = 1 : 27 Volume of the smaller cone = $\frac{810\text{cm}^3 \times 1}{27}$ = 30cm^3		
16	 Tan $30^\circ = \frac{x}{100+y}$ $x = (100 + y) \tan 30^\circ$ $(100 + y) \tan 30^\circ = y \tan 60^\circ$ $\tan 60^\circ = \frac{y}{x} = x = y \tan 60^\circ$ $(100 + y) 0.5774 = 1.1732y$ $57.74 = 1.155y$ $y = \frac{57.74}{1.155}$ $y = 49.99 \approx 50\text{m}$ $\therefore x = 50 \tan 60$ $x = 86.6\text{m}$		
17.	c) (i) $\frac{30 + h}{h} = \frac{40}{30}$ $h = 90$ $\frac{1}{3} \pi \times 1600 \times 120 - \frac{1}{3} \pi \times 900 \times 90$ $(64\,000 \pi - 27\,000) \div 1000$	M₁ A₁ M₁ M₁	Divi de

		37 Π litres	A ₁	by
		(ii) Volume of water = $\frac{2}{5} \times \Pi \times 1.44 \times 1.35$	M ₁	ed 1000: co. ke
		=777.6 Π litres	A ₁	
		d) $\frac{777.6 \Pi}{37 \Pi}$	M ₁	Mult
		= 22	M ₁	by
			A ₁	1000
18.	(a) (i) 800 x 0.2		M1	
	= 160m ³		A1	
	(ii) 160 x 2000		M1	
	= 320,000kg		A1	
	(iii) Cement = $\frac{2}{8} \times 320,000$		M1	
	= 80,000		A1	
	(b) Bags = <u>80,000</u>		B1	
	50			
	= 1600		B1	
	(c) Ballast = $\frac{3}{8} \times 320,000$		M1	
		= 120,000 tonnes	A1	
		= 120 lorries	B1	
20.	(a)			
		S1	Scale	
		B1	Base line	
		B2	Offsets (all – offsets) A want B1	



(b) $\text{Area}_1 = \frac{1}{2} \times 2 \times 3 = 3\text{cm}^2$

$\text{Area}_2 = \frac{1}{2} \times 4(5+3) = 16\text{cm}^2$

$\text{Area}_3 = \frac{1}{2} \times 5 \times 4 = 10\text{cm}^2$

$\text{Area}_4 = \frac{1}{2} \times 2 \times 4 = 4\text{cm}^2$

$\text{Area}_5 = 4 \times 4 = 16\text{cm}^2$

$\text{Area}_6 = \frac{1}{2} \times 4 \times 4 = 8\text{cm}^2$

$\text{Total area} = (3+16+10+4+16+8)\text{cm}^2$
 $= 57\text{cm}^2$

$\text{Actual area} = (57 \times 100)\text{m}^2$
 $= 5700\text{m}^2$

(c) $10,000\text{m}^2 = 1\text{ha}$

$5700\text{m}^2 = ?$

1×5700

$10,000$

$= 0.57\text{ha}$

B1

(3 areas)

B1

(3 areas)

M1

Addition of all six areas

A1

M1

A1

for at least 2 ✓

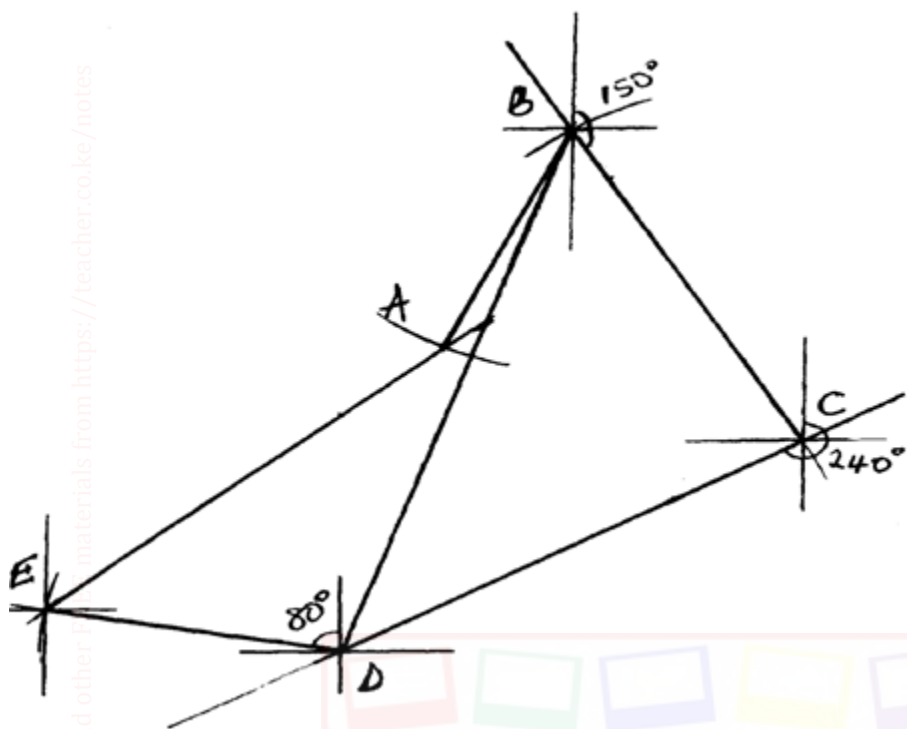


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Distance covered by Kinyua in $1\frac{2}{3}\text{hrs}$
 $= 5 \times 90 = 150\text{km}$
Distance traveled by Nyaboke during the rest =
 $(\frac{1}{3} \times 120) = 40\text{km}$
 $\frac{x}{90} = \frac{390 - x}{120} \Rightarrow 120x = 90(390 - x)$
 $= 167.1\text{km}$
Time = $\frac{167.1}{90} = 1.86$

Download this and other FREE materials from https://teacher.co.ke/notes	90 $8.33 + 1.86 = 10.19$; they met at $=$ 10.11a.m $580 - (150 + 167.1) = 262.9\text{km}$ from M Before the rally driver started, Nyaboke had traveled for $1\frac{1}{2}$ hrs $(\frac{3}{2} \times 120) = 180\text{km}$ $\frac{x}{120} = \frac{x + 180}{80}$ $180x - 120x = 21600$ $x = 360\text{km}$ Distance from K = $580 - (180 + 360)$ $x = 40\text{km}$ Time = $\frac{540}{180} = 3\text{hrs}$ $(9.30 + 3\text{hrs}) = 12.30\text{p.m}$		
22	$\angle QRO = 300$ Base angles of isosc. Triangle $\angle ROT = 100 - 120 = 600$ on straight line $\angle ROT = 600$ $\angle ORP = 600$ Base angles of Isoc triangle $\angle QRS = 900$ diameter subtended right angle at the circumference (a) $\angle SRQ = 900 - 30 - 300$ $= 300$ $\angle QRO + \angle ORP + \angle SRP = 900$ Diam. Subt 900 at circumference (b) $\angle ORP = 600$ Base angle of isosceles triangle (c) OP to MPT $\angle OPT = 900$ Radius meets tangent at 900 $\angle RTP = 900 - \angle OPR$ $= 900 - 300$ $= 600$ (d) $\angle STP = 1800 - \angle OPT 900 - \angle POT 600$ Angle sum of triangle	B1 B1 B1 B1 B1 B1 B1 B1	

	$= 300$ $(e) \angle QPM = \angle QRP = 600$ Angles in alternate segment	B1 B1	
23			



24.

- b) i) $6.8 + 0.1\text{cm}$
 Distance Ae = $340 + 5\text{ km}$
- ii) $180 + 18 = 198 + 2$