MATHEMATICS FORM 1

MARKING SCHEME

1. $\dfrac{-12 \div (-3) \times 4 - (-20)}{-6 \times 6 \div 3 + (-6)}$

BODMAS.

Numerator

$-12 \div -3 = 4$

$4 \times 4 - (-20) = 16 + 20 = 36$

Denominator

$-6 \times 2 + (-6)$

$= -12 + -6$

$= -12 - 6$

$= -18$

$\Rightarrow \dfrac{36}{-18} = -2$

2. a) $3px - py + 3qx - qy$

$p(3x-y) + q(3x-y)$

$\underline{(p+q)(3x-y)}$

(b) $a^2 - 4ap - 4p + a$

$a(a-4p) - 1(4p-a)$

$a(a-4p) + 1(a-4p)$

$\underline{(a+1)(a-4p)}$

3. $30 = 2 \times 3 \times 5$

$900 = 2^2 \times 3^2 \times 5^2$

3mks

4. Odawa $= \frac{1}{3}x$ (4mks)

Miiwa $= \frac{3}{8}(\frac{2}{3}x) = \frac{1}{4}x$

Aniin $= 1 - (\frac{1}{3}x + \frac{1}{4}x)$

$= 1 - \frac{7}{12}x = \frac{5}{12}x$

Difference $\Rightarrow \frac{5}{12}x - \frac{1}{4}x = 40000$

$\Rightarrow \frac{2}{12}x = 40000$

$\Rightarrow \frac{1}{6}x = 40000$

$x = 240,000$

5.

2	3	6	8	12
2	3	3	4	6
2	3	3	2	3
3	3	3	1	3

L.C.M $= 2^3 \times 3 = 8 \times 3 = 24$ (3mks)

$\frac{7}{8} \times 24 = 21$

$\frac{7}{12} \times 24 = 14$

$\frac{5}{6} \times 24 = 20$

$\frac{2}{3} \times 24 = 16$

Ascending order $\frac{7}{12}, \frac{2}{3}, \frac{5}{6}, \frac{7}{8}$.

7. Mother Son

$2x$	x	14yrs Time
$2x-14$	$x-14$	Now
$2x-14-4$	$x-14-4$	4yrs ago
$2x-18$	$x-18$	

4mks

Sum of ages $= (2x-18) + (x-18) = 30$

$\Rightarrow 3x - 36 = 30$

$\frac{3x}{3} = \frac{66}{3}$

$x = 22$

Now mother $(2 \times 22) - 14 = 44 - 14 = 30$ yrs

Son $= 22 - 14 = 8$yrs

3mks

3mks

10.

$3.2\dot{5}\dot{6}$

$r = 3.25656\dot{}$

$10r = 32.5656$

$1000r = 325.656$

$1000r = 3256.5656$

Equation (iv) − (ii)

$1000r - 10r = 3256.5656 - 32.5656$

$990r = 3224$

$\frac{990r}{990} = \frac{3224}{990}$

(3mks)

4mks

13. Length of an arc $= \frac{\theta}{360} 2\pi r$

Circumference of the circle $= 2\pi r$

Length of arc $= \frac{1}{8}(2\pi r)$

$\frac{\theta}{360} \times 2\pi \times 14 = \frac{1}{8} \times 2\pi \times 14$

$\frac{\theta}{360} = \frac{1}{8}$

$\frac{8\theta}{8} = \frac{360}{8}$

$\theta = 45^\circ$

14. Cost price $= 50$

Increased by 20% $\Rightarrow \frac{120}{100} \times 50$

$= 60$

reduced by 20%

$\Rightarrow \frac{80}{100} \times 60$

$= 48$

New price $=$ Ksh 48

3mks

15. a) $g = 1.6\ N/kg$

Weight $= 670\ N$

Weight $=$ mass $\times g$

$\frac{670}{10} =$ mass $\times \frac{10}{10}$

2mks

15 b Weight on the moon

Weight = mass x acceleration

= 67 x 1·6

= 107·2 N

16 a) $\frac{40}{100} \times 1,350,000 = 540,000$

(b) Share equally $= \frac{30}{100} \times 1,350,000 \times \frac{1}{3} = 135,000$

Ratio = 112 : 128 : 210

Trinity shared in the ratio

$\frac{210}{450} \times \frac{30}{100} \times 1,350,000 = 189,000$

Total Trinity's Amount = 135000 + 189000 = 324,000

Bela's ratio Share

$\frac{112}{450} \times \frac{30}{100} \times 1,350,000 = 100,800$

Total Bela's Amount

135,000 + 100,800 = 235,800

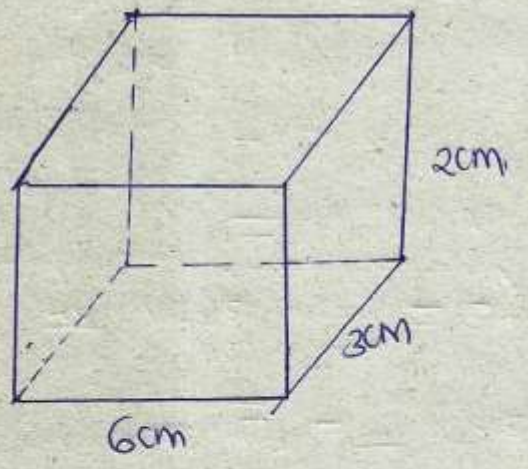
Difference = 324,000 − 235,000 = 88,200

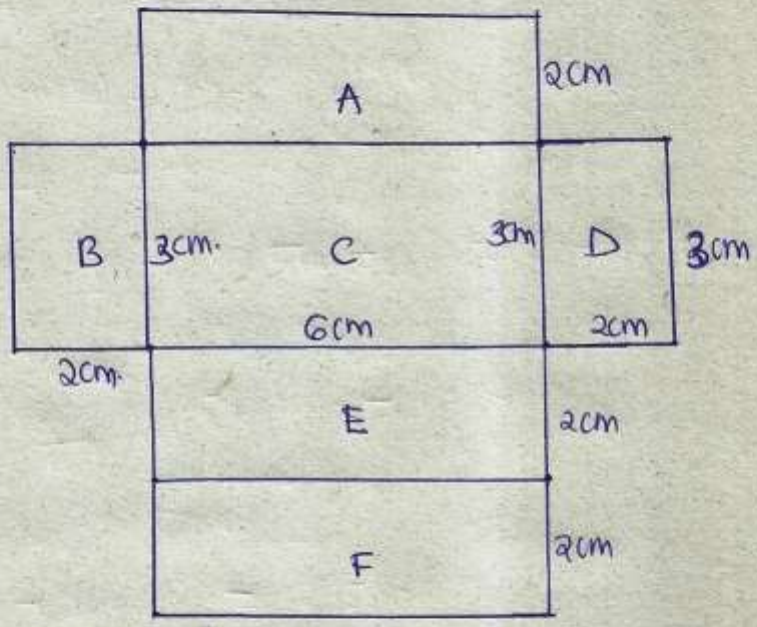
c) $135,000 + \frac{128}{450} \times \frac{30}{100} \times 1,350,000 = 250,200$

6mks

3mks

17





5mks

(i) Surface area of the cuboid.

A = 6 x 2 = 12 cm²
B = 3 x 2 = 6 cm²
C = 3 x 6 = 12cm²
D = 3 x 2 = 6cm²
E = 6 x 2 = 12cm²
F = 6 x 2 = 12cm²

(3mks)

Total surface area = 12+6+12+6+12+12

= 66cm²

(ii) volume (2mks)

V = L x W x H

18. (i) 32cm x 32cm x 50cm.

Surface area $= 32 \times 32 \times 2$

$= 2048\ cm^2$

$\Rightarrow 32 \times 50 \times 2$

$= 3200\ cm^2$

$\Rightarrow 32 \times 50 \times 2$

$= 3200\ cm^2$

Total Surface area $= 2048 + 3200 + 3200$

$= 8448\ cm^2$

(ii) Capacity of the tin

$32 \times 32 \times 50 = \frac{51,200\ cm^3}{1000}$

$= 51.2\ L$

(iii) Volume of cake mixture in the tin in cm^3

$32 \times 32 \times 38 = 38,912\ cm^3$.

(iv) Volume of space unoccupied by the cake in cm^3.

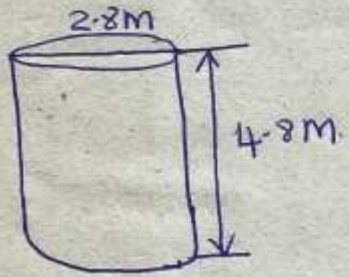
$V = 32 \times 32 \times 50$

$V = 51200 - 38912$

$V = 12,288\ cm^3$

2mks

19



a) volume $= \pi r^2 h$

$= 22/7 \times 1.4^2 \times 4.8$

$= 29.568\ m^3$

3mks

$1\ cm^3 = 800\ kg/m^3$

19 c) $1m^2 \Rightarrow 50$ Ksh.

Surface area $= \pi r^2 + 2\pi rh$

$= 22/7 \times 1.4^2 + 2 \times 22/7 \times 1.4 \times 4.8$

$= 6.16 + 42.24$

$= 48.4m^2$

$1m^2 \Rightarrow$ Ksh 50

$48.4m^2 \times 2,420$

$\Rightarrow$ Ksh 2,420

20. (i) Area of minor sector $= \frac{\theta}{360} \pi r^2$

$= \frac{120}{360} \times 3.142 \times 10 \times 10$ 3mks

$= 104.73 cm^2$

(ii) Area of $\Delta = \frac{1}{2} b \times h$ 2mks

$= \frac{1}{2} \times 12 \times 8 = 48 cm^2$

(iii) Area of the shaded region $= 104.73 -$ 4n 2mks

$= 56.73 cm$

(iv) Area of circle $= 3.142 \times 10 \times 10$ 3mks