DEC MTC MOCK GUIDE FOR SPECIAL SET 1 2022.

1.

$3\sqrt{39}$ with $\frac{1}{3}$ and $\frac{3}{9}$

$3 \div 3 = 1$
$9 \div 3 = 3$

$1 \times 3 = 3$
$3 \times 3 = 9$

$\therefore 39 \div 3 = 13$

2.

Ninety thousand forty nine.

3. $S' = \{ d, m, k \}$

$\therefore n(S)' = 3$

4. $\frac{3}{4} + \frac{2}{3}$ (LCM = 12)

$\frac{\frac{3}{4} \times 12 + \frac{2}{3} \times 12}{12}$

$\frac{3 \times 3 + 2 \times 4}{12}$

$\frac{9 + 8}{12}$

$\frac{17}{12} = 1\frac{5}{12}$

5. $5 - 3q \angle 17$

$5 - 5 - 3q \angle 17 - 5$

$-3q \angle 12$

$\frac{-3q}{-3} > \frac{12}{-3}$

$q > -4$

$1, 3, 6, 11, 18, \underline{29}$
$+2$.

	Sum
$1 + 2 = 3$	$2 \; 9$
$3 + 3 = 6$	$+ 4 \; 2$
$6 + 5 = 11$	$7 \; 1$
$11 + 7 = 18$	
$18 + 11 = 29$	
$29 + 13 = 42$	

Addition of prime number

7. Take the correct measure of the drawn angle in degrees.

8.

Sh. 8000 = 2 litres

Sh. 1 = $\frac{2}{8000}$ litre

Sh. 14000 = $\left(\frac{2}{8000} \times 14000 \right)$

$= \frac{1}{4} \times \frac{7}{1}$
$= \frac{7}{2}$ litre
$= 3\frac{1}{2}$ litres

$\therefore$ One will buy $3\frac{1}{2}$ litres of petrol with Sh. 14000.

9.

T	O	t	h
9	9	6	#
+	1		
1 0	0	0	0

$\therefore 99.64 \approx 100$

10. $\frac{mn - g}{g + 5}$

$\frac{m \times n - g}{g + 5}$

$\frac{n \times n - g}{g + 5}$

$\frac{4 \times 4 - (-2)}{-2 + 5}$

$\frac{16 + 2}{3}$

$\frac{18}{3} = 6$

11.

$2nd\; n_2 = \frac{LCM \times GCF}{1st\; n_2}$

$\frac{36 \times 6}{36}$ with $\frac{18}{36} \times 6$

$\;\;\frac{12}{36} \times 6$

18

$\therefore$ The second number is 18.

12. Simple interest

$P \times R \times T$

$Sh. 300,000 \times \frac{8}{100} \times 3$

$Sh. 300,000 \times \frac{8}{100} \times 3$

$Sh. 3000 \times 24$

$Sh. 24000$
$\times \quad 3$
$Sh. 72,000$

13. Double weight of Chalk and box

$11. 5 kg$
$+ 11. 5 kg$
$23. 0 kg$

Double weight of a half chalk and box.

$6. 5 kg$
$+ 6. 5 kg$
$13. 0 kg$

Weight of chalk only.

$23. 0 kg$
$- 13. 0 kg$
$10. 0 kg$

$\therefore$ The weight of chalk only is 10kg

14.

$\frac{1}{2} \pi D = C$

$\frac{1}{4} \times \frac{22}{7} \times D = 22 dm$

$\frac{11 D}{7} = 22 dm$

$\frac{1}{7} \times \frac{11 D}{7} = 22 dm \times 7$

$\frac{11 D}{11} = \frac{22 dm \times 7}{11}$

$D = 2 dm \times 7$
$D = 14 dm$

$r = \frac{D}{2}$
$= \frac{14 dm}{2}$
$= 7 dm$

Area

$\frac{1}{2} \pi r^2$

$\frac{1}{2} \times \frac{22}{7} \times 7 dm \times 7 dm$

$\frac{1}{1} \times \frac{11}{7} \times 7 dm \times 7 dm$

$77 dm \times dm$

$77 dm^2$

15.

(Base $\angle$s are equal)

$2k + 50° + 50° = 180°$
$2k + 100° = 180°$
$2k + 100° - 100° = 180° - 100°$
$2k = 80°$
$\frac{2k}{2} = \frac{80°}{2}$
$k = 40°$

16. $1 kg = 1000 g$.

$3. 5 kg = \frac{35}{10} kg \times 1000 g$
$= 3500 g$.

Number of sackets

$\frac{3500 g}{500 g} = 7$ sackets

17. $(86 \div 4) - (6 \div 4)$

$(86 - 6) \div 4$

$80 \div 4$ $\frac{20}{4}\,|\,80$

20

18.
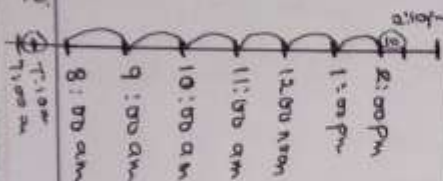
∴ The bus left Kampala at 7:10am.

OR

Departure time

  2 : 10 pm
$-$ 7 : 00 hrs

 12 00 hrs
$+$2 00 hrs
 14 10 hrs

 14 10 hrs
$-$ 7 00 hrs
 7 : 10 am

∴ The bus left Kampala at 7:10 am

19. If yesterday was Wednesday, then today is Thursday.

Days of the week

Sun	Mon	Tue	Wed	Thu	Fri	Sa
0	1	2	3	4	5	6

Day + days = Day (mod 7)

$4 + 17 = -$ (mod 7)

$\frac{21}{7} = 3$ rem 0 (mod 7)

$= 0$ (mod 7)

∴ The day will be Sunday.

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20)

Distance in km	Time in hrs
1000m = 1km	3600 sec = 1hr
1m = $\frac{1}{1000}$km	1 sec = $\frac{1}{3600}$ hr
60m = $\frac{1}{1000} \times 60$	3 sec = $\frac{1}{3600} \times 3$
= $\frac{6}{100}$ km	= $\frac{3}{3600}$ 1200
	= $\frac{1}{1200}$ hr

Speed = D ÷ T

$\frac{6}{100}$ km ÷ $\frac{1}{1200}$ hr

$\frac{6}{100}$ km ÷ $\frac{1}{1200}$

$\frac{6}{100}$ km $\times \frac{1200}{1 hr}$

$\frac{72 km}{hr}$

SECTION B

21 a)

$\begin{array}{ccc} & 6 & 8 \\ 3 & + & \\ 4 & 2 & 3 \end{array}$ $\begin{array}{c} 2 - 4 \\ (3+3) - 4 \\ 8 - 4 = 8 \\ \text{five} \; (1+5) \to 3 \end{array}$

$\begin{array}{ccc} & -1 & 3 & 4 \\ & & & \text{five} \end{array}$ $6 - 3 = 3$

$\begin{array}{ccc} 2 & 3 & 4 \\ & & \text{five} \end{array}$

(b)

C	X	C	I	V
100	(10-100)	(1 - 5)		
	90	1	4	

C = 100

XC = 90

IV = + 4

CXCIV = 194

22 a)

n(ε) = 50

n(D) = 25   n(S) = 2+10
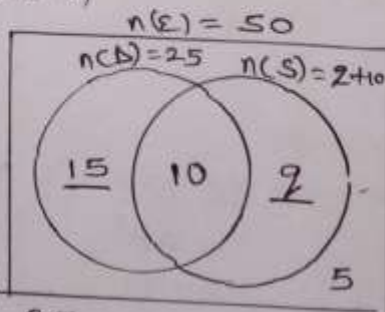
$\begin{array}{r} 25 \\ -10 \\ \hline 15 \end{array}$

(b) $2 + 10 + 15 + 5 = 50$

    $2 + 30 = 50$

    $2 + 30 - 30 = 50 - 30$

      $2 = 20$

$n(S)$

$(2 + 10)$

$20 + 10$

30

∴ $n(S) = 30$

23. a)

Beans	Salt	Meat
Sh. 3800	Sh. $\frac{750}{1500} \times \frac{3}{2}$	Sh. 1500 $\times \frac{5}{1}$
$\times$ 3	Sh. $\frac{1}{7} = \frac{1}{0} \times \frac{3}{1}$	Sh. 1500
Sh. 11,400	Sh. 2,250	$\times$ 5
		Sh. 7,500

Total cost

Sh. 11400
Sh. 02250
Sh. 07500
$-$ Sh. 04800
Sh. 25,950

(b) % discount = $\frac{discount}{Old \; Cost} \times 100\%$

$\frac{Sh. 2595}{Sh. 25950} \times 100 \%$

$1 \times 10 \%$

10%

24) a)

Spending	Saving
$\frac{4}{7}$	$\frac{7}{7} - \frac{4}{7} = \frac{7-4}{7}$
	$= \frac{3}{7}$
	Sh. 180,000

3 parts = Sh. 180,000

1 part = $\dfrac{\text{Sh. }180,000}{3}$ (60,000)

1 part = Sh. 60,000

Salary

Sh. 60,000
× 7
Sh. 420,000

$\dfrac{2}{3}$ of the Salary

$\dfrac{2}{3}$ × Sh. 420,000 (140,000)

Sh. 140,000
× 2
Sh. 280,000

b)

Cock	duck	turkey
3 :	4 :	5

More ratio

5 − 3 = 2

2 Shares = Sh. 50,000

1 Share = $\dfrac{\text{Sh. }50,000}{2}$ (25,000)

1 share = Sh. 25,000

Duck and turkey

4 + 5 = 9

Sh. 25000
× 9
Sh. 225,000

25.
a) r = 8
   p = ⁻5
   z = ⁺3

b) P − z = r

⁻5 − (⁺3) = ⁻8

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26 a)

12 > 3p − 3

12 + 3 > 3p − 3 + 3

15 > 3p

$\dfrac{15}{3} > \dfrac{3p}{3}$

5 > p

p < 5

✓ ✓ ✓ ✓ ✓
← 1 2 3 4 5 →
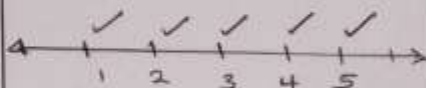
∴ The solution set for p is {1,2,3,4}

b) b−2 from 4b

4b − (b−2)

4b − b + 2

3b + 2

27) a)

Area 1 = L × W
= 14m × 7m
= 98 m²

Area 2 = ½ π r²
= $\dfrac{1}{2} \times \dfrac{22}{7} \times 7m \times 7m$
77 m²

Area 3 = ¼ × π r²
= $\dfrac{1}{4} \times \dfrac{22}{7} \times 7m \times 7m$
$\dfrac{77 m^2}{2}$
38.5 m²

Area of the garden

98 m²
77 m²
+ 38.5 m²
213.5 m²

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b) Total distance

$L + \dfrac{1}{4}c + r + \dfrac{1}{2}c + W$

$\dfrac{1}{4}c = \dfrac{1}{4}\pi d$ | $\dfrac{1}{2}c = \dfrac{1}{2}\pi d$

$\dfrac{1}{4} \times \dfrac{22}{7} \times 14m$ | $\dfrac{1}{2} \times \dfrac{22}{7} \times 14m$

11m | 22m

$L + \dfrac{1}{4}c + r + \dfrac{1}{2}c + W$

14m + 11m + 7m + 22m + 7m

25m + 29m + 7m

29m + 36m

61m

28) Fraction filled in one minute

a) $\dfrac{1}{4} - \dfrac{1}{8}$ (LCM = 8)

$\dfrac{\frac{1}{4}\times 8 - \frac{1}{8}\times 8}{8}$

$\dfrac{2-1}{8}$

$\dfrac{1}{8}$

Duration for the whole tank.

$\dfrac{8}{8} \div \dfrac{1}{8}$ minutes

$\dfrac{8}{8} \times \dfrac{8}{1}$

8 minutes.

$\dfrac{3}{4} \times 8$ minutes

3 × 2 minutes

6 minutes.

b) 1 minute = 120 litres

8 minutes = $\dfrac{120}{\times 8}$
960 litres

∴ The capacity of the tank is 960 litres.

29.

a	30	40	60
2	15	20	30
2	15	10	15
3	15	5	15
5	5	5	5
	1	1	1

Common interval

$(2 \times 2 \times 2 \times 3 \times 5)$ minutes
$(4 \times 6 \times 5)$ minutes
4×30 minutes
120 minutes

Common interval in hrs

60 minutes $= 1$ hr
1 minute $= \frac{1}{60}$ hr
120 minutes $= (\frac{1}{60} \times 120)$ hrs
$= 2$ hours.

Next Common time

$$\begin{array}{r} 10 : 00 \ a.m \\ + 2 \ 00 \ hrs \\ \hline 12 \ 00 \ noon \end{array}$$

30 a)

$$\frac{\text{Sum of marks}}{\text{Number of pupils}} = \text{Average mark}$$

$$\frac{(80 \times k) + (70 \times 2) + 90 \times 1 \ (65 \times 4)}{k + 7} = 73$$

$$\frac{80k + 140 + 90 + 260}{k + 7} = 73$$

$$\frac{(80k + 490)}{k + 7} = 73 \times (k + 7)$$

$$80k + 490 = 73k \ 511$$
$$80k + 490 - 490 = 73k + 511 - 490$$
$$80k = 73k + 21$$
$$80k - 73k = 73k - 73k + 21$$
$$7k = 21$$
$$\frac{7k}{7} = \frac{21}{7}$$
$$k = 3$$

b) Median mark.

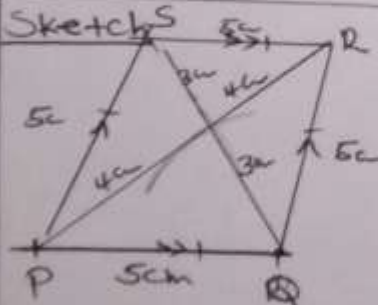$65, 65, 65, 65, 70, 70, 80, 80, 80, 90$

$$\frac{70 + 70}{2}$$

$$\frac{140}{2} = 70$$
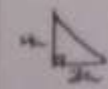
Pupils who scored above 70

$3 + 1$

4 pupils

∴ 4 Pupils scored above the median mark.

31 Sketches

$\sqrt{c^2} = \sqrt{25 c^2}$
$c = 5$ cm

$a^2 + b^2 = c^2$
$3^2 + 4^2 = c^2$
$9 cm^2 + 16 cm^2 = c^2$
$25 cm^2 = c^2$
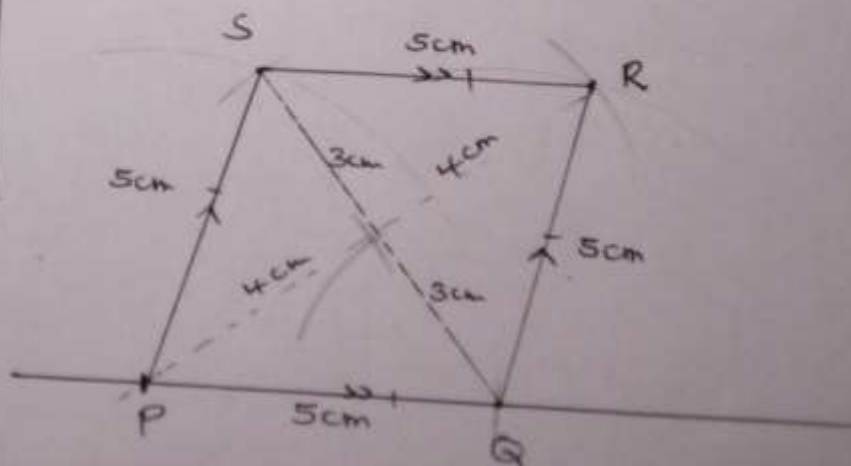
Scale on y-axis

10 small sq. = 20 Km

1 Small sq. = $\frac{20}{10}$ Km

= 2 km

Scale on x-axis

10 small sq = 60 minutes

1 small sq = $\frac{60}{10}$ minutes

= 6 minutes

Distance from Kampala - Mukono

$\frac{\overset{25}{50Km}}{Hr} \times \frac{3}{\underset{1}{2}}$ Hrs

75 km

Time from Mukono - Jinja

85 km ÷ 34 Km/hr

85 Ki × $\frac{1 hr}{34 Km}$

$2\frac{\frac{17}{34}}{2}$ hrs

$2\frac{1}{2}$ hours.

$\begin{array}{r}34\\+34\\\hline 68\end{array}$

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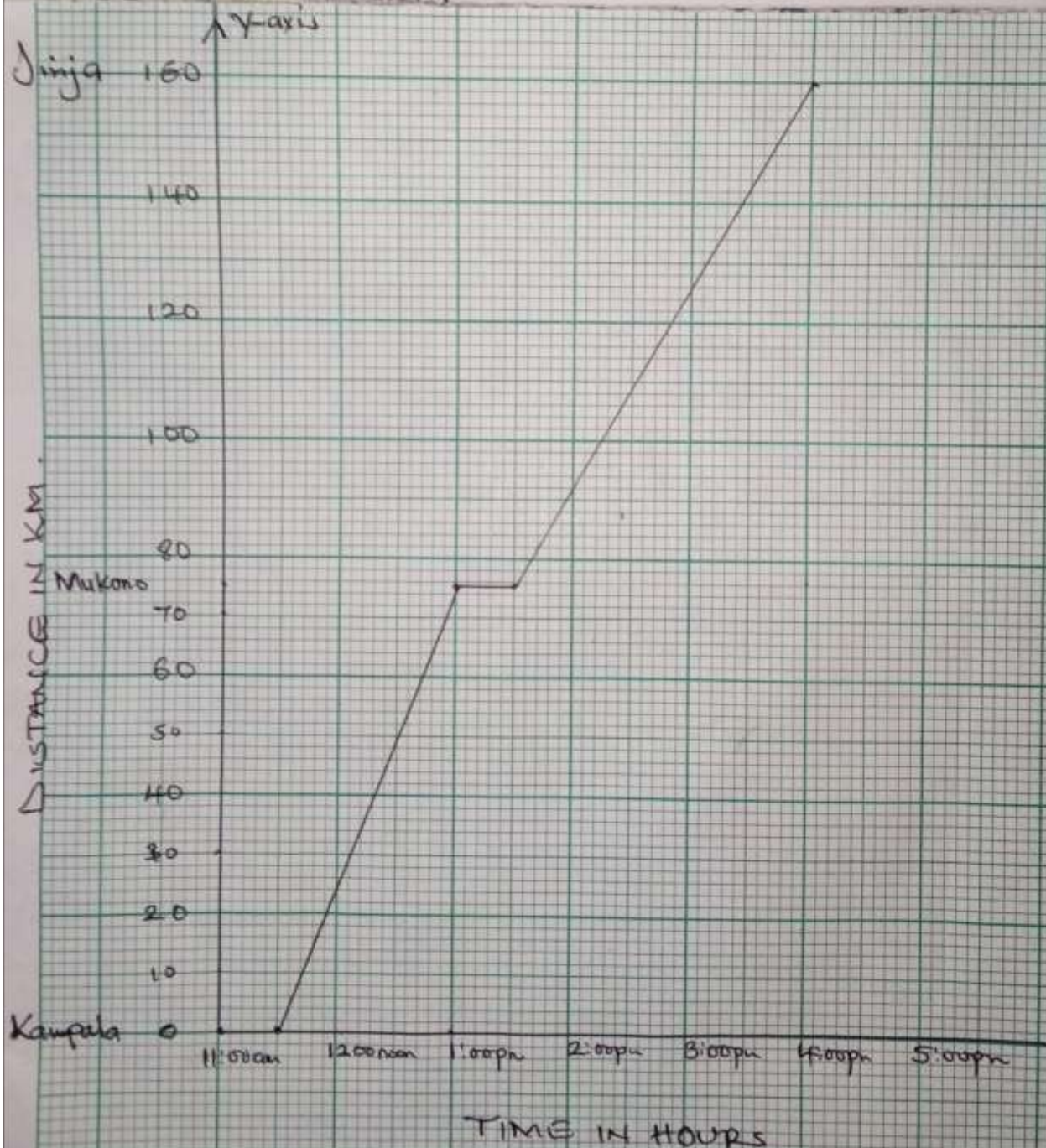
b) He reached Jinja at 4:00pm.