

1. 321

$\begin{array}{r} X \ 3 \\ 9 \ 6 \ 3 \end{array}$

2. $-3 - (-9)$

$\begin{array}{r} -3 + 9 \\ +6 \end{array}$

3. $XC = 90$

$IX = +9$

$XCIX = 99$

Ninety-nine

4. 1, 2, 4, 7, 11, 16, 22

$1 + 1 = 2$

$2 + 2 = 4$

$4 + 3 = 7$

$7 + 4 = 11$

$11 + 5 = 16$

$16 + 6 = 22$

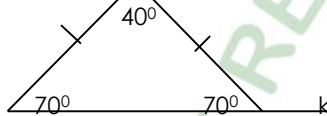
5. $(2x+1) - (x-2)$

$2x + 1 - x + 2$

$2x - x + 1 + 2$

$x + 3$

6.



$180^\circ - 40^\circ = 140^\circ$

$140^\circ - 70^\circ = 70^\circ$

$k + 70^\circ = 180^\circ$

$k + 70^\circ - 70^\circ = 180^\circ - 70^\circ$

$k = 110^\circ$

7. $k = \{t, e, a, c, h\}$

$M = \{l, e, a, r, n\}$

$(K \cap M)^1 = \{t, c, h, l, r, n\}$

$n(K \cap M)^1 = 6$

8. $(0.4 \times 27) + (73 \times 0.4)$

$0.4(73 + 27)$

4×100

$40 = 40$

9. 1011_{two}

$= (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$

$= 1 \times 2 \times 2 \times 2 + 0 \times 2 \times 2 + 1 \times 2 + 1 \times 1$

$= 8 + 0 + 2 + 1$

$= 11_{ten}$

10. $9600 = 9.6 \times 10^3$

11. $50 \times 10_{parts}$

$100 = 5_{parts}$

12. $11:00_{am}$

$- 2:30$

$9:30_{am}$

13. $504 \div 24$

$= 21_{crates}$

14. Friday + 50 = -----finite 7

$5 + 50 = -----finite 7$

$55 = -----finite 7$

$55 \div 7 = 7 \text{ rem } 6$ finite 7

$5 + 50 = 6$ finite 7

6 stands for Saturday

15. $SI = P \times R \times T$

$= \text{Shs} \frac{240,000}{100} \times \frac{15}{100} \times 8$

$= \text{Shs} 200 \times 15 \times 8$

$= \text{Shs} 24,000$

16. $1\text{km} = 1000\text{m}$

$36\text{km} = 36 \times 1000\text{m}$

$36\text{km} = 36000\text{m}$

$1\text{hr} = 60 \times 60 \text{ sec}$

$1\text{hr} = 3600\text{sec}$

$S = D \div T$

$S = \frac{36000\text{m}}{3600\text{sec}}$

$= 10\text{m/sec}$

17. $\frac{5}{6} \div \frac{1}{3}$

$\frac{5}{6} \times \frac{3}{1}$

$\frac{5 \times 3}{6 \times 1}$

$\frac{15}{6} = 2\frac{1}{2}$

18. Let the number of pupils be k.

$100\% + 20\% = 120\%$

$\frac{120}{100} \times k = 1080\text{pupils}$

$\frac{12k}{10} = 1080\text{pupils}$

$10 \times \frac{12k}{10} = (1080 \times 10)\text{pupils}$

$\frac{12k}{10} = 10800\text{pupils}$

$\frac{12}{10} = \frac{10800}{k}$

$12 = \frac{10800 \times 10}{k}$

$12k = 108000$

$k = \frac{108000}{12}$

$k = 900\text{pupils}$

900 pupils were in school.

19. Oranges : Mangoes

$2 : 3$

$3 : 24$

3 parts = 24

$\frac{3}{3} \text{ parts} = \frac{24}{3}$

$1 \text{ part} = 8$

2 parts = 8×2

2 parts = 16

16 fruits of oranges were in the basket.

20. Total age of 2 women

$2 \times 46\text{yrs}$

92yrs

Total age of 3 women

$3 \times 44\text{yrs}$

132yrs

3rd woman's age

$132 - 92 = 40$

21a). $n(\Sigma) =$

$n(F)=40$

$n(M)=35$

$40 - y$

y

$35 - y$

P

b) $40 - y + 35 - y = 53$

$40 + 35 - y - y = 53$

$75 - 2y = 53$

$75 - 2y + 2y = 53 + 2y$

$75 - 53 = 53 - 53 + 2y$

$22 = 2y$

$\frac{22}{2} = \frac{2y}{2}$

$11 = y$

11 students ate both

$75 - y$

$= 75 - 11 = 64$

c). $P = y(64 - 53) \text{ or } (75 - 64)$

$p = 11$

d). Prob = $\frac{D.C}{n(\Sigma)}$

$\frac{75}{75}$

22a). $\frac{0.25 \times 1.44}{1.2 \times 0.5}$

$\frac{(25 \times 144)}{(100 \times 100)} \div \frac{(12 \times 5)}{(10 \times 10)}$

$\frac{25^5 \times 144^{12} \times 10 \times 10}{100 \times 100 \times 12 \times 12 \times 5 \times 5}$

$\frac{5 \times 12 \times 1 \times 1}{1 \times 100 \times 1 \times 1}$

$\frac{60}{100} = 0.6$

b). $\frac{1}{3} - \frac{1}{5} \text{ of } \frac{5}{10} + \frac{2}{5}$

$\frac{1}{3} - \frac{1 \times 5}{5 \times 10} + \frac{2}{5}$

$\frac{1}{3} - \frac{5}{50} + \frac{2}{5}$

$\frac{1}{3} - \frac{1}{10} + \frac{2}{5}$

$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

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$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

$\frac{1}{3} + \frac{2}{5} - \frac{1}{10}$

24a). $D = S \times T$

$120\text{km/hr} \times 1 \times 1\frac{1}{2}\text{hrs}$

$120 \times \frac{3}{2} \text{ km/hr} \times \frac{3}{2}$

$60\text{km} \times 3 = 180\text{km}$

b). Av. Speed

$= \frac{180\text{km} + 120\text{km}}{1\frac{1}{2}\text{hr} + 3\frac{1}{2}\text{hr}}$

$= \frac{300\text{km}}{5\text{hrs}}$

$= 60\text{km/hr}$

25a). Value of k

$k \times 2 \times 2 \times 3 = 60$

$12k = 60$

$\frac{12k}{12} = \frac{60}{12}$

$k = 5$

b). Value of w

$w = 2 \times 2 \times 3 \times 3$

$= 4 \times 9$

$= 36$

c). G.C.F = $2 \times 2 \times 3$

$= 4 \times 3$

$= 12$

d). L.C.M = $5 \times 2 \times 2 \times 3 \times 3$

$= 10 \times 6 \times 3$

$= 180$

26a) Range = $H - L$

$= 100 - 30$

$= 70$

b). Average of marks above 50

$\frac{(80 \times 4) + (60 \times 5) + 100}{10}$

$\frac{720}{10} = 72$

27. Meat Soap

Shs12,000x2 Shs24,000

Shs24,000

Tomatoes Salt

$20^5 \times \text{Shs}1,000$ 500 x Shs2,200

4^1 1,000

$5 \times \text{Shs}1,000$ 50 x Shs24

Shs5,000 Shs1,200

Total Change

Shs24,000 Shs65,000

Shs24,000 - Shs54,200

Shs5,000 Shs10,800

+Shs1,200

Shs54,200

28.a) $102_n = 11_{ten}$

$(1 \times n^2) + (0 \times n^1) + (2 \times n^0) = 11$

$$b). 5^{2x} \times 5 = 125$$

$$5^{2x} \times 5^1 = 5^3$$

$$5^{2x} + 1 = 5^3$$

$$2x + 1 = 3$$

$$2x + 1 - 1 = 3 - 1$$

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

$$x = 1$$

$$\underline{r = 7\text{cm}}$$

32b) Name of the shape formed is trapezium.

29.a) Number of tins packed along:

$$\text{The length } \frac{50\text{cm}}{7\text{cm}} = 7 \text{ tins}$$

$$\text{The width } \frac{35\text{cm}}{7\text{cm}} = 5 \text{ tins}$$

$$\text{The height } \frac{40\text{cm}}{10} = 4 \text{ tins}$$

No of tins packed

$$7 \times 5 \times 4 = 140 \text{ tins}$$

b). **Volume of the big box**

$$V = L \times W \times H$$

$$V = 50\text{cm} \times 35\text{cm} \times 40\text{cm}$$

$$V = 1,750\text{cm}^2 \times 40\text{cm}$$

$$V = 70,000\text{cm}^3$$

Volume of the tins

$$V = \pi r^2$$

$$V = \frac{22}{7} \times \frac{11}{2} \times \frac{7}{2} \times 140$$

$$V = 11\text{cm} \times 7\text{cm} \times 35\text{cm}$$

$$V = 2695\text{cm}^3$$

Volume of the space left

$$70,000\text{cm}^3$$

$$- 2,695\text{cm}^3$$

$$\underline{67,305\text{cm}^3}$$

30)a

$$4k + 2k + 2k + 40^0 = 360^0$$

$$8k + 40^0 = 360^0$$

$$8k + 40^0 - 40^0 = 360^0 - 40^0$$

$$\frac{8k}{8} = \frac{320}{8}$$

$$k = 40$$

$$b) PQR = 180^0 - 2k$$

$$= 180^0 - (2 \times 40^0)$$

$$= 180^0 - 80^0$$

$$= 100^0$$

31. **Area of the triangle**

$$A = \frac{1}{2} \times b \times h$$

$$= \frac{1}{2} \times 24 \times 18\text{cm}$$

$$= 1 \times 12\text{cm} \times 18\text{cm}$$

$$= 216\text{cm}^2$$

Area of the circle.

$$216\text{cm}^2 - 62\text{cm}^2 = 154\text{cm}^2$$

$$\pi r^2 = A$$

$$\frac{22}{7} \times r^2 = 154\text{cm}^2$$

$$7$$

$$7 \times \frac{22}{7} \times r^2 = 154\text{cm}^2 \times 7$$

$$7$$

$$\frac{22r^2}{22} = \frac{1078}{22}$$

$$\frac{22r^2}{22} = 49$$

$$r^2 = 49\text{cm}^2 \times 7\text{cm}$$

$$\sqrt{r^2} = \sqrt{49\text{cm}^2}$$

