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BY:

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MATHEMATICS

SOLUTION BY:

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'Exceed your goal'

Section A – 40 marks

1.
$$\begin{array}{r} 473 \\ +312 \\ \hline 785 \end{array}$$

2.

Thousands	Units
27	040

Twenty seven thousand, forty.

3.

$1 = 1$

$1 + 2 = 3$

$1 + 2 + 3 = 6$

$1 + 2 + 3 + 4 = 10$

4, 5, (6,) 7, 8, 9, (10)

4.

$Q = \{m,k\}$

$n(Q) = 2$

Number of subsets = 4

2^n = Number of subsets

$2^n = 4$

$2^n = 2^2$

$n = 2$

$n(Q) = 2$

5.

5834

$5834 = 5.834 \times 10^3$

OR

$5834 \div 10 = 583.4$

$583.4 \div 10 = 58.34$

$58.34 \div 10 = 5.834$

$5834 = 5.834 \times 10^3$

OR

5834

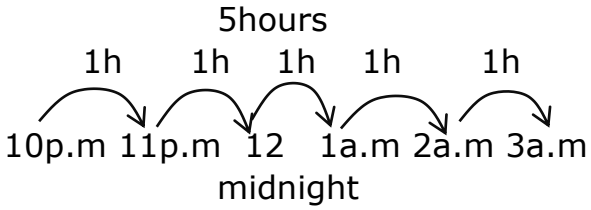
$5834 = 5.834 \times 10^3$

OR

5	8	3	4
10^3	10^2	10^1	10^0

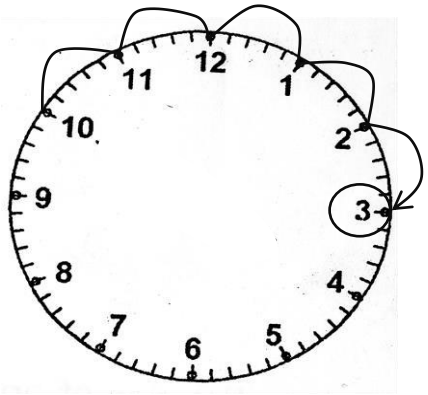
$5834 = 5.834 \times 10^3$

6.



At 3:00a.m.

OR



At 3:00a.m

OR

10:00
+5:00
15:00

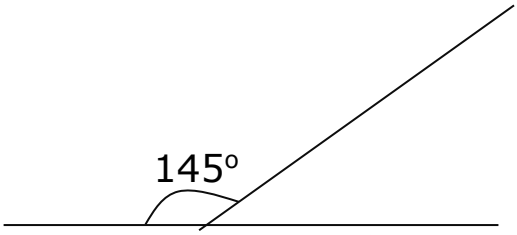
15:00
-12:00
3:00
At 3:00a.m

OR

10:00	22:00	27:00
+12:00	+ 5:00	-24:00
22:00	27:00	3:00

At 3:00a.m

7.



8. $\frac{m \times n}{n - r}$

$\frac{5 \times 3}{3 - (^{-}2)}$ / - x - = +

$\frac{5 \times 3}{3 + 2}$

$\frac{15}{5}$

3

9.

1kg = 1000g
9.85 x 1000g
985 x 1000g
100
9850g

OR

1kg = 1000g
9.85kg = $\frac{985}{100}$ x 1000g
9.85kg = 9850g

10.

Probability = $\frac{DC}{TC}$

Probability = $\frac{5}{(5+6)}$

Probability = $\frac{5}{11}$

11.

$3y = 5(\text{finite } 7)$

$5(\text{finite } 7) = 5, 12, 17\ldots$

$\frac{3y}{3} = \frac{12(\text{finite } 7)}{3}$

$y = 4(\text{finite } 7)$

OR

$3y = 5(\text{finite } 7)$

$3y = 5+7(\text{finite } 7)$

$\frac{3y}{3} = \frac{12(\text{finite } 7)}{3}$

$y = 4(\text{finite } 7)$

12.

M18 = {18,36,54,90…}

M30 = {30,60,90…}

LCM = 90

OR

2	18	30
3	9	15
3	3	5
5	1	5
	1	1

LCM = 2x3x3x5

LCM = 90

OR

GCF of 18 and 30

2	18	30
3	9	15
	3	5

2 x 3 = 6

LCM of 18 and 30

LCM = $\frac{\text{Product of numbers}}{\text{GCF}}$

LCM = $\frac{18 \times 30}{6}$

LCM = 3 x 30

LCM = 90

13. 9.8 ÷ 0.07

$\frac{9.8}{0.07}$

$\frac{9.8 \times 100}{0.07 \times 100}$

$\frac{980}{7}$

140

OR

9.8 ÷ 0.07

$\frac{98}{10} \div \frac{7}{100}$

$\frac{98}{10} \times \frac{100}{7}$

14 x 10

140

OR

$9.8 \div 0.07$

$(98 \times 10^{-1}) \div (7 \times 10^{-2})$

$(98 \div 7) \times (10^{-1} \div 10^{-2})$

$14 \times (10^{-1-(-2)})$

$14 \times (10^{-1+2})$

14×10^{1}

14×10

140

14.

Buying price of the two cocks

sh 70,000

- sh 12,000

sh 58,000

Buying price of one cock

$\frac{\text{sh } 58{,}000}{2}$

sh 29000

OR

Selling price of each cock

$\frac{\text{sh } 70000}{2}$

sh 35000

Profit made on each cock

$\frac{\text{sh } 12000}{2}$

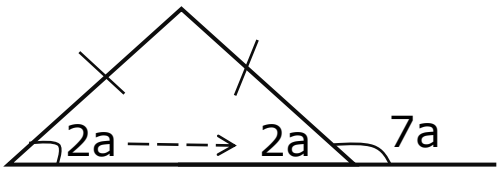
sh 6000

Buying price of each cock

sh 35000 – sh 6000

sh 29000

15.



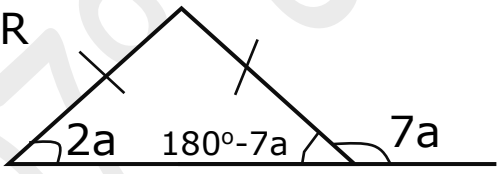
$2a + 7a = 180^{o}$

$9a = 180^{o}$

$\frac{9a}{9} = \frac{180^{o}}{9}$

$a = 20^{o}$

OR



$2a = 180^{o} - 7a$

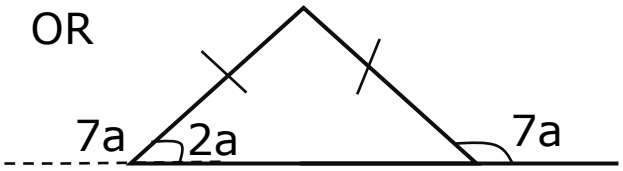
$2a + 7a = 180^{o} - 7a + 7a$

$9a = 180^{o}$

$\frac{9a}{9} = \frac{180^{o}}{9}$

$a = 20^{o}$

OR



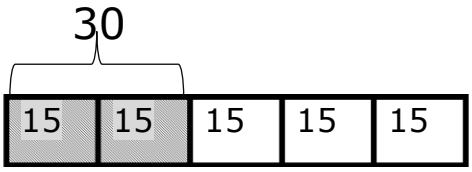
$7a + 2a = 180^{o}$

$9a = 180^{o}$

$\frac{9a}{9} = \frac{180^{o}}{9}$

$a = 20^{o}$

16.



30 ÷ 2 = 15
15 x 5 = 75 workers

OR
Total ratio
2+3 = 5
30 ÷ 2
5
30 x 5
2
15 x 5
75 workers

OR
Total ratio
2+3 = 5
Let the total number of workers be n
2 x n = 30
5
2n = 30
5
5x2n = 30x5
5
2n = 150
2 2
n = 75 workers

OR
Male : Female
2 : 3
30 : ??
Number of female workers
3 x 30
2
3 x 14
45 female workers
Total number of workers
30+45 = 75 workers

17.
5k – 7 = 3
6
5k – 7+7 = 3+7
6
5k = 10
6
6x5k = 10x6
6
5k = 60
5 5
k = 12

OR
5k – 7 = 3
6
(6x5k) – (7x6) = (3x6)
6
5k – 42 = 18
5k – 42 + 42 = 18+42
5k = 60
5 5
k = 12

18.

Mean = $\frac{\text{Sum}}{\text{Number}}$

Mean = $\frac{4+7+8+5}{4}$

Mean = $\frac{24}{4}$

Mean = 6

OR

Sum

4+7+8+5 = 24

Mean = $\frac{\text{Sum}}{\text{Number}}$

Mean = $\frac{24}{4}$

Mean = 6

19. Distance covered in one revolution

πd

πxd

$\frac{22}{7}$x70cm

22x10cm

220cm

In two revolutions

220cmx2 = 440cm

OR

2xcircumference

2xπxd

2x $\frac{22}{7}$x70cm

2x22x10cm

2x220cm

440cm

20. S=260km/h, T=45mins

D = SxT

D = 260km/h x $\frac{45}{60}$h

D = $\frac{260\text{km}}{1\text{h}}$ x $\frac{45}{60}$h

D = 13km x 15

D = 195km

OR

Time

T= $\frac{45}{60}$h

T= $\frac{3}{4}$h

Distance

D = 260km/h x $\frac{3}{4}$h

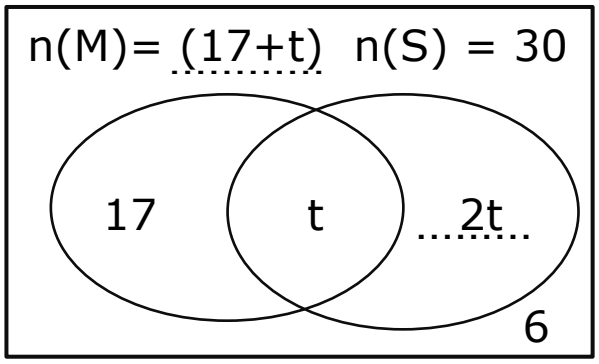
D = $\frac{260\text{km}}{1\text{h}}$ x $\frac{3}{4}$h

D = 65km x 3

D = 195km

Section B – 60 marks

21.



b)

t+2t = 30

$\frac{3t}{3} = \frac{30}{3}$

t = 10

10 pupils

OR

Both : n(S)only

1 : 2

Total ratio

1+2 = 3

$\frac{1}{3}$ x 30

1 x 10

10 pupils

OR

2t = 30 – t

2t+t = 30 – t+t

3t = 30

$\frac{3t}{3} = \frac{30}{3}$

t = 10

10 pupils

c)

30+17+6 = 53pupils

OR

17+t+2t+6

17+6+3t

23 + (3xt)

23 + (3x10)

23 + 30

53 pupils

OR

17 + 6 + 3t

23 + (3xt)

23 + (3x10)

23 + 30

53 pupils

OR

10+(2x10)+17+6

10+20+23

53 pupils

OR

Let the total be n

(17+t+30+6)-n = t

(17+10+36)-n =10

63 – n = 10

63 – 63 – n = 10 – 63

$\frac{-n}{-1} = \frac{-53}{-1}$

n = 53

53 pupils

22. i) 103_{five} to base ten

103_{five}

↓ ones

↓ fives

↓ five fives

$(1x5x5) + (0x5) + (3x1)$

$25 + 0 + 3$

28_{ten}

OR

$(1x5^2) + (0x5^1) + (3x5^0)$

$(1x5x5) + (0x5) + (3x1)$

$25 + 0 + 3$

28_{ten}

OR

$(1x5x5) + (3x1)$

$25 + 3$

28_{ten}

OR

$(1x5^2) + (3x5^0)$

$(1x5x5) + (3x1)$

$25 + 3$

28_{ten}

OR

103_{five}

↓ $3x1 = 3$

↓ $0x5 = 0$

↓ $1x5x5 = 25$

$25+0+3 = 28_{ten}$

103_{five}

1five fives+3ones

$(1x5x5) + (3x1)$

$25 + 3$

28_{ten}

ii) 28_{ten} to base two

Base	Number	Remainder
2	28	
2	14	0
2	7	0
2	3	1
2	1	1
	0	1

↑ (read remainders upward)

11100_{two}

$103_{five} = 11100_{two}$

OR

Base	Number	Remainder
2	28	0
2	14	0
2	7	1
2	3	1
2	1	1
	0	

↑ (read remainders upward)

11100_{two}

$103_{five} = 11100_{two}$

23.

a) $\frac{\text{sh } 6800}{2} \times 3$

sh 3400

x 3

sh 10200

OR

$\frac{3}{2}$ x sh 6800

sh 3400

x 3

sh 10200

b)

Posho

$(\text{sh } 1600 \div \frac{500}{1000}) \times 1\frac{1}{2}$

sh 1600 x $\frac{1000}{500}$ x $\frac{3}{2}$

sh 1600 x 3

sh 4800

Amount paid

sh 10500

sh 4800

+ sh 3000

sh 18300

OR

Posho

$(1\frac{1}{2} \div \frac{500}{1000})$ x sh 1600

$\frac{3}{2}$ x $\frac{1000}{500}$x sh 1600

sh 1600 x 3

sh 4800

Amount paid

sh 10500

sh 4800

+ sh 3000

sh 18300

OR

1kg of posho costs

sh 1600x2

sh 3200

$1\frac{1}{2}$kg of posho cost

$1\frac{1}{2}$ x sh 3200

$\frac{3}{2}$ x sh 3200

3 x sh 1600

sh 4800

Amount paid

sh 10500

sh 4800

+ sh 3000

sh 18300

24.

a)

SI = A – P

sh 885000

- sh 750000

sh 135000

OR

P+I = A

sh 75000 + SI = sh 885000

SI = sh 885000 – sh 75000

SI = sh 135000

b)

$$T = \frac{SI \times 100}{PXR}$$

$$T = \frac{\text{sh } 135000 \times 100}{\text{sh } 75000 \times 18}$$

$$T = \frac{15 \times 5}{75}$$

T = 1 year

OR

PxRxT = SI

sh 135000x18%xT = sh 75000

$$\text{sh } 135000 \times \frac{18}{100} \times T = \text{sh } 75000$$

sh 1350x18xT = sh 75000

$$\frac{\text{sh } 75000xT}{\text{sh } 75000} = \frac{\text{sh } 75000}{\text{sh } 75000}$$

T = 1year

OR

SI = PxRxT

SI = sh 135000x18%xT

$$SI = \text{sh } 135000 \times \frac{18}{100} \times T$$

SI = sh 75000xT

Value of T

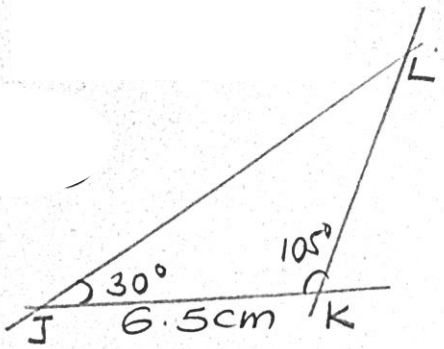
sh 75000xT = sh 75000

$$\frac{\text{sh } 75000xT}{\text{sh } 75000} = \frac{\text{sh } 75000}{\text{sh } 75000}$$

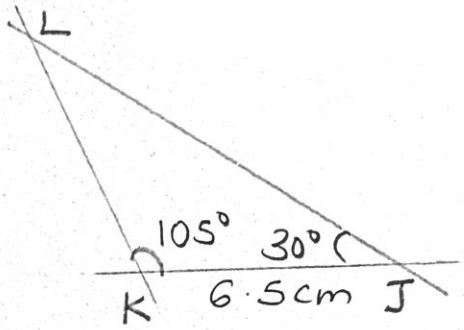
T = 1 year

25.

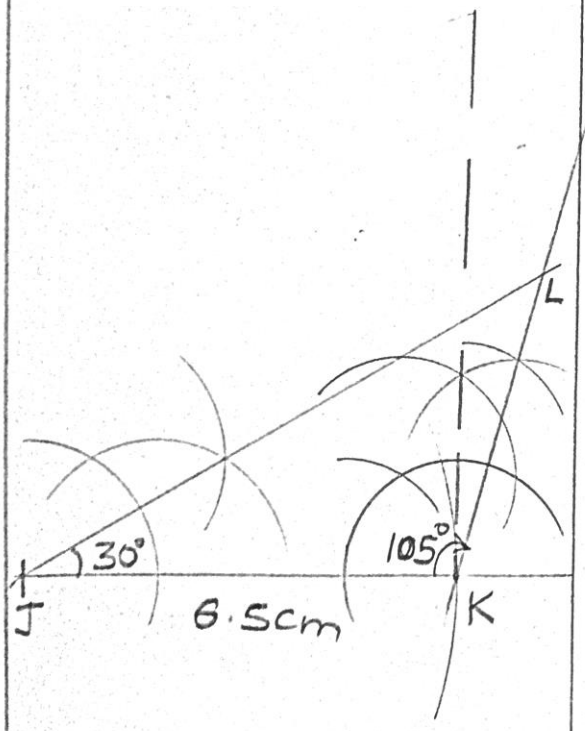
Sketch



OR

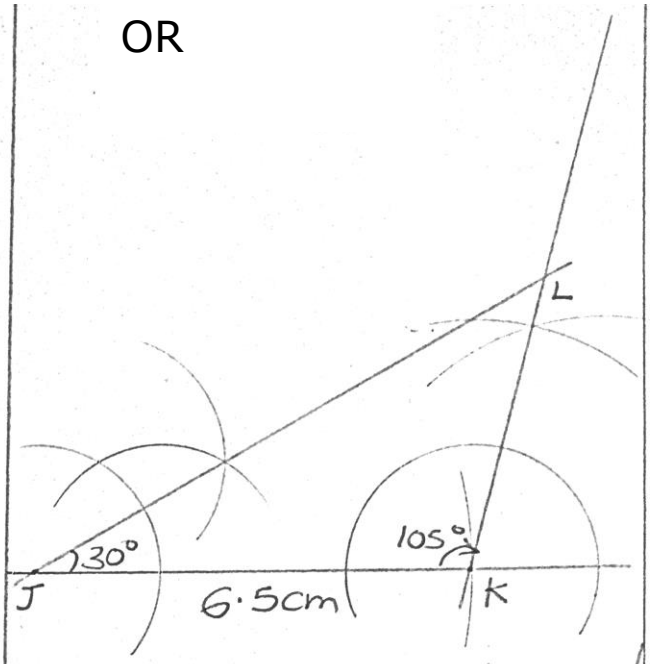


Accurate diagram

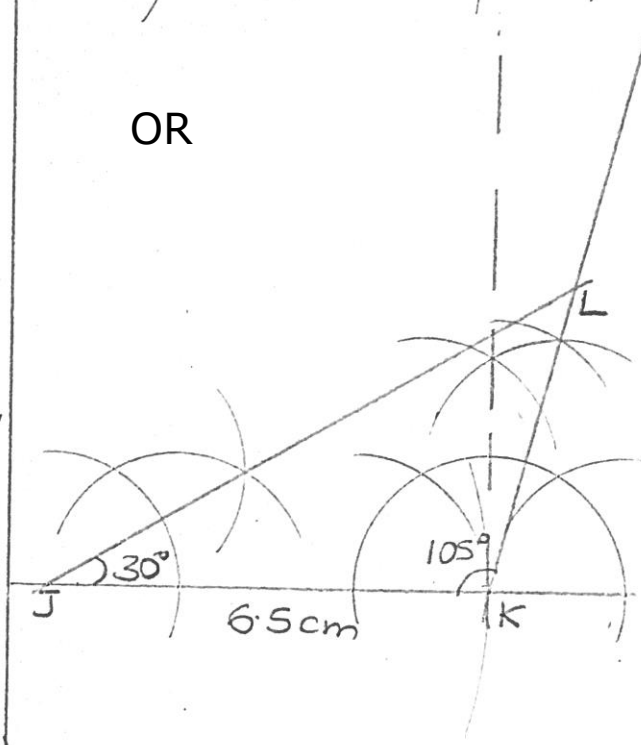


b) LK = 4·5cm

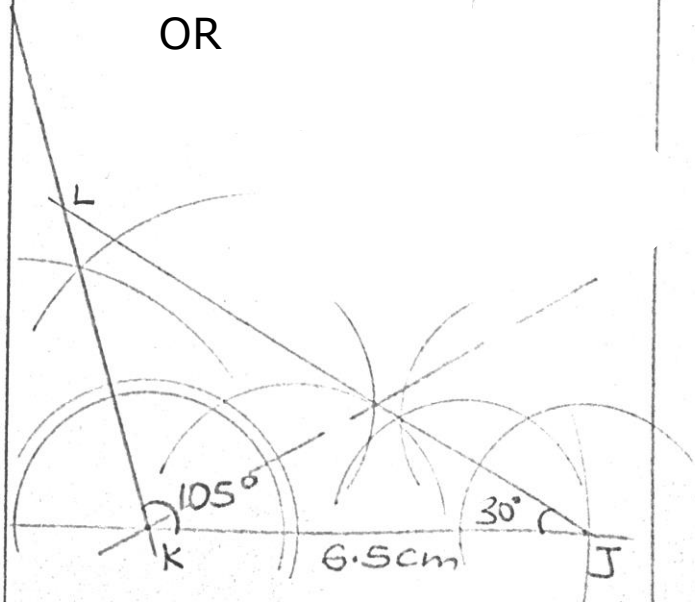
OR



OR



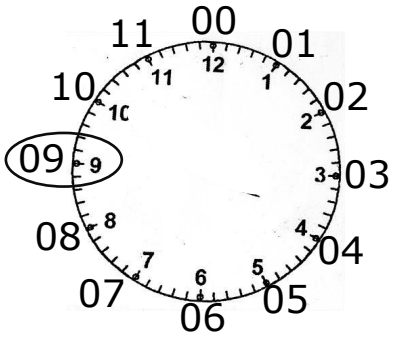
OR



26. a)

09 30
- 00 00
9:30 a.m

OR



9:30a.m

b)

Hours	Minutes	
14	30	/30+60
- 13	40	/ 90 - 40
0	50	

50 minutes

c)

Hours	Minutes
14	30
- 09	00
5	30

5 hours 30 minutes

T = $5\frac{1}{2}$hours

D = 275 km

S = D ÷ T

S = 275 km ÷ $5\frac{1}{2}$h

S = 275 km ÷ $\frac{11h}{2}$

S = 275 km x $\frac{2}{11h}$

S = 50km/h

27.

a)

42cm ÷ 3 = 14cm

14cm x 4 = 56cm

OR

$\frac{4}{3}$ x 42cm

4 x 14cm

56cm

b)

Manilla

A = LxW

A = 56cm x 42cm

A = 2352cm^2

Cards

A = πr^2 x 12

A = π x r x r x 12

A = $\frac{22}{7}$x$\frac{14}{2}$cmx$\frac{14}{2}$cmx12

A = 1848cm^2

Remaining area

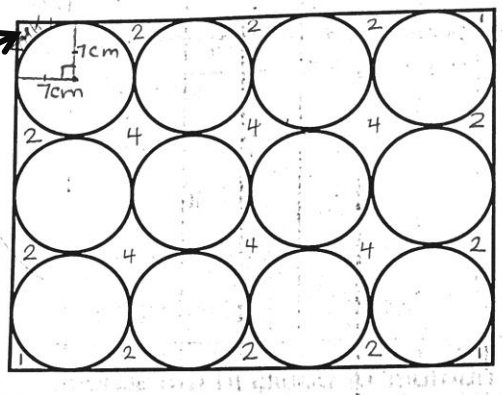
2352cm^2 – 1848cm^2

504cm^2

(NEW)

27. Lukwago cut out circular cards from a rectangular manilla paper whose width is 42 cm as shown in the diagram below. Study the diagram and answer the questions that follow.

$\frac{3}{14}$ of (SxS)



(a) Find the length of the manilla paper. *(02 marks)*

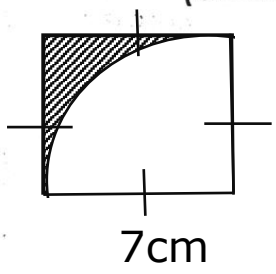
Radius of each circle

42 cm / 6

7 cm

Length of the manilla

(7 x 8) cm = 56 cm



(b) Calculate the area of the pieces of the manilla paper that remained. (Use $\pi = \frac{22}{7}$). *(04 marks)*

$A = \frac{3}{14} \times S \times S \times$ Number of quarter pieces

$A = \frac{3}{14} \times 7cm \times 7cm \times 48$

$A = \frac{3}{\cancel{14}_{2}} \times \frac{\cancel{7}^{1}cm}{1} \times 7cm \times \frac{\cancel{48}^{24}}{1}$

$A = 21 cm^2 \times 24$

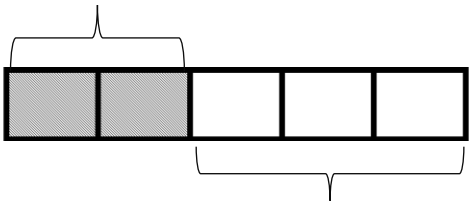
$A = 504 cm^2$

P.O.W

24
x21
124
+48
504

28.

a) Girls



Boys

Fraction for girls = $\frac{2}{5}$

OR

If girls = n

boys = $n + \frac{1}{5}$

Value of n

$n + n + \frac{1}{5} = 1$

$2n + \frac{1}{5} = 1$

$(5 \times 2n) + (5 \times \frac{1}{5}) = (1 \times 5)$

$10n + 1 = 5$

$10n + 1 - 1 = 5 - 1$

$\frac{10n}{10} = \frac{4}{10}$

$n = \frac{2}{5}$

Girls = $\frac{2}{5}$

OR

$(\frac{5}{5} - \frac{1}{5}) \div 2$

$\frac{4}{5} \div \frac{2}{1}$

$\frac{4}{5} \times \frac{1}{2}$

$\frac{2}{5}$

OR

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

20%

Girls --- n

Boys --- n+20%

Total --- 100%

Value of n

n+n+20% = 100%

2n + 20% = 100%

2n+20%-20% = 100%-20%

2n = 80%

$\frac{2n}{2} = \frac{80\%}{2}$

n = 40%

Girls

$40\% = \frac{40}{100}$

$= \frac{2}{5}$

OR

Let the number of parts for girls be n and boys n+1

Value of n

n+n+1 = 5

2n +1 = 5

2n+1-1=5-1

$\frac{2n}{2} = \frac{4}{2}$

n = 2

Since girls take 2 parts out of the 5 parts
so, girls = $\frac{2}{5}$

OR
Girls --- $\frac{n}{5}$
Boys --- $\frac{n+1}{5}$
Value of n
$\frac{n}{5} + \frac{n+1}{5} = \frac{5}{5}$
$(5x\frac{n}{5}) \; 5(\frac{n+1}{5}) = \frac{5}{5}x5$
$n+n+1 = 5$
$2n +1 = 5$
$2n+1-1=5-1$
$\frac{2}{2}n = \frac{4}{2}$
$n = 2$
Girls
$\frac{n}{5} = \frac{2}{5}$

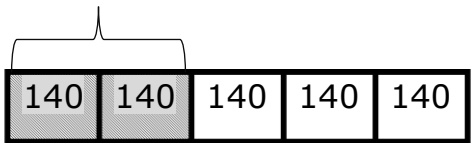
OR
$\frac{1}{5} = 1:5$
Girls --- n
Boys --- 5 – n
Value of n
$(5-n) - n = 1$
$5 - n - n = 1$
$5 - 2n = 1$
$5 - 5 - 2n = 1 - 5$
$-2n = -4$
$\frac{-2}{-2}n = \frac{-4}{-2}$
$n = 2$

$2:5 = \frac{2}{5}$

b) $280 \div \frac{2}{5}$
$280x\frac{5}{2}$
$140x5$
700 pupils

OR
2 parts ---- 280
1 part --- $\frac{280}{2}$
1 part --- 140
5 parts --- 140x5
5 parts --- 700 pupils

OR
280



280 ÷ 2 = 140

140+140+140+140+140
700 pupils

OR
Let the total number of pupils be n

$\frac{2}{5}$ of n = 280

$\frac{2}{5} \times n = 280$

$\frac{2n}{5} = 280$

$5 \times \frac{2n}{5} = 280 \times 5$

$2n = 280 \times 5$

$\frac{2n}{2} = \frac{280 \times 5}{2}$

$n = 140 \times 5$

$n = 700$ pupils

OR

$\frac{2}{5} = \frac{2}{280} : \frac{5}{??}$

$\frac{5}{2} \times 280$

5×140

700 pupils

29. a)

$180^0(n-2) =$ Int.< sum

$180^o(n-2) = 1800^o$

$180^o(n-2) = 1800^o$

$\frac{180^o}{180^o} \quad \frac{1800^o}{180^o}$

$n - 2 = 10$

$n-2+2 = 10 + 2$

$n = 12$sides

OR

$180^o(n-2) = 1800^o$

$180^on - 360^o = 1800^o$

$180^on = 1800^o + 360^o$

$180^on = 2160^o$

$\frac{180^on}{180^o} = \frac{2160^o}{180^o}$

$n = 12$ sides

OR

Number of triangles

$1800^o \div 180^o = 10$

Number of sides

$10 + 2 = 1$

2 sides

OR

$\left(\frac{1800^o}{180^o}\right) + 2$

$10 + 2$

12 sides

b)

$\frac{360^o}{\text{Sides}}$

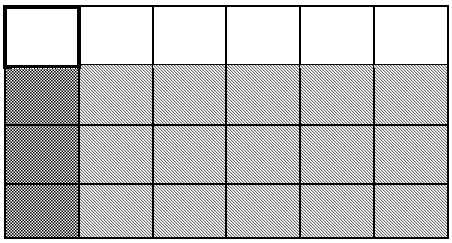
360^o

12

30^o

OR
Each interior angle
$1800^o \div 12 = 150^o$
Each exterior angle
$180^o - 150^o = 30^o$

30.



Parts shaded once represents amount of water sold.

$\frac{15}{24} \times 4800$
15 x 200
3000 litres

OR

200	200	200	200	200	200
200	200	200	200	200	200
200	200	200	200	200	200
200	200	200	200	200	200

4800÷24 = 200 litres
200 x 15 = 3000 litres

OR
Fraction sold
$\frac{3}{4} - \frac{1}{6}$ of $\frac{3}{4}$
$\frac{3}{4} - \frac{1}{6} \times \frac{3}{4}$
$\frac{3}{4} - \frac{1}{8}$
$\frac{6 - 1}{8}$
$\frac{5}{8}$
Amount of water sold
$\frac{5}{8} \times 4800$
5 x 600
3000 litres

OR
$\frac{6}{6} - \frac{1}{6}$
$\frac{6 - 1}{6}$
$\frac{5}{6}$

Amount of water sold
$\frac{5}{6}$ of $(\frac{3}{4} \times 4800)$
$\frac{5}{6}$ of (3 x 1200)
$\frac{5}{6} \times 3600$
5 x 600
3000 litres

OR
Original capacity
$\frac{3}{4} \times 4800$
3 x 1200
3600 litres

Capacity remained
$\frac{1}{6} \times 3600$
3000 litres

Capacity sold
3600 litres
- 600 litres
3000 litres

b)
Number of jerrycans
$\frac{3000}{20}$
150 jerrycans

Amount of money
150 x sh 200
sh 30000

OR
$\frac{3000}{20} \times$ sh 200
sh 300 x 10
sh 3000

OR
$\frac{\text{sh } 200}{20} \times 3000$
sh 10 x 3000
sh 30000

31.
Let the cost of a pencil be *p*

Book --- *3p*
Pen --- *p + sh 300*

Value of p
3p = p + p + sh 300
3p = 2p + sh 300
3p-2p= 2p – 2p + sh 300
p = sh 300

Cost of a book
3p
3xp
3xsh 300
sh 900

32. a)

Science

OR
SCI

b)
Vertical scale
10 = 2
5
1sq rep 2pupils

(2x12) pupils
24 pupils

OR
20 + (2x2)
20 + 4
24 pupils

OR
30 – (2x3)
30 – 6
24 pupils

OR
12 x 10
5
12 x 2
24 pupils

C)
40x2
80 pupils

OR
40 x 10
5
8 x 10
80 pupils

OR
SST --- (6x2) = 12
ENG --- (8x2) = 16
MTC --- (12x2)=24
SCI --- (5x2) = 10
RE --- (9x2) = 18

Total
12+16+24+10+18
80 pupils

d)

8 x 100%
40
2 x 10%
20%

OR
8 -→ 1
40 5
As a percentage
1x20
5x20
20
100
20%

OR
2x8 = 16
16 x 100%
80
20%

END