MATHEMATICS

1. d. None

2. ~~100~~ 100 10^{100}

3.

4.

5. Resolving 1323 into factors

$1323 = (3 \times 3) \times (3 \times 7) \times 7$.

Hence all factors cannot be grouped therefore 1323 cannot be multiplied by 7.

3	1323
3	441
3	147
7	49
7	7
	1

6. $\frac{2.7}{18} \times 100\%$.

$= \frac{2.7}{18_2} \times \frac{50}{100}\%$.

$= \frac{3}{10} \times 50\%$

$= 15\%$.

$\frac{2.7}{9} \times 50$

$= \frac{27^3}{10} \times \frac{1}{9} \times 5$

$\frac{27}{10} \div 9$

$= \frac{27^3}{10} \times \frac{1}{9}$

7. $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$\Rightarrow 36 = 15 + 21 - n(A \cap B)$

$\Rightarrow 36 - 36 = n(A \cap B)$

$\Rightarrow 0 = n(A \cap B)$

8. $\begin{array}{r} 5A \\ \times\ A \\ \hline 399 \end{array}$ $A = 7$ Because $\begin{array}{r} 57 \\ \times\ 7 \\ \hline 399 \end{array}$

3.

Number of men	30	x
Number of days	12	24

i)

ii)

$\Rightarrow 30 : x = 12 : 24$

iii)

$\Rightarrow \frac{30}{x} = \frac{12}{24}$

i)

$\Rightarrow 12x = 30 \times 24$

$\Rightarrow x = \frac{30 \times 24}{12} = 60$

Q10. a) commutative law of addition

$\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$ $\quad \frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$

$\frac{8}{12} \times \frac{4}{4} = \frac{32}{48}$ $\quad \frac{9}{12} = \frac{9 \times 4}{12 \times 4} = \frac{36}{48}$

These numbers between are $\frac{33}{48}, \frac{34}{48}, \frac{35}{48}$.

12. $(12)^{-2} \times 4^3$

$= \frac{1}{(12)^2} \times 4^3$

$= \frac{1}{144} \times 64$

$= \frac{4}{9}$

13. long rope is cut into 12 equal pieces

14. LCM of denominators =

$\frac{8}{7} = \frac{8 \times 40}{7 \times 40} = \frac{320}{280}$

$\frac{-9}{8} = \frac{-9 \times 70^{35}}{8 \times 70\ 35} = \frac{-630}{280}$ $\frac{-315}{280}$

$\frac{-3}{2} = \frac{-3 \times 140}{2 \times 140} = \frac{-420}{280}$

$0 = \frac{0 \times 280}{1 \times 280} = 0$

$\frac{2}{5} = \frac{2 \times 96}{5 \times 96}$ $= \frac{192}{280}$ $\frac{112}{280}$

2	7, 8, 2, 1, 5
2	7, 4, 1, 1, 5
2	7, 2, 1, 1, 5
7	7, 1, 1, 1, 5
5	1, 1, 1, 1, 5
	1, 1, 1, 1, 1

$2 \times 2 \times 2 \times 7 \times 5 = 280$

$\begin{array}{r} 35 \\ \times 8 \\ \hline 280 \end{array}$

$\therefore \frac{320}{280} > \frac{192}{480} > 0 > \frac{-420}{280} > \frac{-630}{280}$ $5)480(96$

$\Rightarrow \frac{8}{7} > \frac{2}{5} > 0 > \frac{-3}{2} > \frac{-9}{8}$

15. Additive inverse of 7 = −7

Multiplicative inverse of 7 = $\frac{1}{7}$

Sum of additive inverse and multiplicative inverse of 7 = $-7 + \frac{1}{7}$

$= \frac{(-7 \times 7) + (1 \times 1)}{7}$

$= \frac{-49 + 1}{7}$

$= \frac{-48}{7}$

16. Perimeter of ~~rectangular~~ triangle $= 8y^2 - 9y + 4$

Two sides of triangle are $3y^2 - 5y$ and $4y^2 + 12$,

& Third side of triangle $= (8y^2 - 9y + 4) - (3y^2 - 5y + 4y^2 + 12)$

$= 8y^2 - 9y + 4 - (3y^2 + 4y^2 - 5y + 12)$

$= 8y^2 - 9y + 4 - (7y^2 + 12 + 5y)$

$= 8y^2 - 9y + 4 + 7y^2 - 12 + 5y$

$= 8y^2 + 7y^2 - 9y + 5y + 4 - 12$

$= 15y^2 - 4y - 8$

Two sides of triangle are $3y^2 - 5y$ and $4y^2 + 12$.

Sum of two sides of triangle $= (3y^2 - 5y) + (4y^2 + 12)$

$= 3y^2 - 5y + 4y^2 + 12$

$= 3y^2 + 4y^2 - 5y + 12$

$= 7y^2 - 5y + 12$

Third side of triangle = Perimeter of triangle - sum of two sides of triangle

$= (8y^2 - 9y + 4) - (7y^2 - 5y + 12)$

$= 8y^2 - 9y + 4 - 7y^2 + 5y - 12$

$= (8 - 7)y^2 (.$

$= 8y^2 - 7y^2 - 9y + 5y + 4 - 12$

$= y^2 - 4y - 8$

17. A can do a piece of work in 20 days.

$\therefore$ A's 1 day's work $= \frac{1}{20}$

12) B can do a piece of work in 15 days.

$\therefore$ B's 1 day's work $= \frac{1}{15}$

$(A+B)$'s 1 day's work $= \frac{1}{15} + \frac{1}{20}$

$= \frac{4+3}{60}$

$= \frac{7}{60}$

3	15, 20
2	5, 20
2	5, 10
5	5, 5
	1, 1

$3 \times 2 \times 2 \times 5$

$= 60$

$(A+B)$'s 6 day's work $= \frac{7}{60} \times 6^{1} = \frac{7}{10}$

Remaining work $= 1 - \frac{7}{10}$

$= \frac{10-7}{10}$

$= \frac{3}{10}$

According To question B can do a piece of work in 15 days.

$\therefore$ B can do the remaining work in $= 15 \times \frac{3}{10_2}$

$= \frac{9}{2}$ days

18. i) Principal = Rs 630
Interest = Rs 126
Time = 4 years
Rate = $\frac{100 \times I}{P \times T} = \frac{100 \times 126}{630 \times 4} = \frac{25}{5}\%$

ii) For simple interest
let the Principal be 100
Amount = 200
Interest = 100
Time = 6 years
Rate = $\frac{100 \times 100}{100 \times 6} = 16.66\%$

[630]

7 | 630, 126
9 | 90, 18
2 | 10, 2
5 | 5, 1

63 × 2 = 126
126 × 5 = 630

6 | 100 | 16.66
6
40
36
40
36
40

19. SI = $\frac{₹7500 \times 2 \times 8}{100}$ = ₹280

C.I.
For 1st year
Principal = Rs 7500
Rate = 8%
Time = 1 year
Interest = $\frac{7500 \times 8 \times 1}{100}$ = ₹600
Amount at end of 1st year = ₹7500 + ₹600 = ₹8100
For 2nd year
Principal = ₹8100
Rate = 8%
Time = 1 year
Interest = $\frac{8100 \times 1 \times 8}{100}$ = ₹648
Amount = 8100 + 648 = ₹8748

CI = Amount − Principal

= ₹8748 − ₹7500

= ₹1248

7500
8 8748
7500
1248

20. Let price of 100 kg sugar be Rs 100.

Price of sugar after it is increased by 25% = Rs 100 + 25 = Rs 125.

Percentage the price should be decreased = $\left(\frac{125-100}{125} \times 100\%\right)$

$= \left(\frac{25}{125} \times \frac{20}{100}\right)\%$ $= 20\%$.

21. ?

Peter

~~Mohan~~

22. Amount of money Peter paid = $\frac{100 \times 912}{100-5\%}$

$= \frac{100 \times 912}{95}$

$= 960$

Amount John paid = $\frac{100 \times 960}{100+20\%}$

$= \frac{\cancel{100} \times \cancel{960}\ 160}{\cancel{120}\ \cancel{6}}$

$= ₹\ 800$.

160
x5

23. i) SP of the scooter for Rahim = Rs 14,490

Profit % = 5%.

CP for Rahim = $\frac{100 \times 14490}{(100+5)\%}$

$= \frac{^{20}\cancel{100} \times \cancel{14490}\ 690}{\cancel{105}\ \cancel{21}}$

$=$ Rs 13800

21 | 14490 | 690
126
189
189
0

ii) SP of scooter of Mr Rajesh = Rs 13350 / 13350

Loss % = 8%

GP of scooter for Mr Rajesh = $\frac{100 \times 13350}{100 - 8}$

$= \frac{100 \times 13350}{92}$

$= \frac{100 \times 1335000}{9225}$

$= 215000$

23 | 13350 | 56
115
188
138
500

25 - 24. $\frac{5}{6}$ and $\frac{8}{9}$

LCM of denominator 6 and 9 is 18

2 | 6, 9
3 | 3, 9
3 | 1, 3
  | 1, 1

$\frac{5}{6} = \frac{5 \times 3}{6 \times 3} = \frac{15}{18}$

$\frac{8}{9} = \frac{8 \times 2}{9 \times 2} = \frac{16}{18}$

$\frac{15}{18} = \frac{15 \times 5}{18 \times 5} = \frac{75}{90}$

$\frac{16}{18} = \frac{16 \times 5}{18 \times 5} = \frac{80}{90}$

4 rational number between $\frac{5}{6}$ and $\frac{8}{9}$ are

$\frac{75}{90}$, $\frac{76}{90}$, $\frac{77}{90}$, $\frac{78}{90}$, $\frac{79}{90}$

25. i) $\sqrt{7.84} + \sqrt{78400}$

=

	20
2	7.84
+ 2	4
40	3 8
	0

26. i) ~~ii)~~ Single to

~~iii) ii)~~ $B = \{y : 2y + 1 < 3 \text{ and } y \in W\}$

$\Rightarrow$

ii) $A = \{x : 7x - 3 = 11\}$

$\Rightarrow 7x - 3 = 11$

$\Rightarrow 7x = 11 + 3$

$\Rightarrow 7x = 14$

$\Rightarrow x = \frac{14}{7} = 2$

$A = \{2\}$

iii)

27. $CP = \frac{100 \times 6~~37~~ 94}{94 + 15}$ = Rs ~~9~~00

~~SA~~ CP = Rs 700, Profit % 5%

$SP = $ ~~100+~~ $\frac{100 + 5}{100} \times 7.00$

$= \frac{105}{100} \times 7~~00~~$

= R 5735

28. 3 men = 6 boys

$\Rightarrow$ 1 man = $\frac{6}{3} \times 3 = 18$ boys

i) 4 men = 12 boys

ii) 1 men = $12 \times 4 = 48$

iii)

Number of boys	18	48
Number of days	20	x

iv)

$48x = \frac{18 \times 20}{36}$ 7

$\Rightarrow x = \frac{18 \times 20}{48}$ 5 $= 15$

28. 3 men = 6 boys

1 man = $\frac{6}{3} = 2$ boys

3 man + 12 man = 15 man

4 men + 12×2 men

$= 4$ men $+ 24$

$= 28$ men

Number of days	20	x
Number of men	15	28

$20 : x = 28 : 15$

$\Rightarrow \frac{20}{x} = \frac{28}{15}$

$\Rightarrow x = \frac{20 \times 15}{28}$ 5 $= \frac{75}{7}$ days

29. Number of day | 20 | x
Amount of money | 2,480 | 6944

$20 : x = 6944 : 2480$

$\Rightarrow \frac{20}{x} = \frac{6944}{2480}$

$\Rightarrow x = \frac{2480 \times 20}{6944}$

$8 : 5 = 4x : 20 = 2480 : 6944$

$\Rightarrow \frac{8}{5} = \frac{x}{20} = \frac{2480}{6944}$

$\Rightarrow 5 \times x \times 6944 = 8 \times 20 \times 2480$

$\Rightarrow$

$\frac{8x}{5 \times 20} = \frac{2480}{6944}$

$\frac{x}{20} = \frac{8 \times 6944}{5 \times 2480}$

$\therefore x = \frac{20 \times 8 \times 6944}{5 \times 2480}$

$x = \frac{2480 \times 5 \times 20}{6944 \times 8}$

$x \times 5 \times 2480 =$

$\frac{8 \times 2480}{5 \times 6944} \quad \frac{5 \times 2480 \times 20}{5 \times 6944 \times 20 \times 2480} =$

$\frac{x}{20} =$

$\frac{5 \times 6944}{8 \times 2480}$

$\therefore x =$

$\{x : x^2 - 9x + 10 = 0\}$

$-10 + 1 = -9$

$x^2 - 9x - 10 = 0$

$\Rightarrow x^2 - 10x + 1x - 10 = 0$

$\Rightarrow x(x-10) + 1(x-10) = 0$

$\Rightarrow (x-10)(x+1) = 0$

$\Rightarrow x - 10 = 0$ or $x + 1 = 0$

$\Rightarrow x = 10$ or $x = -1$

$\therefore$ is $\{10, -1\}$

$B = \{ y : 2y+1 < 3 \}, y \in W \}$

$2 \times 1 + 1$

$= 2 + 1$

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

$2y + 1 \leq 3$

$B = \{0\}$ y must be a whole

$2y + 1$

$= 2 \times 1 + 1$

$= 2 + 1 = 3$

here 3 is ≤ 3

so $2 \times 0 + 1$

$= 0 + 1$

$= 1$

hence $B = \{0\}$ —