

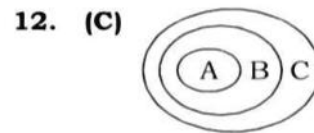
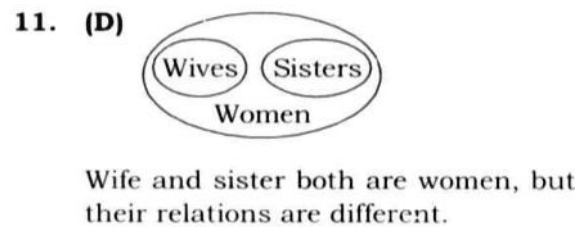
> **ANSWER KEY**

- | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 1. (b) | 2. (d) | 3. (b) | 4. (a) | 5. (c) | 6. (c) | 7. (b) | 8. (c) | 9. (d) | 10. (b) |
| 11. (d) | 12. (c) | 13. (b) | 14. (a) | 15. (b) | 16. (b) | 17. (a) | 18. (d) | 19. (b) | 20. (b) |
| 21. (c) | 22. (d) | 23. (a) | 24. (c) | 25. (c) | 26. (b) | 27. (b) | 28. (b) | 29. (b) | 30. (d) |
| 31. (c) | 32. (a) | 33. (b) | 34. (a) | 35. (b) | 36. (a) | 37. (b) | 38. (c) | 39. (b) | 40. (b) |
| 41. (d) | 42. (a) | 43. (b) | 44. (d) | 45. (a) | 46. (d) | 47. (b) | 48. (a) | 49. (c) | 50. (a) |
| 51. (b) | 52. (b) | 53. (b) | 54. (a) | 55. (a) | 56. (b) | 57. (c) | 58. (b) | 59. (a) | 60. (d) |
| 61. (d) | 62. (c) | 63. (d) | 64. (b) | 65. (d) | 66. (a) | 67. (c) | 68. (a) | 69. (c) | 70. (b) |
| 71. (d) | 72. (d) | 73. (b) | 74. (d) | 75. (a) | 76. (c) | 77. (a) | 78. (b) | 79. (c) | 80. (b) |
| 81. (d) | 82. (c) | 83. (c) | 84. (c) | 85. (d) | 86. (b) | 87. (b) | 88. (d) | 89. (c) | 90. (d) |
| 91. (b) | 92. (d) | 93. (d) | 94. (d) | 95. (c) | 96. (a) | 97. (b) | 98. (a) | 99. (d) | 100. (d) |

Hint & Solutions

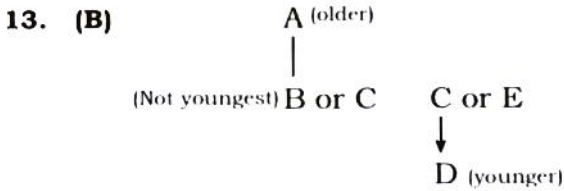
1. (B) $5 : 26 :: 8 : \boxed{65}$
 $\begin{array}{|c|c|} \hline 5^2 + 1 \\ \hline \end{array} \uparrow \quad \begin{array}{|c|c|} \hline 8^2 + 1 \\ \hline \end{array} \uparrow$
2. (D) Writer writes books. Similarly,
Composer compose **Songs**.
3. (B) $BD : 8 :: GF : \boxed{42}$
 $\begin{array}{|c|c|} \hline 2 \times 4 \\ \hline \end{array} \uparrow \quad \begin{array}{|c|c|} \hline 7 \times 6 \\ \hline \end{array} \uparrow$
4. (A) Flourish, prosper and thrive all are represent development (growth), but **Excite** is represent emotion (feelings).
5. (C) [24-84], their factors are 2, 4 and 6. [34-76], their factor is 2. **[23-64]**, their is no factor. Hence, they are co-prime numbers. [38-76], their factor is 2. So, only option 'C' have a co-prime numbers.
6. (C) (A) $\begin{array}{cccc} 1 & 2 & 4 & 7 \\ A & B & D & G \\ \hline +1 & +2 & +3 & \end{array}$
 (B) $\begin{array}{cccc} 5 & 6 & 8 & 11 \\ E & F & H & K \\ \hline +1 & +2 & +3 & \end{array}$
 (C) $\begin{array}{cccc} 17 & 16 & 14 & 11 \\ \boxed{Q} & \boxed{P} & \boxed{N} & \boxed{K} \\ \hline -1 & -2 & -3 & \end{array}$
 (D) $\begin{array}{cccc} 12 & 13 & 15 & 18 \\ L & M & O & R \\ \hline +1 & +2 & +3 & \end{array}$
7. (B) $\begin{array}{ccccccc} 4 & 13 & 16 & 6 & 12 & 14 & 8 & 11 & 12 & 10 & 10 & 10 & 12 & 9 & 8 \\ DMP & FLN & HKL & JJJ & \boxed{LIH} \\ \hline +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 \\ -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 \\ -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 & -2 \end{array}$
8. (C) $1 \quad 2 \quad 8 \quad \boxed{33} \quad 148 \quad 765$
 $\begin{array}{|c|c|c|c|c|c|} \hline 1 \times 2 + 1 \\ \hline \end{array} \uparrow \quad \begin{array}{|c|c|c|c|c|c|} \hline 2 \times 2 + 2 \\ \hline \end{array} \uparrow \quad \begin{array}{|c|c|c|c|c|c|} \hline 8 \times 3 + 3 \\ \hline \end{array} \uparrow \quad \begin{array}{|c|c|c|c|c|c|} \hline 33 \times 4 + 4 \\ \hline \end{array} \uparrow \quad \begin{array}{|c|c|c|c|c|c|} \hline 148 \times 5 + 5 \\ \hline \end{array} \uparrow$

9. (D) cut/**but**/hut/**sut**
10. (B) From the choices:
 (A) Inserting the signs (-, +)
 We get,
 $(7 - 3) + 6 = 24$ [Use 'BODMAS' rule]
 $4 + 6 = 24 \Rightarrow 10 \neq 24$
 (B) Inserting the signs (-, ×)
 We get,
 $\boxed{(7 - 3) \times 6 = 24}$ [Use 'BODMAS' rule]
 $4 \times 6 = 24 \Rightarrow 24 = 24$
 (C) Inserting the signs (-, ÷)
 We get,
 $(7 - 3) \div 6 = 24$ [Use 'BODMAS' rule]
 $4 \div 6 = 24 \Rightarrow 0.66 \neq 24$
 (D) Inserting the signs (+, ×)
 We get,
 $(7 + 3) \times 6 = 24$ [Use 'BODMAS' rule]
 $10 \times 6 = 24 \Rightarrow 60 \neq 24$



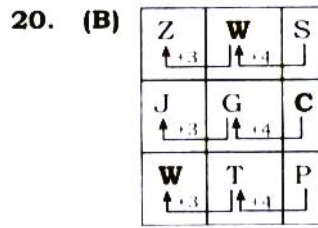
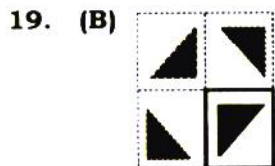
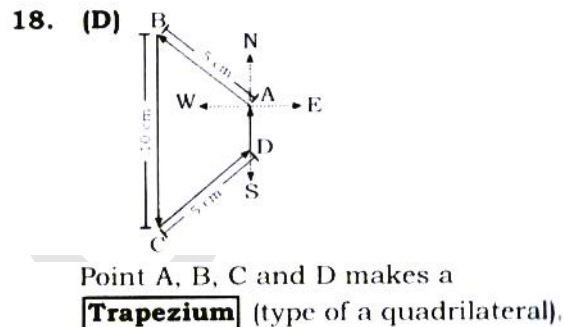
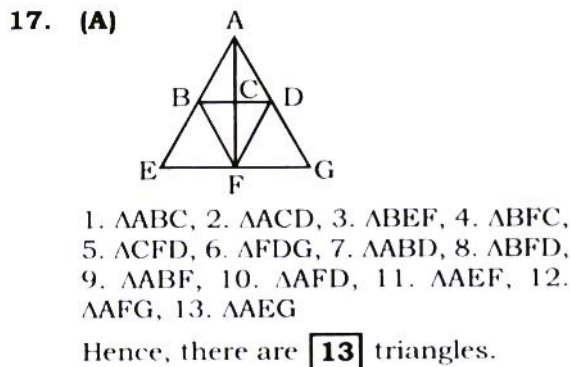
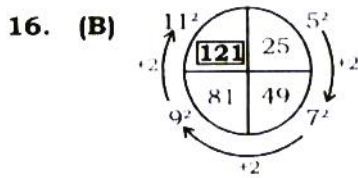
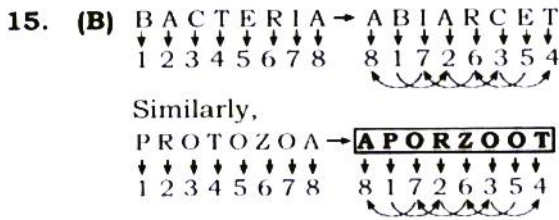
- Conclusions:**
- I. Because 'C' covers all part of 'A'. Hence, Some 'C' are 'A' is **true**.
 - II. All 'A' is cover by 'C'. Hence, All 'A' are 'C' is **true**.

Hence, both the conclusions I and II follow



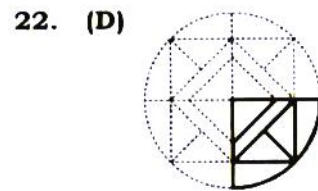
According to the information, B is not youngest. A, C and E are older than D. Hence; **D** is youngest.

14. (A) Through given letters 'EYDSNY'. 'SYDNEY' name will be formed and 'SYDNEY' is a **city** of Australia.

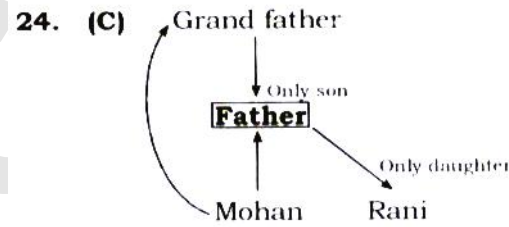


Hence, the missing characters are **WCM**.

21. (C) Solving from the options.
 (A) 11, 66, 33, 96
 (B) 11, 67, 32, 97
 (C) **31, 87, 32, 97**
 (D) 31, 66, 33, 97



23. (A) **PARAMOUNT**



Mohan's grand-father's only son is Mohan's father
 Father's only daughter \rightarrow Mohan's sister

Sister's father = Mohan's Father

25. (C)

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    L       4th       R
    | | | | |
    | | | | |
    | | | | |
    | | | | |
    | | | | |
    Mohan
    
```

Total number of student
 = Position from left + Position from Right - 1
 = 4 + 4 - 1 = **7**

51. A does $\frac{1}{3}$ part of work = 5 days
 \therefore A does a complete work
 \therefore B does the $\frac{2}{5}$ part of work
 = 10 days
 \therefore B does whole work = 25 days
 One days work of A and B together
 = $\frac{1}{15} + \frac{1}{25} = \frac{8}{75}$

52. Efficiency of pipes

$$E_P = \frac{1}{4} \text{ units/hr}$$

$$E_Q = \frac{1}{8} \text{ units/hr}$$

$$E_R = \frac{1}{12} \text{ units/hr}$$

$$E_S = -\frac{1}{10} \text{ units/hr}$$

As we know that A pipe which has maximum efficiency rate, takes minimum time

∴ Combination that will take minimum time to fill tank

$$= P \text{ and R are open}$$

53. $(0.\overline{1})^2(1 - 9(0.\overline{16})^2)$

$$= \left(\frac{1}{9}\right)^2 \left[1 - 9\left(\frac{16-1}{90}\right)^2\right]$$

$$= \frac{1}{81} \left[1 - 9\left(\frac{1}{6}\right)^2\right]$$

$$= \frac{1}{81} \left[1 - \frac{1}{4}\right] = \left[\frac{1}{108}\right]$$

$$54. \frac{9}{20} - \left\{ \frac{1}{5} + \left\{ \frac{1}{4} + \left(\frac{5}{6} - \frac{1}{3} + \frac{1}{2} \right) \right\} \right\}$$

$$= \frac{9}{20} - \left\{ \frac{1}{5} + \left\{ \frac{1}{4} + \left(\frac{5}{6} - \frac{5}{6} \right) \right\} \right\}$$

$$= \frac{9}{20} - \left\{ \frac{1}{5} + \frac{1}{4} \right\} = \frac{9}{20} - \frac{9}{20}$$

$$= 0$$

55. Let the incomes of persons be $5x$ and $3x$

$$\therefore \frac{5x - 1300}{3x - 900} = \frac{9}{5}$$

$$\Rightarrow x = 800$$

So, their incomes are

$$5x = 5 \times 800 = 4000$$

$$3x = 3 \times 800 = 2400$$

56. Ajay spends time in the office during a week

$$= 8 \times 6 = 40$$

$$\therefore \text{Required percentage} = \frac{40}{7 \times 24} \times 100 = 2381\%$$

57. Marked price of article Rs = 500

Let selling price of article be Rs x

∴ S.P including 10% sales tax/10%

$$x + x \times 10\% = 500$$

$$x = \frac{500}{1.10} \times 100$$

$$= \frac{5000}{11}$$

% Discount

$$= \frac{\left(500 - \frac{5000}{11}\right) \times 100}{500}$$

$$= \frac{1}{11} \times 100$$

$$= 9\frac{1}{11}\%$$

58. Let cost price $-3x$

$$\therefore S.P = 3x + 3x \times 33\frac{1}{3}\%$$

$$= 4x$$

After 12% increment in cost of production

New CP

$$= 3x + 12\% \text{ of } 3x$$

$$= \frac{336}{100}x$$

After 10% increment in S.P = 10%

New S.P

$$= 4x + 10\% \times 4x = \frac{440}{100}x$$

$$\therefore \% \text{ profit} = \frac{\frac{440x}{100} - \frac{336}{100}x}{\frac{336}{100}x}$$

$$= 30\frac{20}{21}\%$$

59. Let sum Rs = x , rate

S.I for 2 years

S.I.

$$= \frac{x \times r \times 2}{100}$$

New rate

$$= r + 3$$

New S.I.

$$= \frac{x + (r + 3) \times 2}{100} \dots (ii)$$

$$\therefore \frac{x + (r + 3) \times 2}{100} - \frac{x \times r \times 2}{100} = 72$$

$$\Rightarrow 3x = 3600$$

$$\Rightarrow x = 1200$$

$$\therefore \text{Sum} = 1200$$

60. Let sum = x

Total amount after 2 years, at $12\frac{1}{2}\%$

$$A = x \left[1 + \frac{r}{100} \right]^2$$

$$\Rightarrow A = x \left[1 + \frac{12\frac{1}{2}}{100} \right]^2$$

$$= x \left[1 + \frac{1}{8} \right]^2 = \frac{81}{64}x$$

$$\therefore C.I = \frac{81}{64}x - x$$

$$\Rightarrow \frac{17x}{64} = 510$$

$$\Rightarrow x = 64 \times 30 = 1920$$

∴ Simple Interest

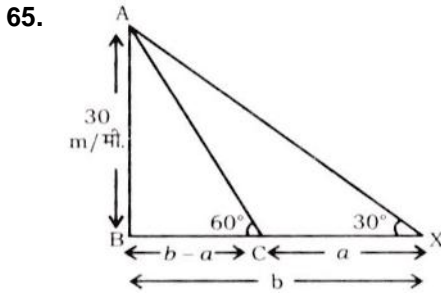
$$\begin{aligned} \Rightarrow &= \frac{x \times r \times t}{100} \\ &= \frac{1920 \times 2 \times 25}{100 \times 2} \\ &= 480 \end{aligned}$$

62. Numbers between 200 and 299 be
(203, 213, 233, 243, 253, 263, 273, 283, 293) = 10
Number between 300 and 399 be
∴ Total numbers = 110

63. The portion filled by stones and soil
- $$\begin{aligned} &= \frac{\pi \times r^2 \times H}{l \times b \times h} \\ &= \frac{\frac{22}{7} \times 2 \times 2 \times 56}{48 \times 16.5 \times 4} \\ &= \frac{2}{9} \text{ part} \end{aligned}$$

64. Volume of water = $3m \times 40m \times \frac{2km}{60}$
- $$= \frac{3 \times 40 \times 2000}{60} = 4000 \text{ m}^3$$
- ∴ 1 m³ = 1000 litres

∴ Volume of water



In $\triangle ABX$ / $\triangle ABX$

$$\tan 30^\circ = \frac{30}{b} \Rightarrow \frac{1}{\sqrt{3}} = \frac{30}{b}$$

$$b = 30\sqrt{3}$$

In $\triangle ABC$ / $\triangle ABC$

$$\tan 60^\circ = \frac{30}{(b-a)}$$

$$\sqrt{3} = \frac{30}{b-a} \Rightarrow b-a = 10\sqrt{3}$$

Put the value of b in equation (ii)

$$30\sqrt{3} - a = 10\sqrt{3}$$

$$a = 20\sqrt{3}$$

∴ Distance moves by the man

66. $\sec^2 \theta - \frac{\sin^2 \theta - 2 \sin^4 \theta}{2 \cos^4 \theta - \cos^2 \theta}$
- $$= \sec^2 \theta - \frac{(1 - 2 \sin^2 \theta) \sin^2 \theta}{(2 \cos^2 \theta - 1) \cos^2 \theta}$$
- $$= \sec^2 \theta - \frac{\cos 2\theta \cdot \sin^2 \theta}{\cos 2\theta \cdot \cos^2 \theta} \times \tan^2 \theta$$

$$= \sec^2 \theta - \tan^2 \theta = 1$$

67. $x = a(\sin \theta + \cos \theta)$

$$\Rightarrow \frac{x}{a} = (\sin \theta + \cos \theta)$$

$$y = b(\sin \theta - \cos \theta)$$

$$\Rightarrow \frac{y}{b} = \sin \theta - \cos \theta$$

Now $\frac{x^2}{a^2} + \frac{y^2}{b^2}$

$$= (\sin \theta + \cos \theta)^2 + (\sin \theta - \cos \theta)^2$$

$$= 2(\sin^2 \theta + \cos^2 \theta) = 2$$

68. $(r \cos \theta - \sqrt{3})^2 + (r \sin \theta - 1)^2 = 0$

$$\therefore r \cos \theta - \sqrt{3} = 0$$

$$r \sin \theta = 1$$

After taking square of both sides

$$r^2 = 3 + 1 \Rightarrow r = 2$$

From equation $\theta = 30^\circ$

$$\therefore \frac{r \tan \theta + \sec \theta}{r \sec \theta + \tan \theta} = \frac{2 \times \frac{1}{\sqrt{3}} + \frac{2}{\sqrt{3}}}{2 \times \frac{2}{\sqrt{3}} + \frac{1}{3}} = \frac{4}{5}$$

69. $\therefore (2a-1)^2 + (4b-3)^2 + (4c+5)^2 = 0$

$$\therefore a = \frac{1}{2}, b = \frac{3}{4}, c = -\frac{5}{4}$$

$$\therefore a + b + c = \frac{1}{2} + \frac{3}{4} - \frac{5}{4} = 0$$

$$\therefore a^3 + b^3 + c^3 - 3abc = 0$$

$$\therefore \frac{a^3 + b^3 + c^3 - 3abc}{a^2 + b^2 + c^2} = 0$$

70. $x^2 + \frac{1}{x^2} = 1$

$$\therefore x + \frac{1}{x} = \sqrt{3}$$

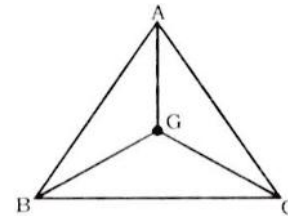
$$\therefore x^3 + \frac{1}{x^3} = 0 \Rightarrow x^6 + 1 = 0$$

$$\therefore x^{102} + x^{96} + x^{90} + x^{84} + x^{78} + x^{72} + 5$$

$$= x^{96}(x^6 + 1) + x^{84}(x^6 + 1) + x^{72}(x^6 + 1) + 5$$

$$= 5$$

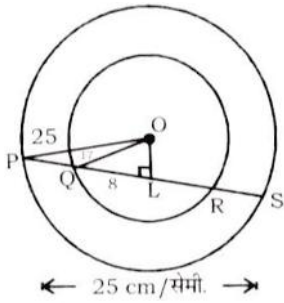
- 71.



Area of $\triangle abc / \triangle abc = 60 \text{ cm}^2$

$$= \frac{1}{3} \times 70 = 20 \text{ cm}^2$$

72.



$$OP = 25\text{cm}$$

$$OQ = 17\text{ cm}$$

In $\triangle OQL / \triangle OQL$

$$\begin{aligned} OL^2 &= OQ^2 - QL^2 \\ &= 17^2 - 8^2 = 289 - 64 \\ OL &= 15\text{cm} \end{aligned}$$

In $\triangle POL / \triangle POL$

$$\begin{aligned} OL^2 &= OP^2 - PL^2 \\ &= (25)^2 - (15)^2 \end{aligned}$$

$$\begin{aligned} PL^2 &= 400 \\ PL &= 20 \\ PS &= 2PL \\ &= 40\text{cm} \end{aligned}$$

\therefore

73. Total students = 800

$$= \frac{800}{360^\circ} \times 54^\circ = 120$$

74. Number of students who do not use institute Bus

$$= \frac{800}{360^\circ} \times 144^\circ = 320$$

75. Students who go on foot

$$= \frac{72^\circ}{360^\circ} \times 800 = 160$$

Gupta Classes