

> **ANSWER KEY MOCK 4 SOLUTIONS**

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

**Hint & Solutions**

1. (C)  $24 : 288 :: 22 : \boxed{242}$   
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow$   
 $24^2 + 2 \quad 22^2 + 2$
2. (B) Car repairs in garage. Similarly, Aircraft repairs in **Hanger**.
3. (C)  $14 \ 15$        $7 \ 19$   
 $N \times O : 14 \times 15 :: G \times S : \boxed{7 \times 19}$   
 $\downarrow \quad \uparrow$        $\downarrow \quad \uparrow$   
 Place value      Place value
4. (D)  $\begin{array}{ccc} C & N & D & Y \\ 3 & 14 & 4 & 25 \\ -1 & -1 & -1 & -1 \\ \hline 2 & 13 & 3 & 24 \\ B & M & C & X \end{array}$   
 Similarly,  
 $\begin{array}{ccc} E & X & F & W \\ 5 & 24 & 6 & 23 \\ -1 & -1 & -1 & -1 \\ \hline 4 & 23 & 5 & 22 \\ \boxed{D} & \boxed{W} & \boxed{E} & \boxed{V} \end{array}$
5. (B) Mint, Coriander and Rosemary all are plants, but **Peepal** is a tree.
6. (D) (A)  $\begin{array}{cccc} 26 & 24 & 23 & 21 \\ Z & X & W & U \\ -2 & -1 & -1 & -2 \\ \hline 12 & 10 & 14 & 13 \\ \boxed{Z} & \boxed{X} & \boxed{U} & \boxed{R} \end{array}$  (B)  $\begin{array}{cccc} 25 & 23 & 22 & 20 \\ Y & W & V & T \\ -2 & -1 & -1 & -2 \end{array}$   
 (C)  $\begin{array}{cccc} 23 & 21 & 20 & 18 \\ W & U & T & R \\ -2 & -1 & -1 & -2 \end{array}$  (D)  $\begin{array}{cccc} 12 & 10 & 14 & 13 \\ \boxed{Z} & \boxed{X} & \boxed{U} & \boxed{R} \\ -2 & -1 & -1 & -2 \end{array}$
7. (C)  
 (A) 9-27 : Both numbers are divisible by 3  
 (B) 9-12 : Both numbers are divisible by 3  
 (C) **15-19** : Only 15 is divisible by 3  
 (D) 21-27 : Both numbers are divisible by 3
8. (B) Solving from the options.  
 (A) 00, 30, 95, 78  
 (B) **30, 13, 65, 88**  
 (C) 41, 85, 10, 99  
 (D) 96, 75, 34, 58

9. (D) Page    Pain    Pair    Pall  
 1            2            3            4  
 Hence; **Pair** appear on the third position in English dictionary order.
10. (C) Cell    Tissue    Organ  
 2            1            3  
 Hence, the meaningful order is **2, 1, 3**
11. (B)  $\begin{array}{ccccccc} & \times 3 & & \times 3 & & \times 3 & & \times 3 \\ & \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 26 & 1 & 24 & 4 & 20 & 7 & 17 & 10 & 14 & 13 \\ Z3A & & W9D & & \boxed{T27G} & & O81J & & N243M \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +3 & +3 & +3 & +3 & +3 & +3 & +3 & +3 & +3 & +3 \end{array}$
12. (C)  $\begin{array}{ccccccc} 7 & 12 & 19 & 28 & 39 & \boxed{52} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +5 & +7 & +9 & +11 & +13 & +15 \end{array}$
13. (D)  $\begin{array}{cccc} \textcircled{D,E} & \textcircled{I,J} & \textcircled{O,P} & \textcircled{V,W} \\ BC, FGH, KLMN, \boxed{QRSTU}, XYZABC \end{array}$
14. (B) From the choices:  
 (A) Inserting the sign (+, -, ×)  
 We get,  
 $9 + 3 - 4 \times 6 = 29$  [Use 'BODMAS' rule]  
 $9 + 3 - 24 = 29 \Rightarrow 12 - 24 = 29$   
 $\Rightarrow -12 \neq 29$   
 (B) Inserting the sign (×, -, +)  
 We get,  
 $\boxed{9 \times 3 - 4 + 6 = 29}$  [Use 'BODMAS' rule]  
 $27 + 2 = 29 \Rightarrow 29 = 29$   
 (C) Inserting the sign (+, ×, -)  
 We get,  
 $9 + 3 \times 4 - 6 = 29$  [Use 'BODMAS' rule]  
 $9 + 12 - 6 = 29 \Rightarrow 15 \neq 29$   
 (D) Inserting the sign (×, +, -)  
 We get,  
 $9 \times 3 + 4 - 6 = 29$  [Use 'BODMAS' rule]  
 $27 - 2 = 29 \Rightarrow 25 \neq 29$



$$(\sqrt{x + 4\sqrt{x + 4\sqrt{x + 4}}} = x)$$

$$\begin{aligned} \therefore x^2 &= x + 4x \\ \therefore x^2 &= 5x \\ \therefore x &= 5 \end{aligned}$$

52.  $f(x) = \frac{1}{x^2 + 6x + 10}$

For maximum value  $f(x) = 0$

$$\frac{d}{dx} \left[ \frac{1}{x^2 + 6x + 10} \right] = 0$$

$$\frac{(x^2 + 6x + 10) \cdot 0 - 1(2x + 6)}{(x^2 + 6x + 10)^2} = 0$$

$$\begin{aligned} 2x + 6 &= 0 \\ x &= \frac{-6}{2} = -3 \end{aligned}$$

$$(f(x))_{\max} = \frac{1}{9 - 18 + 10} = 1$$

53. Min value of  $(a \cos^2 \theta + b \sec^2 \theta)$

When  $(a < b) / (a \cos^2 \theta + b \sec^2 \theta)$

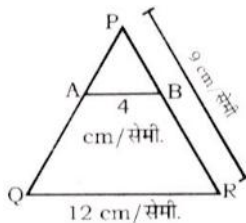
$$(a > b) = a + b$$

$$\begin{aligned} \therefore \text{Minimum value of } 5 \cos^2 \theta + 9 \sec^2 \theta \\ = 5 + 9 = 14 \end{aligned}$$

54.  $\frac{1 - \cos A}{1 + \cos A} \times \frac{1 - \cos A}{1 - \cos A}$

$$\begin{aligned} &= \frac{(1 - \cos A)^2}{1 - \cos^2 A} \\ &= \frac{(1 - \cos A)^2}{\sin^2 A} \\ &= \left( \frac{1 - \cos A}{\sin A} \right)^2 \end{aligned}$$

55.



$$\begin{aligned} AB &= 4 \text{ cm} \\ QR &= 12 \text{ cm} \\ PR &= 9 \text{ cm} \end{aligned}$$

In

$$\begin{aligned} \angle APB &= \angle QPR \\ \angle ABP &= \angle QRP \end{aligned}$$

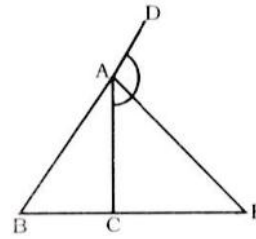
$$\therefore \Delta ABP \sim \Delta QRP$$

$$\frac{AB}{QR} = \frac{PB}{PR}$$

$$\therefore \frac{4}{12} = \frac{PB}{9}$$

$$\therefore PB = \frac{4 \times 9}{12} = 3 \text{ cm}$$

56.



In  $\Delta ABC$ ,  $AE$  is external bisector of  $\angle CAD / \Delta ABC$

$\therefore$  By external bisector theorem

$$\frac{AB}{AC} = \frac{BE}{CE}$$

Let

$$CE = x \text{ cm}$$

$$\therefore \frac{5}{3} = \frac{6 + x}{x}$$

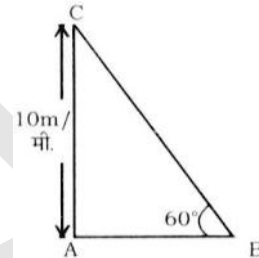
$$5x = 18 + 3x$$

$$5x - 3x = 18$$

$$2x = 18, x = 9 \text{ cm}$$

$$\therefore CE = 9 \text{ cm}$$

57.



Let  $AC$  is the height of a pole and  $B$  is the position of man

$$\therefore \tan 60^\circ = \frac{AC}{AB}$$

$$\therefore \frac{\sqrt{3}}{1} = \frac{10}{AB}$$

$$\therefore \sqrt{3}AB = 10$$

$$\therefore AB = \frac{10}{\sqrt{3}}$$

$$\therefore AB = \frac{10\sqrt{3}}{3}$$

$\therefore$  Distance of the person from the pole

$$= \frac{10\sqrt{3}}{3} \text{ m}$$

58. Let the sides of triangle be  $3x, 4x$  and  $5x$  units

$$\therefore (3x)^2 + (4x)^2 = (5x)^2$$

$$\therefore 9x^2 + 16x^2 = 25x^2$$

$\therefore$  The triangle is a right angled

$$\therefore \text{Area of triangle} = \frac{1}{2} \times 3x \times 4x = 6x^2$$

$$\therefore 6x^2 = 144$$

$$\therefore x^2 = 24$$

$$x = \sqrt{24} = 2\sqrt{6} \text{ units}$$

$\therefore$  Sides of triangle

$$= 3 \times 2\sqrt{6}, 4 \times 2\sqrt{6}$$

and

$$5 \times 2\sqrt{6} = 6\sqrt{6}, 8\sqrt{6}$$

$$= 6\sqrt{6} + 8\sqrt{6} + 10\sqrt{6}$$

$$= 24\sqrt{6}$$

$$\therefore 3a = 24\sqrt{6}$$

$$\therefore a = 8\sqrt{6} \text{ units}$$

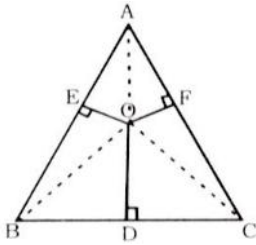
$\therefore$  Area of equilateral triangle

$$= \frac{\sqrt{3}}{4} \times a^2$$

$$= \frac{\sqrt{3}}{4} \times 8\sqrt{6} \times 8\sqrt{6}$$

$$= 96\sqrt{3} \text{ units}^2$$

59.



$ABC$  is an equilateral triangle of side  $a$  cm

$\therefore$  Area of  $\triangle ABC$

$$= \frac{1}{2} \times AB \times OE + \frac{1}{2} \times AC \times OF + \frac{1}{2}$$

$$\therefore \frac{\sqrt{3}}{4} a^2 = \frac{1}{2} \times a(OE + OF + OD)$$

$$\therefore AB = BC = CA = a$$

$$\therefore \frac{\sqrt{3}}{4} a^2 = \frac{1}{2} \times a(6 + 7 + 8)$$

$$\therefore \frac{\sqrt{3}}{4} a^2 = \frac{a}{2} \times 21$$

$$\therefore a = \frac{42}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = 14\sqrt{3} \text{ cm}$$

60. Ratio of capitals invested by A, B and C

$$= 5:6:8$$

Ratio of profits earned by A, B and C

$$= 10:15:24$$

$\therefore$  Ratio of time spent by A, B and C

$$= \frac{10}{5} : \frac{15}{6} : \frac{24}{8}$$

$$= 2 : \frac{5}{2} : 3 = 4:5:6$$

61. Let the average money spend by them is Rs  $x$ 

Total amount of money spend by 1-10 persons

$$= 30 \times 10 = 300$$

Money spend by 11th person

$$= x + 20$$

$\therefore$  Total amount spend by all person

$$= (320 + x)$$

$$\therefore 320 + x = 11x$$

$$\Rightarrow 320 = 10x$$

$$\therefore x = 32$$

Total money spend by all them

$$= 32 \times 11 = 352$$

62. Let  $x = 0.\overline{69}$ 

Multiplying both sides by 100

$$100x = 69.\overline{69}$$

$$-x = \overline{-69}$$

$$99x - 69$$

$$\therefore x = \frac{69}{99} = \frac{23}{33}$$

63.

$$\frac{3^\circ + 4^{-1}}{3^\circ - 4^{-1}} = \frac{1 + \frac{1}{4}}{1 - \frac{1}{4}} = \frac{\frac{4+1}{4}}{\frac{4-1}{4}} = \frac{5}{3}$$

$$= \frac{5}{4} \times \frac{4}{3} = \frac{5}{3}$$

64. B gives 5% start to A / B, A

$\therefore$  Ratio of distance travelled by A and B

$$= 95:100 = 19:20$$

Again C gives 10% start to B / C, B

$$= 10\%$$

$\therefore$  Ratio of distance travelled by B and C / B

$$\therefore A:B:C = 171:180:200$$

$\therefore$  start given by C to A in 200 m/race

$$= 200 - 171 = 29\text{m}$$

65. A completes  $\frac{1}{4}$  of work in 4 days

$$\therefore \text{Work done by A in 1 day} = \frac{1}{4 \times 4} = \frac{1}{16}$$

$\therefore$  Part of work completed by B in 8 days

$\therefore$  Part of work completed by B in 1 days

$$= \frac{2}{5 \times 8} = \frac{1}{20}$$

$\therefore$  Total work completed by A and B in 1

$$= \frac{1}{16} + \frac{1}{20} = \frac{5+4}{80} = \frac{9}{80}$$

$\therefore$  A and B together complete  $\frac{9}{80}$  work in 1 day

$\therefore$  A and B together complete 1 work in

$$= \frac{1}{\frac{9}{80}} = \frac{80}{9} = 8\frac{8}{9} \text{ days}$$

66.  $\therefore$  HCF is multiple of LCM, so from the given options, 12 is not multiple of 160

$$= 12$$

67. Increase in expenditure = 20%

Let the first expenditure  $x$

Now increased expenditure

$$= x + \frac{20}{100} \times x = \frac{6x}{5}$$

$$\text{Decrease in expenditure} = \frac{\frac{6x}{5} - x}{\frac{6x}{5}} \times 100$$

$$= \frac{x}{6x} = \frac{100}{6} \%$$

$$= 16\frac{2}{3} \%$$

68. Let the printed price of watch be Rs  $x$

Selling price of watch after allowing 20% discount

$$= \frac{x}{1} - \frac{20x}{100} = \frac{x}{1} - \frac{x}{5} = \frac{5x - x}{5} = \frac{4x}{5}$$

Cost price of watch

$$= \frac{4x}{5} \times \frac{100}{112} = \frac{5x}{8}$$

∴ Ratio of the cost price to printed price

$$= \frac{5x}{7} : x = 5:7$$

69. We know that =  $\frac{\text{Total amount}}{\text{Principal}}$

$$= \left(1 + \frac{r \times t}{100}\right)$$

$$\frac{6}{5} = \left(1 + \frac{rt}{100}\right)$$

$$rt = 20$$

After 3 years

$$\frac{3}{2} = 1 + \frac{r(t+3)}{100}$$

$$\frac{1}{2} = \frac{rt + 3r}{100}$$

$$\frac{1}{2} = \frac{20 + 3r}{100}$$

⇒

$$r = 10$$

∴ Interest rate

$$= 10\%$$

70. Amount of milk in first vessel

$$= \frac{5}{13}$$

Amount of milk in second vessel

$$= \frac{2}{13}$$

Amount of milk in mixture

$$= 16\frac{2}{3} \% = \frac{1}{6}$$

∴ Required ratio

$$= 1:17$$

71. Let the speed of boat is  $x$  km/h and the speed of stream is  $y$  km/h

∴ The speed of boat along the stream  
=  $(x + y)$  km/h

The speed of boat against the stream  
=  $(x - y)$  km/h

$$\therefore x + y = \frac{1}{10} = \frac{60}{10} = 6$$

$$x - y = \frac{3}{1} = 3$$

Subtract eq. (ii) from (i)

$$x + y = 6$$

$$x - y = 3$$

$$\begin{array}{r} - \\ + \\ - \end{array}$$

$$\therefore 2y = 3$$

$$\therefore y = \frac{3}{2}$$

Speed of the stream

$$= 1.5 \text{ km/h}$$

72. Let

$$a:b:c = 5x:7x:8x$$

$$\therefore a + b = 5x + 7x = 12x$$

$$a + b + c = 5x + 7x + 8x = 20x$$

$$\therefore (a+b):(a+b+c) = 12x:20x = 3:5$$

73. The number of students passed in English

$$= \frac{144^\circ}{360^\circ} \times 1200 = 480$$

The number of students passed in Geography

$$= \frac{20}{100} \times 1200 = 240$$

$$\therefore \text{Required Ratio} = 480:240$$

$$= 2:1$$

74. The number of students passed in English

$$\frac{144^\circ}{360^\circ} \times 1200 = 480$$

The number of students passed in Mathematics

$$= \frac{25}{100} \times 1200 = 300$$

$$\therefore \text{Difference} = 480 - 300 = 180$$

75. The percentage of students passed in English

$$= \frac{144^\circ}{360^\circ} \times 100$$

$$= 40\%$$