UP SI MOCK TEST – 57 (SOLUTION)

81. (D) Let the third number is 100
A.T.Q.,

Ist	IInd	IIIrd
75	80	100

Required % $= \frac{75}{100} \times 100 = 93\frac{3}{4}\%$

82. (D) $50\% = \frac{1}{2}$
Let Z has 2 units of money
According to the question,
X : Y : Z
6 : 3 : 2
$\frac{(6+3+2)}{3}$ units = ₹110
$\Rightarrow$ 11 units = ₹110
1 unit = ₹330
6 units = 30×6 = ₹180
Hence, X has ₹180.

83. (A) $a^3 + b^3 = (a + b)^3 - 3ab\,(a + b)$
$(8)^3 - 3 \times \frac{32}{3}(8)$
$512 - 3 \times 8$
$512 - 256 = 256$

84. (C) A.T.Q.,
Amount = ₹3144
Rate = 8%
Let, Principal = ₹x
Time
$= \frac{30+29+31+30+31+30+7}{366} = \frac{219}{366}$
$\therefore$ SI$= \frac{P \times R \times T}{100}$
$3144 - x = \frac{x \times 8 \times 219}{100 \times 366}$ = ₹3000

85. (C) A.T.Q.,

C.P		M.P.
(100 – Discount)	:	(100 + Profit)
(100 – 10)	:	(100 + 20)
90	:	120
3	:	4

$\therefore$ 3 units = 1200
1 unit = 400
4 units = 400×4 = 1600
$\therefore$ Market Price = ₹1600

86. (C) A.T.Q.,
CP of 1 cycle = ₹500
CP of 10 cycles = 500×10
= ₹5000
SP of 5 cycles = 5×750 = ₹3750
SP of remaining 5 cycle = 5×550
= ₹2750
Total SP of 10 cycles = 3750 + 2750
= ₹6500
Profit = SP – CP = 6500 – 5000
= ₹1500
Profit% $= \frac{1500}{5000} \times 100 = 30\%$

87. (C) After three successive Discount,
S.P. of an Article
$= 5000 \times \frac{100-x}{x} \times \frac{100-y}{100} \times \frac{100-z}{100}$
$= \frac{(100-x)(100-y)(100-z)}{200}$

88. (D) Second train covers the 120 kms more distance only because of its exceed speed of (60–50)km =10 kmph
$\Rightarrow$ Time, taken by trains to meet each other $= \frac{90\text{kms}}{10\text{km/h}} \Rightarrow 9$ hours
$\Rightarrow$ Distance covered by first train = 9×50 = 450 km
$\Rightarrow$ Distance covered by the second train = 9 hours × 60 kmph $\Rightarrow$ 540km.
$\Rightarrow$ Total distance between A and B = 540 + 450 = 990 km

89. (B) A.T.Q.,
$\Rightarrow$ Distance between his house to school
$\Rightarrow \frac{S_1 \times S_2}{S_1 - S_2} \times \frac{\text{diff. of time}}{60}$
$= \frac{4 \times 3}{(4-3)} \times \frac{(10\text{ min early} + 10\text{ min late})}{60}$
$\Rightarrow 12 \times \frac{20}{60} \Rightarrow$ Distance = 4 km.

90. (A) Given, $\sqrt[3]{79507} = 43$
$\Rightarrow \sqrt[3]{79.507} + \sqrt[3]{0.079507} + \sqrt[3]{0.000079507}$
$\Rightarrow 4.3 + 0.43 + 0.048 = 4.773$

91. (C) A.T.Q.,

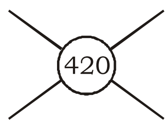
5	E	9
2	F	8
3	G	7
11	1	4

$\Rightarrow$ Sum of 2, E, F and G must be 11. For maximum F we will have to take E and G zero.

$\therefore$ F = 9

92. (D) Cows Hen

180×4=720 180×2=360



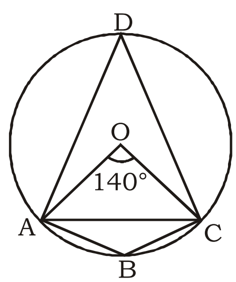
60 : 300

C : H = 3 : 15

Numbers of cows

$= \frac{3}{3+15} \times 180 = \frac{3}{18} \times 180 = 30$

93. (B)



$\angle AOC = 2\times \angle ADC$

(center angle is double the major angle)

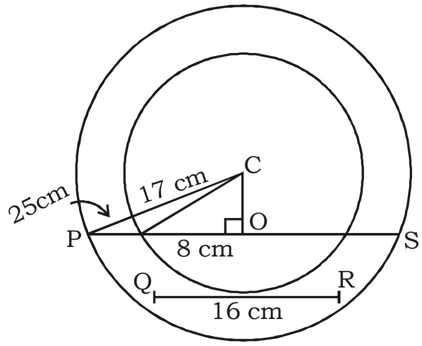
$\angle ADC = \frac{140}{2} = 70°$

$\angle ABC + \angle ADC = 180°$

$\angle ABC + 70° = 180°$

$\angle ABC = 110°$

94. (D)



$QC^2 = OQ^2 + OC^2$ (By pt)

$17^2 = 8^2 + OC^2$

OC = 15 cm

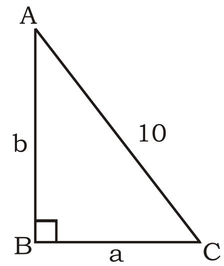
In right ΔCOP

$CP^2 = OP^2 + CO^2$, $25^2 = OP^2 + 15^2$

OP = 20cm, PS = 2×OP

= 2×20 = 40 cm

95. (C) In right ΔABC,



$a^2 + b^2 = 10^2$ (by pt)...(i)

area $\Delta ABC = \frac{1}{2}ab = 20$

ab = 40

$(a + b)^2 = a^2 + b^2 + 2ab$

$= 10^2 + 2(40) = 180$

96. (A) $3 : 1\frac{1}{4} : 3\frac{1}{4}$

$\Rightarrow 3 : \frac{5}{4} : \frac{13}{4}$

$\Rightarrow$ 12 : 5 : 13 $\Rightarrow$ (Triplet of right Δ)

97. (C) (a + b) : (b + c) : (c + a) = 7 : 6 : 5

$\Rightarrow$ a + b + c = 27 ...(i)

$\Rightarrow$ b + c = 6 units

$\Rightarrow$ a + b = 7 units

$\Rightarrow$ c + a = 5 units

from eq^n (i)

$\Rightarrow$ a + b = 21 ...(ii)

$\Rightarrow$ b + c = 18 ...(iii)

$\Rightarrow$ c + a = 15 ...(iv)

solving eq^n (ii), (iii) and (iv)

a = 9, c = 6, b = 12

Now, $\frac{1}{a} : \frac{1}{b} : \frac{1}{c} = \frac{1}{9} : \frac{1}{12} : \frac{1}{6} = 8 : 6 : 12$

= 4 : 3 : 6

98. (B) A.T.Q.,

$\Rightarrow \frac{3^{30} + 3^{60} + 3^{90}}{3}$

$\Rightarrow 3^{29} + 3^{59} + 3^{89}$

99. (A) Income of A and B = 2×14000 = ₹28000

Income of B and C = 2×15600 = ₹31200

Income of A and C = 2×14400 = ₹28800

Income of A, B and C

$= \frac{(28000+31200+28800)}{2}$

= ₹44000

C income = 44000 – 28000 = ₹16000

100. (B) HCF of fractional numbers is

$\left(\frac{\text{HCF of numerator}}{\text{LCM of denominator}}\right)$

$\therefore$ HCF $\left(\frac{2}{3},\frac{4}{5},\frac{6}{7}\right)$

$\Rightarrow \left(\frac{\text{HCF } 2,4,6}{\text{LCM } 3,5,7}\right) = \frac{2}{3\times5\times7} = \frac{2}{105}$

101. (B) For least or minimum number of canes we should have maximum capacity canes for required quantity

$\Rightarrow$ For this we take HCF of given quantities.

HCF (21, 42, 63) = 21

$\therefore$ Maximum capacity of a cane = 21 litres

$\therefore$ Number of canes of cow milk $= \frac{21}{21} = 1$

$\therefore$ Number of canes of toned milk $= \frac{42}{21} = 2$

$\therefore$ number of canes of double toned milk

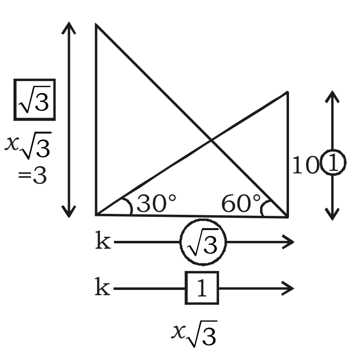
$= \frac{63}{21} = 3$

$\therefore$ Total number of canes = 1 + 2 + 3 = 6

102. (D) HCF (GCD) of a, b number is 12 and a > b > 12 (given)

$\therefore$ smallest value of a & b are (36, 24)

103. (A) A.T.Q.,

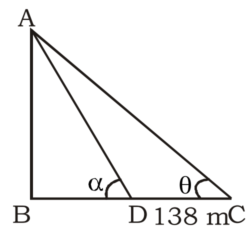


1 units $\rightarrow$ 10

3 units $\rightarrow$ 10×3 = 30

$\therefore$ Height of hill = 30m

104. (A)



Shortcut approach

Ist Case:

$\tan\theta = \frac{AB}{BC} = \frac{\text{Perpendicular}}{\text{Base}} = \frac{1}{5}$

IInd Case:

$\text{Sec}\alpha = \frac{AD}{BD} = \frac{\text{Hypo}}{\text{Base}} = \frac{\sqrt{193}}{12}$

In ΔABD

Hypo. = $\sqrt{193}$, Base = 12

Then perpendicular = 7

(By Pythagoras theorem)

In Case I Perpendicular is 1.

So equal this

$\tan\theta = \frac{1\times7}{5\times7} = \frac{7}{35}$ ← Perpen. / ← Base

	Case 1	Case 2	
Perpen →	7	7	$\xrightarrow{\times 6}$ **42 m**
Base →	35	12	

35 – 12 = 23 units $\xrightarrow{\times 6}$ 138 m

AB = **42m**

105. (B) $\left[\frac{m_1\times h_1\times T_1}{W_1} = \frac{m_2\times h_2\times T_2}{W_2}\right]$

$9_{\text{taps}}\times20_{\text{mins}} = T_{\text{taps}}\times15_{\text{mins}}$

T = **12 Taps**

106. (D) $\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{7}$

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

$x^3 + \frac{1}{x^3} = 125 - 3 \times 5 = 110$

107. (A) $R_x = \frac{80}{20}$ pages/hr = 4 p/h

$R_{(x+y)} = \frac{135}{27}$ p/h = 5 p/h

$R_y = R_{(x+y)} - R_x = (5 - 4) = 1$ p/h

y can copy 20 pages $= \frac{20p}{1p/h} = 20h$

108. (B) $\left(0.\overline{63} + 0.\overline{37}\right) = \frac{63}{99} + \frac{37}{99}$

$= \frac{63+37}{99} = \frac{100}{99}$

109. (D) Let present average = x years
Total age = $5x$ year
According to question,
$5x - y + z = 5x - 15$
where y = Replaced member
z = New member
$-y + z = -15$
$y - z = 15$
This is required difference.

110. (A) 1305, 4665, 6905 are three numbers, greatest number which leaves same remainder in each case. To find this take difference of numbers

$\Rightarrow$ 1305 4665 6905
–3360 –2240
–1120

$\therefore$ 1120 is the no. which leaves the same remainder when divide 1305, 4665, 6905

$\therefore$ sum of number digit $\Rightarrow 1 + 1 + 2 + 0 = 4$

111. (D) B's profit share in 1 year = 12×100
= ₹1200

Interest of A $= \frac{10,000 \times 5 \times 1}{100} =$ ₹200

Total profit of A and B = 1200 + 500 + 200 = ₹1900

Remaining profit =4000 – 1900 = ₹2100

Note: Remaining profit will be divided in the ratio of their profit.

	A	:	B
Capital	10,000	:	4000
	5	:	2

Share of A in remaining profit

$= \frac{2100}{(5+2)} \times 5 =$ ₹600

Total profit of A = 500 + 1500 = ₹2000

Total profit of B= 1200 + 600 + 200
= ₹2000

112. (B)

	A	:	B	:	C
Capital	24000	:	32000	:	18000
	5	:	16	:	9

Let the total profit $=100x$

Extra share of A $= 100x \times \frac{15}{100} = 15x$

Extra share of B $= 100x \times \frac{12}{100} = 12x$

Remaining profit $= [100x - (15x + 12x)] = 73x$

A.T.Q.,

Note: Remaining profit distributed in the ratio of their capitals

$\therefore$ Share of C $= \frac{73x}{(12 \div 16 \div 9)} \times 9 = \frac{657x}{37}$

$\frac{657x}{37} =$ ₹65700

$x =$ ₹ $\frac{65700 \times 37}{657} =$ ₹3700

$\therefore$ Hence required profit = $100x$
= 100 × 3700 = ₹3,70,000

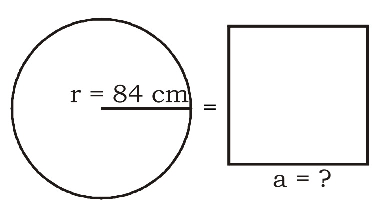
113. (C) Side of hexagon

$= \frac{\text{Side of equilateral triangle}}{3} = 2$ cm

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

$= 6\sqrt{3}$ cm^2

114. (C) A.T.Q.,



Let the length of side of the square be 'a' cm

(circumference)C = 4a (perimeter of square)

$2\pi r = 4a \Rightarrow a = 132$ cm

115. (D) **Options are wrong in question paper and correct options are-**

(A) $\frac{3}{9}$ **(B)** $\frac{1}{9}$

(C) $\frac{4}{9}$ **(D)** $\frac{2}{9}$

Solution-

Let part filled be 'x'

A.T.Q.,

$x \times (48m \times 16.5m \times 4m) = n(2)^2 \times 56$

$x = \frac{22 \times 4 \times 56}{7 \times 48 \times 16.5 \times 4}$

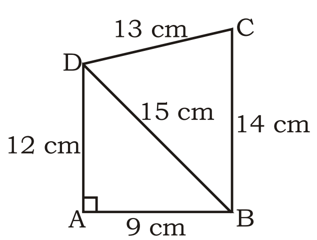
$x = \frac{2}{9}$ Ans.

116. (A) **Options are wrong in question paper and correct options are-**

(A) 720 cm² **(B) 800 cm²**

(C) 700 cm² **(D) 750 cm²**

Solution-



In ΔABD,

$BD = \sqrt{AB^2 + AD^2} = \sqrt{9^2 + 12^2} = \sqrt{81 + 144}$

$= \sqrt{225} = 15$ cm

Area of $\Delta ABD = \frac{1}{2} \times AB \times AD$

$= \frac{1}{2} \times 9 \times 12 = 54$ cm²

In ΔBCD

semi perimeter $= \frac{13 + 14 + 15}{2} = \frac{42}{2} = 21$

Area of $\Delta BCD = \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{21(21-13)(21-14)(21-15)}$

$= \sqrt{21 \times 8 \times 7 \times 6} = 21 \times 4 = 84$ cm²

area ABCD = 84 + 54 = 138 cm²

height of prism

$= \frac{\text{volume}}{\text{Area of base}} = \frac{2070}{138} = 15$ cm

perimeter of base = 9 + 14 + 13 + 12 = 48 cm

Area of lateral surface = perimeter × height = 48×15 = **720 cm²**

117. (B) $\because$ (81 + 63)° = 80000

$360° = \frac{80000}{144°} \times 360° =$ ₹2,00,000

118. (D) Required percentage

$= \frac{63 - 36}{36} \times 100 = 75\%$

119. (C) Required percentage

$= \frac{81 - 54}{81} \times 100 = \frac{27}{81} \times 100 = 33\frac{1}{3}\%$

120. (C) $a^2 + b^2 + c^2 + 96 = 8(a + b - 2c)$

$= 2(4a + 4b - 8c)$

Now, a = 4, b = 4, c = –8

$\sqrt{ab - bc + ca} = \sqrt{16 + 32 - 32} = 4$

121. (A) Book have pages. Ladder have steps.

122. (A) Pair of opposite letters.

123. (A) As, $11^3 = 1331$

Similarly, $12^3 =$ **1728**

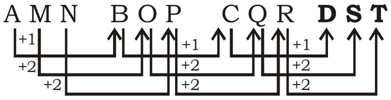
124. (A) As, Shoes makes by Cobbler. Similarly, Furniture makes by Carpenter.

125. (B) All are civilians awards except options (B).

126. (D) Expect in the 345, in all other number the difference b/w the units and hundredth digit is 3.

127. (B) Except option (B), all are civilians awards.

128. (B) A M N B O P C Q R **D S T**



129. (B) 5 6 9 14 21 **30**

+1 +3 +5 +7 +9

+2 +2 +2 +2

130. (A) (n^3 + 3) sequence followed where 'n' is natural number.

131. (C) 132. (B)

133. (A) In 1 hour, minute hand gain 55 min hence at 9 O'clock they are 15 min. spaces apart.

Therefore, to be in opposite directions the minute hand will have gain 15 min. spaces.

Now, in 15 min. $\frac{60}{55} \times 15 = 16\frac{4}{11}$ min.

Hence, $16\frac{4}{11}$ min. past 9

134. (C) efg**h**/eeff**g**ghh/e**e**eff**f**gggh**h**h

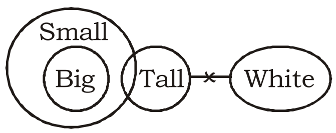
135. (B) (8 + 7) × 6 = 90

(7 + 6) × 5 = 65

(6 + 5) × 4 = **44**

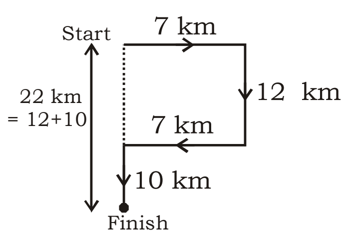
136. (A) 137. (C)

138. (C)



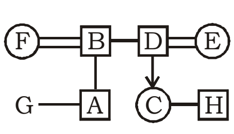
Either I or II and conclusion III follows.

139. (A)



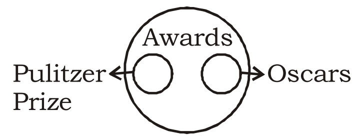
∴ He is 22 km in south direction from his starting position.

140. (A)



So, H is the nephew of F.

141. (C)



142. (A) 143. (B) 144. (C)

145. (D) Market→Vegetables→Buy→Dinner →Cook

146. (D) The adjacent face of 6 are 1, 3, 4, 5 only 2 is in opposite side.

147. (D) 14 C 3 A 12 E 4 D 2

= 14 × 3 – 12 + 4 ÷ 2 = 32

148. (B) As, H A M M E R

M A H E R M

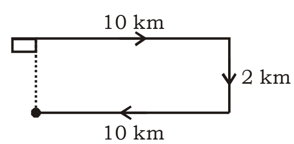
Similarly,

M A T T E R

T A M E R T

149. (C) 150. (C) 151. (D) 152. (B)

153. (D)



Distance from his house = 2 km

154. (A)

155. (A) As, T E R M I N A L

-1 -1 -1 -1 +1 +1 +1 +1

S D Q L J O B M

similarly, C R E D I B L E

-1 -1 -1 -1 +1 +1 +1 +1

B Q D C J C M F

Directions (156 - 160):

peace → sa

night → la

property → ta

senior → ty

wing → op

science → nm

156. (C) 157. (B) 158. (C) 159. (B)

160. (D)

UP SI ANSWER KEY - 57

1. (A)	21. (B)	41. (B)	61. (D)	81. (D)	101. (B)	121. (A)	141. (C)
2. (A)	22. (D)	42. (D)	62. (B)	82. (D)	102. (D)	122. (A)	142. (A)
3. (B)	23. (A)	43. (B)	63. (D)	83. (A)	103. (A)	123. (A)	143. (B)
4. (A)	24. (D)	44. (A)	64. (A)	84. (C)	104. (A)	124. (A)	144. (C)
5. (A)	25. (B)	45. (B)	65. (B)	85. (C)	105. (B)	125. (B)	145. (D)
6. (D)	26. (D)	46. (B)	66. (D)	86. (C)	106. (D)	126. (D)	135. (D)
7. (A)	27. (C)	47. (A)	67. (D)	87. (C)	107. (A)	127. (B)	147. (D)
8. (B)	28. (D)	48. (C)	68. (D)	88. (D)	108. (B)	128. (B)	148. (B)
9. (A)	29. (D)	49. (C)	69. (C)	89. (B)	109. (D)	129. (B)	149. (C)
10. (D)	30. (D)	50. (B)	70. (D)	90. (A)	110. (A)	130. (A)	150. (C)
11. (C)	31. (A)	51. (B)	71. (A)	91. (C)	111. (D)	131. (C)	151. (D)
12. (B)	32. (A)	52. (D)	72. (B)	92. (D)	112. (B)	132. (B)	152. (B)
13. (C)	33. (C)	53. (C)	73. (D)	93. (B)	113. (C)	133. (A)	153. (D)
14. (A)	34. (D)	54. (D)	74. (C)	94. (D)	114. (C)	134. (C)	154. (A)
15. (A)	35. (C)	55. (B)	75. (D)	95. (C)	115. (D)	135. (B)	155. (A)
16. (A)	36. (D)	56. (C)	76. (A)	96. (A)	116. (A)	136. (A)	156. (C)
17. (D)	37. (A)	57. (D)	77. (C)	97. (C)	117. (B)	137. (C)	157. (B)
18. (B)	38. (B)	58. (C)	78. (B)	98. (B)	118. (D)	138. (C)	158. (C)
19. (B)	39. (D)	59. (A)	79. (B)	99. (A)	119. (C)	139. (A)	159. (B)
20. (C)	40. (D)	60. (D)	80. (C)	100. (B)	120. (C)	140. (A)	160. (D)