36. (d): Required average = \( \frac{450+420+450}{3} = 440 \)

37. (a): Total male participated from school – B & D together = 540 + 560 = 1100
Total female participated from school – A & C together = 450 + 500 = 950
Required difference = 1100 – 950 = 150

38. (d): Total male participated from school – B & C together = 540 + 720 = 1260
Total female participated from school – A & D together = 450 + 450 = 900
Required % = \( \frac{1260-900}{900} \times 100 = 40\% \)

39. (b): Total students participated from school F = \( \frac{140}{100} \times 650 + 420 \times \frac{32}{21} \)
= 910 + 640 = 1550

40. (b): Total number of male students participated from all the five schools
= (650 + 540 + 720 + 560 + 680) = 3150

41. (b): Pattern of series –

\[
\begin{array}{cccc}
200 & 100 & 150 & 375 & 1312.5 \\
\times0.5 & \times1.5 & \times2.5 & \times3.5 & \\
\end{array}
\]

42. (a): Pattern of series -

\[
\begin{array}{cccc}
104 & 96 & 120 & 88 & 128 \\
+8 & -16 & +24 & -32 & +40 \\
\end{array}
\]

43. (d): Pattern of series -

\[
\begin{array}{cccc}
15 & 8 & 9 & 15 & 32 \\
\times(0.5+0.5) & \times(1+1) & \times(1.5+1.5) & \times(2+2) & \times(2.5+2.5) \\
\end{array}
\]

44. (e): Pattern of series -

\[
\begin{array}{cccc}
8 & 14 & 26 & 46 \\
\times4 & \times6 & \times8 & \times10 \\
\end{array}
\]

45. (e): Pattern of series -

\[
\begin{array}{cccc}
72000 & 6000 & 12000 & ? \\
+2 & +3 & +4 & \times6 \\
\end{array}
\]

46. (d): Let total work be 360 units
Efficiency of 1 man = \( \frac{360}{12 \times 10} \times 10 = 3 \) units/day
Efficiency of 1 woman = \( \frac{360}{10 \times 18} \times 18 = 2 \) units/day
Required time = \( \frac{360}{4 \times 3 + 6 \times 2} = 15 \) days

47. (a): distance = 240 kms
Required speed = \( \frac{240}{2.5} = 96 \text{ kmph} \)
Required % = \( \frac{96-60}{60} \times 100 = 60\% \)

48. (b): Let 10 years ago, ages of Ram and Rahim were x years and 3x years, respectively.
Then, present age of Ram = (x + 10)
and present age of Rahim = (3x + 10)
According to the question,
\[
x + 10 + 5 = 2 \times 3 \\
3x + 10 + 5 = 3 \\
\Rightarrow 3x + 45 = 6x + 30 \\
\Rightarrow 3x = 15 \\
\therefore x = 5
\]
Hence, required ratio = \( \frac{5 + 10}{3 + 5 + 10} = \frac{15}{25} = 3 : 5 \)

49. (b): required time = \( \frac{140+120}{(132-80)\times\frac{15}{18}} = \frac{260 \times 18}{52 \times 5} = 18 \text{ sec} \)

50. (c): let CP of book be Rs x
SP = Rs 1.2x
New CP = Rs 0.9x
ATQ, 0.9x \times \frac{140}{100} = 1.2x + 90
1.26x = 1.2x + 90
x = Rs 1500

51. (a): I. x = 5
II. y = 5
So, x=y

52. (d): I. \( x^2 - 7x - 5x - 35 = 0 \)
x (x + 7) – 5 (x + 7) = 0
(x + 7) (x – 5) = 0
x = -7, 5
II. \( y^2 + 7y + 8y + 56 = 0 \)
y(y + 7) + 8(y + 7) = 0
(y + 7) (y + 8) = 0
y = -8, -7
So, x≥y

53. (a): I. \( x = \pm 9 \)
II. \( y = \pm 8 \)
So, no relation can be established

54. (a): I. \( 17x^2 - 14x - 3 = 0 \)
\( 17x^2 - 17x + 3x - 3 = 0 \)
\( 17x (x - 1) + 3 (x - 1) = 0 \)
\( (17x + 3) (x - 1) = 0 \)
x = \( -\frac{3}{17}, 1 \)
II. \( y^2 - 2y - 35 = 0 \)
y^2 - 7y + 5y - 35 = 0
y(y - 7) + 5(y - 7) = 0
y = 7, -5
So, no relation can be established
55. (e); I. \[ x^2 + 9x - 5x - 45 = 0 \]
   \[ x(x + 9) - 5(x + 9) = 0 \]
   \[ (x - 5)(x + 9) = 0 \]
   \[ x = 5, -9 \]

II. \[ y^2 - 5y - 8y + 40 = 0 \]
   \[ y(y - 5) - 8(y - 5) = 0 \]
   \[ (y - 5)(y - 8) = 0 \]
   \[ y = 5, 8 \]

So, \[ x \leq y \]

56. (e); let initial quantity of milk & water be \( 5x \) & \( 3x \) lit respectively

ATQ, \[ \frac{5x + 8}{3x} = \frac{11}{5} \]
\[ 25x + 40 = 33x \]
\[ x = 5 \]
required difference = \[ 5x - 3x = 2x = 10 \text{ lit} \]

57. (a); let rate of interest be R%

ATQ, \[ \frac{6000 \times R \times 2}{100} \]
\[ R = 10\% \]
Since compounding is done half-yearly, rate of interest = 5%

Effective rate of interest = \[ 5 + 5 + \frac{5 \times 5}{12} = 10.25\% \]
Required interest = \[ \frac{6000 \times 10.25 \times 1}{100} = \text{Rs 615} \]

58. (b); let speed of boat in still water & speed of stream be \( 7x \) & \( 3x \) kmph respectively

ATQ, \[ \frac{28}{7x + 3x} = \frac{42}{60} \]
\[ x = 4 \]
Required difference = \[ \frac{40}{7x - 3x} - \frac{60}{7x + 3x} = \frac{4}{x} = 1 \text{ hour} \]

59. (d); let amount invested by A be Rs \( x \)

Profit ratio; \[ A : B = (x \times 12) : (17000 - x) \times 6 + (15500 - x) \times 6 \]
\[ = 2x : (32500 - 2x) \]

ATQ, \[ \frac{19500}{32500 - 2x + 2x} \times (32500 - 2x) = 8100 \]
\[ x = \text{Rs 9500} \]
Required capital of B after 6 months
\[ = 15500 - x = \text{Rs 6000} \]

60. (c); let length & breadth of rectangle be \( x \) & \( y \) m respectively

ATQ, \[ 1.4xy - xy = 24 \]
\[ xy = 60 \]
\[ x + y = 16 \]

from (i) & (ii)
\[ x = 10 \text{ m}, \ y = 6 \text{ m} \]

breadth of rectangle = 6 m

61. (d); \[ ? = 170 - 35 \]
\[ ? = 135 \]

62. (a); \[ (12 + 13) \times 3 = \frac{?}{5} \]
\[ ? = 375 \]

63. (c); \[ ? = (3 \times 5) \times 8 \]
\[ ? = 120 \]

64. (b); \[ \left( \frac{120}{100} \times 750 \right) \div ? = 25 \]
\[ ? = 900 \div 25 \]
\[ ? = 36 \]

65. (d); \[ ? = (8 - 4 + 3) + \frac{6 - 10 + 7}{12} \]
\[ ? = 7 \frac{1}{4} \]

66. (e); \[ 275 + \frac{64}{100} \times 750 = 750 + ? \]
\[ 275 + 480 = 750 + ? \]
\[ ? = 5 \]

67. (a); \[ ? = 15 + 9 + 144 \]
\[ ? = 168 \]

68. (c); \[ \frac{528}{3} = 18 + 3.25 \]
\[ ? = 24 \]

69. (d); \[ \frac{12.5}{100} \times (120 + ?) = 45 \]
\[ 120 + ? = 360 \]
\[ ? = 240 \]

70. (c); \[ 44 \times 12 - 16 = (8)^2 \]
\[ 528 - 16 = (8)^2 \]
\[ ? = 3 \]