Directions (1-5): Find the wrong number in the following number series:
Q1.   72,   74,   84,   110,   160,   244,   364
(a) 364
(b) 244
(c) 160
(d) 74
(e) 72

Q2.   30,   42,   48,   54,   65,   81,   126
(a) 42
(b) 48
(c) 126
(d) 30
(e) 65

Q3.   77,   78,   159,   472,   1889,   9446,   56677
(a) 159
(b) 472
(c) 1889
(d) 56677
(e) 77

Q4.   2159,   1967,   1782,   1611,   1461,   1339,   1254
(a) 1967
(b) 2159
(c) 1461
(d) 1254
(e) 1611
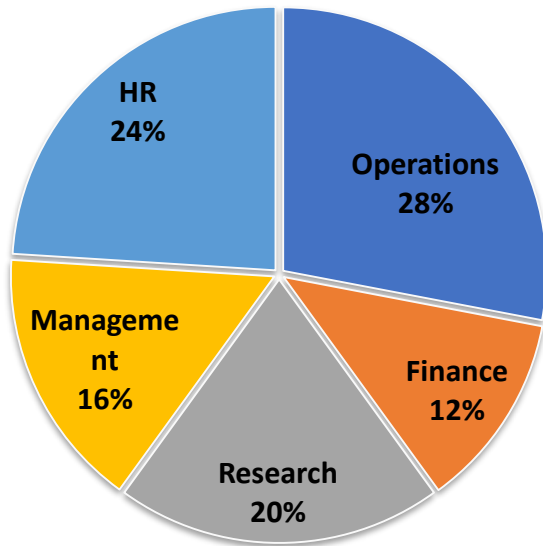
Q5.   854,   886,   923,   964,   1007,   1054,   1107
(a) 923
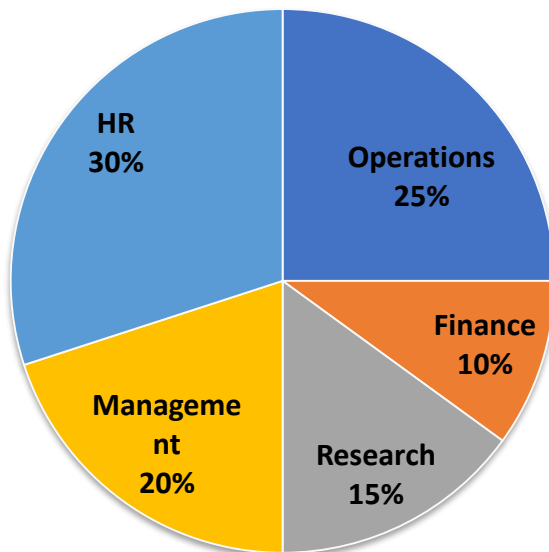(b) 1007
(c) 854
(d) 1054
(e) 1107

Directions (6-10): Study the pie charts given below and answer the following questions.
Pie charts show the percentage distribution of total employees of a company in 5 different departments (HR, Finance, Operations, Research and Management) and percentage distribution of total male employees of the company in these departments.

Total employees in the company

- Operations 28%
- Finance 12%
- Research 20%
- Management 16%
- HR 24%

Total male employees in the company

- Operations 25%
- Finance 10%
- Research 15%
- Management 20%
- HR 30%

Note – Total employees in a department = Total (male + female) employees in that department.

Q6. Female in Operations department is 170 more than that of in Research department. If female in Finance & Management department together is 670, then find the number of male employees in HR department.
(a) 300
(b) 225
(c) 375

(d) 450
(e) 150

Q7. Total employees in Research and Management department together are 1200 more than total male employees in Finance and HR department together. If female employees in HR department are 30% of total employees in Research department, then find total male employees in the company.
(a) 5000
(b) 6500
(c) 5500
(d) 7000
(e) 6000

Q8. Male employees in HR department are $42\frac{6}{7}\%$ of total employees in Operations department. If difference between female employees in Finance & Operations department is 750, then find female employees in HR department.
(a) 500
(b) 900
(c) 600
(d) 1200
(e) 1000

Q9. Ratio of total male employees to total female employees in Operations and Research department together is 5 : 11. If female employees in HR department are 510, then find difference between total male employees and total female employees in the company.
(a) 1650
(b) 1300
(c) 750
(d) 1000
(e) 950

Q10. Average number of employees in Research, Management and HR is 200 more than average number of male employees in Operations, Research and Management. If female employees in Research department is 50 more than male employees in same department, then find total employees in the company.
(a) 4000
(b) 5000
(c) 4500
(d) 3500
(e) 2500

Q11.   Pipe – P alone & Pipe – Q alone can fill same tank in 24 hours and in 15 hours respectively and another pipe – R alone can empty same tank in 20 hours. If pipe – P, Q & R are opened alternatively for an hour to fill the same tank in such a way that pipe – Q opened in 1st hour and then pipe – R (outlet) and then pipe – P, then find time taken to fill the tank?

(a) $51\frac{1}{8}$ hours

(b) 52 hours

(c) $50\frac{3}{8}$ hours

(d) $51\frac{1}{5}$ hours

(e) 49 hours

Q12.   Maanik and Shivam entered into a partnership by investing Rs.20000 and Rs.32000 respectively. After 4 months, Maanik increased his investment by 50% and after another 6 months Shivam increased his investment by 25%. If at the end of the year Shivam got a profit of Rs.30000, then find total profit?

(a) Rs.80000

(b) Rs.77000

(c) Rs.54000

(d) Rs.93000

(e) Rs.12000

Q13.   Deepak invested Rs. P for 2 years in scheme – A at the rate of 18% p.a. on CI compounding annually and received a total amount of Rs.83544 from scheme – A. He then invested Rs.(P+X) in another scheme – B for 2 years at the rate 20% p.a. on SI. If he received Rs.30000 as interest from scheme – B, then find X?

(a) Rs 24000

(b) Rs 28000

(c) Rs 12000

(d) Rs 22000

(e) Rs 15000

Q14.   Deepak has two solutions – P & Q of wine and rum. Type-P contains 60% wine and type-Q contains 45% wine. If Deepak mixed 35 ml type-P solution with 200 ml type-Q solution to form another solution of wine and rum, then find approximate percentage of rum in the newly formed solution.

(a) 53%

(b) 63%

(c) 61%

(d) 58%

(e) 57%

Q15.   If upstream speed of a boat is 60% of downstream speed of the boat and boat takes total 10 hours and 40 minutes to cover 120 km each in downstream and in upstream, then find time taken by same boat to cover 300 km in upstream?
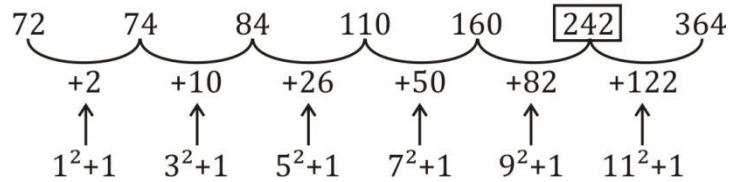
(a) $18\frac{1}{3}$ hours

(b) $20\frac{2}{3}$ hours

(c) $15\frac{1}{3}$ hours

(d) $16\frac{2}{3}$ hours
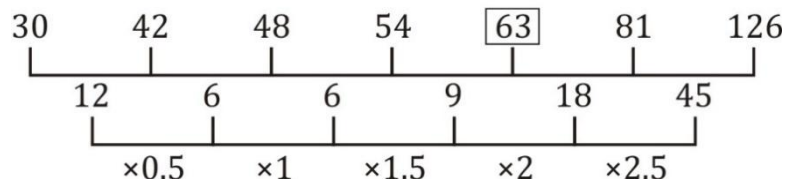
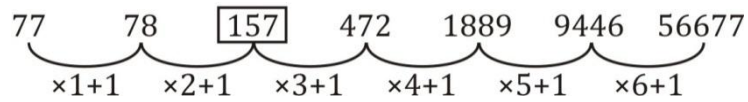(e) $21\frac{1}{3}$ hours

Solutions

S1. Ans.(b)
Sol.

72   74   84   110   160   [242]   364

+2   +10   +26   +50   +82   +122

1^2+1 3^2+1 5^2+1 7^2+1 9^2+1 11^2+1

Wrong no $\rightarrow$ 244

S2. Ans.(e)
Sol.

30   42   48   54   [63]   81   126

12   6   6   9   18   45

×0.5   ×1   ×1.5   ×2   ×2.5

Wrong no $\rightarrow$ 65

S3. Ans.(a)
Sol.

77   78   [157]   472   1889   9446   56677

×1+1   ×2+1   ×3+1   ×4+1   ×5+1   ×6+1

Wrong no. $\rightarrow$ 159

S4. Ans.(d)
Sol.

2159   1967   1782   1611   1461   1339   [1252]

192   185   171   150   122   87

−7   −14   −21   −28   −35

Wrong no. $\rightarrow$ 1254

S5. Ans.(c)
Sol.

[855]   886   923   964   1007   1054   1107

+31   +37   +41   +43   +47   +53   Prime
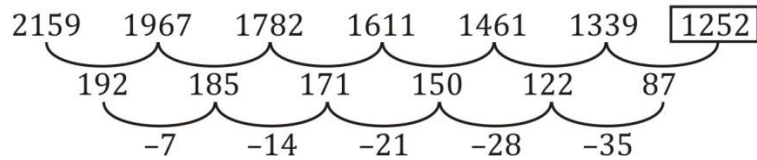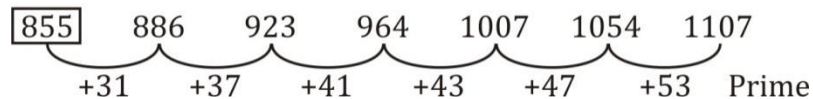
Wrong no. → 854

S6. Ans. (d)
Sol. Let total employees in company be 100x and let total male employees in the company be 100y.
ATQ,
$\left(\frac{28}{100} \times 100x - \frac{25}{100} \times 100y\right) - \left(\frac{20}{100} \times 100x - \frac{15}{100} \times 100y\right) = 170$
$28x - 25y - 20x + 15y = 170$
$8x - 10y = 170$ ...(i)
And, $\left(\frac{12}{100} \times 100x - \frac{10}{100} \times 100y\right) + \left(\frac{16}{100} \times 100x - \frac{20}{100} \times 100y\right) = 670$
$12x - 10y + 16x - 20y = 670$
$28x - 30y = 670$ ...(ii)
On solving (i) & (ii), we get:
$x = 40, \ y = 15$
Required male employees = $\frac{30}{100} \times 100 \times 15$
= 450

S7. Ans. (e)
Sol. Let total employees in company be 100x and let total male employees in the company be 100y.
ATQ,
$\left(\frac{20+16}{100} \times 100x\right) - \left(\frac{10+30}{100} \times 100y\right) = 1200$
$36x - 40y = 1200$ ....(i)
Now, female employees in HR department = $\left(\frac{24}{100} \times 100x - \frac{30}{100} \times 100y\right)$
= $24x - 30y$
Now, $\frac{24x-30y}{\frac{20}{100}\times100x} = \frac{30}{100}$
$\frac{24x-30y}{20x} = \frac{3}{10}$
$18x = 30y$
$y = 0.6x$ ...(ii)
On solving (i) & (ii), we get:
$x = 100, \ y = 60$
Required male employees = 100×60
= 6000

S8. Ans. (b)
Sol. Let total employees in company be 100x and let total male employees in the company be 100y.
So, male employees in HR department = $100y \times \frac{30}{100}$
= 30y
And, total employees in Operations department = $100x \times \frac{28}{100}$
= 28x

ATQ,

$$\frac{30y}{28x} = \frac{300}{700}$$

$$x = 2.5y$$

Now, female employees in Finance department = $\left(\frac{12}{100} \times 100x\right) - \left(\frac{10}{100} \times 100y\right)$

$= 12x - 10y$

$= 30y - 10y \quad (x = 2.5y)$

$= 20y$

And, female employees in Operations department = $\left(\frac{28}{100} \times 100x\right) - \left(\frac{25}{100} \times 100y\right)$

$= 28x - 25y$

$= 70y - 25y \quad (x = 2.5y)$

$= 45y$

Now, $(45y - 20y) = 750$

$y = 30$

And, $x = 75$

Required female employees = $\left(\frac{24}{100} \times 100 \times 75\right) - \left(\frac{30}{100} \times 100 \times 30\right)$

$= 1800 - 900$

$= 900$

S9. Ans. (d)
Sol. Let total employees in company be 100x and let total male employees in the company be 100y.

So, total female employees in Operations and Research department together

$= \left(\frac{28}{100} \times 100x - \frac{25}{100} \times 100y\right) + \left(\frac{20}{100} \times 100x - \frac{15}{100} \times 100y\right)$

$= 28x - 25y + 20x - 15y$

$= 48x - 40y$

And, total male employees in Operations and Research department together $= \frac{25+15}{100} \times 100y$

$= 40y$

ATQ,

$$\frac{40y}{48x-40y} = \frac{5}{11}$$

$$\frac{x}{y} = \frac{8}{3}$$

Let x & y be 8a & 3a respectively.

Now, $\left(\frac{24}{100} \times 100 \times 8a\right) - \left(\frac{30}{100} \times 100 \times 3a\right) = 510$

$$a = 5$$

Hence, total male employees in the company = $100 \times 3 \times 5$

$= 1500$

And, total female employees in the company = $100 \times 8 \times 5 - 1500$

$= 2500$

Required difference = $2500 - 1500$

$= 1000$

S10. Ans. (e)

Sol. Let total employees in company be 100x and let total male employees in the company be 100y.

ATQ,

$\left(\frac{1}{3} \times \frac{(20+16+24)}{100} \times 100x\right) - \left(\frac{1}{3} \times \frac{25+15+20}{100} \times 100y\right) = 200$

$20x - 20y = 200$

$x - y = 10$ ...(i)

Now, female employees in Research department = $\left(100x \times \frac{20}{100}\right) - \left(100y \times \frac{15}{100}\right)$

$= 20x - 15y$

And, male employees in Research department = $\left(100y \times \frac{15}{100}\right)$

$= 15y$

Now,

$20x - 15y - 15y = 50$

$2x - 3y = 5$ ...(ii)

On solving (i) & (ii), we get:

$x = 25, \; y = 15$

So, required employees = $100x$

= 2500

S11. Ans. (e)

Sol. Let total capacity of tank be 120 units (LCM of 24, 15 & 20).

So, efficiency of pipe – P = $\frac{120}{24}$

= 5 units/hour

Efficiency of pipe – Q = $\frac{120}{15}$

= 8 units/hour

And, efficiency of pipe – R = $\frac{120}{20}$

= 6 units/hour

Tank filled by pipe – P, Q & R in 3 hours = 8 – 6 + 5

= 7 units

Tank filled by pipe – P, Q & R in 48 hours = $7 \times \frac{48}{3}$

= 112 units

Required time = $\frac{120-112}{8} + 48$

= 49 hours

S12. Ans. (c)

Sol. Ratio of Profit share of Maanik to Shivam

$= \left((20000 \times 4) + (30000 \times 8)\right) : \left((32000 \times 10) + (40000 \times 2)\right)$

= 4 : 5

Total profit = $30000 \times \frac{9}{5}$

= Rs.54000

S13. Ans. (e)

Sol. ATQ,

$P\left(1 + \frac{18}{100}\right)^2 = 83544$

P = Rs 60000

And,

$\frac{(P+X)\times20\times2}{100} = 30000$ ...(i)

Put value of P in (i):

$\frac{(60000+X)\times20\times2}{100} = 30000$

$60000 + X = 75000$

$X = Rs\ 15000$

S14. Ans. (a)

Sol. Quantity of rum in the newly formed solution = $\left(35 \times \frac{40}{100}\right) + \left(200 \times \frac{55}{100}\right)$

= 124 ml

Required % = $\frac{124}{35+200} \times 100$

= 52.77%

= 53% (approx.)

S15. Ans. (d)

Sol. Let downstream speed of the boat be 5x km/hr.

So, upstream speed of a boat = $\frac{60}{100} \times 5x$

= 3x km/hr.

ATQ,

$\frac{120}{5x} + \frac{120}{3x} = \frac{32}{3}$

$x = 6$

Required time = $\frac{300}{3\times6}$

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