

1D

Total numbers = 70

Total numbers in 1 to 70 which has 1 in the unit digit = 7

Total numbers in 1 to 70 which has 9 in the unit digit = 7

Total numbers in 1 to 70 which has 1 or 9 in the unit digit = $7 + 7 = 14$

Required percentage

$$= \frac{14}{70} \times 100 = \frac{140}{7} = 20\%$$

2C

Total number of votes = 7500

20% votes were invalid.

Therefore, 80% votes were valid.

$$\text{i.e., total valid votes} = 7500 \times \frac{80}{100}$$

1st candidate got 55% of the total valid votes.

Hence 2nd candidate got 45% of the total valid votes

Therefore, valid votes that the 2nd candidate got

$$= 7500 \times \frac{80}{100} \times \frac{45}{100}$$

$$= 75 \times \frac{4}{5} \times 45$$

$$= 75 \times 4 \times 9$$

$$= 300 \times 9$$

$$= 2700$$

3A

Equal number of candidates appeared in each state.

In state A, 6% candidates got selected.

In state B, 7% candidates got selected.

Given that 80 more candidates got selected in state B than A.

Therefore, 1% of candidates appeared in each state = 80

$$\Rightarrow 100\% \text{ of candidates appeared in each state} = 80 \times 100 = 8000$$

i.e., number of candidates appeared from each state = 8000

4C

$$\frac{6}{24} \times 100 = 25\%$$

5D

The student got 125 marks and still failed by 40 marks.

$$\Rightarrow \text{mark required to pass} = 125 + 40 = 165$$

Therefore, 33% of the total marks = 165

$$\Rightarrow 100\% \text{ of the total marks} = \frac{165 \times 100}{33} = 500$$

6B

Given that $(x + 9)$ was 56% of the sum of their marks.

$$\Rightarrow (x + 9) = \frac{56}{100}(2x + 9)$$

$$\Rightarrow (x + 9) = \frac{14}{25}(2x + 9)$$

$$\Rightarrow 25x + 225 = 28x + 126$$

$$\Rightarrow 3x = 99$$

$$\Rightarrow x = 33$$

Then $(x + 9) = 33 + 9 = 42$

7A

$$A = \frac{x}{100} \times y = \frac{xy}{100} \dots (1)$$

$$B = \frac{y}{100} \times x = \frac{yx}{100} \dots (2)$$

Therefore $A = B$

8B

$$\Rightarrow b = \frac{20a}{100} = \frac{a}{5}$$

$$\begin{aligned} b\% \text{ of } 20 &= 20 \times \frac{b}{100} \\ &= \frac{b}{5} = \frac{a}{5} \times \frac{1}{5} = \frac{a}{25} \\ &= \frac{4a}{100} = 4\% \text{ of } a \end{aligned}$$

9B

$$5\% \text{ of } A + 4\% \text{ of } B = \frac{2}{3}(6\% \text{ of } A + 8\% \text{ of } B)$$

$$\Rightarrow \frac{5A}{100} + \frac{4B}{100} = \frac{2}{3} \left(\frac{6A}{100} + \frac{8B}{100} \right)$$

$$\Rightarrow 5A + 4B = \frac{2}{3}(6A + 8B)$$

$$\Rightarrow 15A + 12B = 12A + 16B$$

$$\Rightarrow 3A = 4B$$

$$\Rightarrow \frac{A}{B} = \frac{4}{3}$$

$$\Rightarrow A : B = 4 : 3$$

10A

Let the amount paid to X per week = x

and the amount paid to Y per week = y

$$\text{Then } x + y = 550 \dots (1)$$

$$\text{But } x = 120\% \text{ of } y \dots (2)$$

From (1) and (2),

$$120\% \text{ of } y + 100\% \text{ of } y = 550$$

$$220\% \text{ of } y = 550$$

$$y = \frac{550 \times 100}{220} = 250$$

11A

$$\text{Quantity of pure acid} = 8 \times \frac{20}{100} = 1.6$$

12D

Price of the car = Rs.3,25,000

Car was insured to 85% of its price

$$\text{Insured price} = 325000 \times \frac{85}{100}$$

Insurance company paid 90% of the insurance.

Amount paid by insurance company

$$\begin{aligned} &= 325000 \times \frac{85}{100} \times \frac{90}{100} \\ &= 325 \times 85 \times 9 \\ &= 248625 \end{aligned}$$

Difference between the price of the car and the amount received

$$\begin{aligned} &= 325000 - 248625 \\ &= \text{Rs.}76375 \end{aligned}$$

13D

y is 10% more than 125

$$\Rightarrow y = 125 + 12.5 = 137.5$$

x is 10% less than y

$$\Rightarrow x = 137.5 - 13.75 = 123.75$$

14A

Actual price = Rs.25 + Rs.2.50 = Rs.27.5

Saving = Rs.2.5

Saving percent

$$\begin{aligned} &= \frac{2.5}{27.5} \times 100 = \frac{250}{27.5} = \frac{2500}{275} \\ &= \frac{100}{11} = 9\frac{1}{11}\% \\ &\approx 9\% \end{aligned}$$

15B

145% of Y's length = 30 meter

$$\text{Therefore, Y's length} = \frac{30 \times 100}{145} = 20.68$$

16A

tax = 30 paise = Rs.0.3

tax is 6%.

i.e., Rs.0.3 is 6% of the taxable item.

$$\text{Therefore, cost of taxable item} = \frac{0.3 \times 100}{6} = 5$$

$$\text{cost of the tax free items} = 25 - (0.3 + 5) = 19.7$$

17A

increase in the population in 10 years

$$= 262500 - 175000 = 87500$$

percent increase in the population in 10 years

$$= \frac{87500}{175000} \times 100 = \frac{8750}{175} = 50\%$$

average percent increase of population per year

$$= \frac{50\%}{10} = 5\%$$

18B

votes received by the winning candidate = 11628

$$\text{total votes} = 1136 + 7636 + 11628 = 20400$$

Required percentage

$$= \frac{11628}{20400} \times 100 = \frac{11628}{204}$$

$$= \frac{2907}{51} = \frac{969}{17} = 57\%$$

19C

60% of oranges = 420

$$100\% \text{ of oranges} = \frac{420 \times 100}{60} = 700$$

i.e., total oranges = 700

20D

Total runs scored = 110

Total runs scored from boundaries and sixes

$$= 3 \times 4 + 8 \times 6 = 60$$

Total runs scored by running between the wickets

$$= 110 - 60 = 50$$

Required percent

$$= \frac{50}{110} \times 100 = \frac{500}{11} = 45\frac{5}{11}\%$$

21D

20% of students are below 8 years of age

$$\Rightarrow \text{number of students whose age} \geq 8 \text{ years} = 80\% \text{ of } x \dots (1)$$

$$\text{number of students whose age is 8 years} = 48 \dots (2)$$

number of students whose age is greater than 8 years

$$= 48 \times \frac{2}{3} = 32 \dots (3)$$

From (1),(2) and (3),

$$80\% \text{ of } x = 48 + 32 = 80$$

$$\Rightarrow 100\% \text{ of } x = \frac{80 \times 100}{80} = 100$$

$$\Rightarrow x = 100$$

22D

85% of the eligible candidates belonged to general category

Therefore remaining 15% belonged to other categories.

=> 15% of eligible candidates = 4275

=> eligible candidates = $\frac{4275 \times 100}{15} = 28500$

5% of the applicants were ineligible.

Therefore, remaining 95% were eligible.

=> 95% of applicants = 28500

=> number of applicants = $\frac{28500 \times 100}{95} = 30000$

23C

Let the number = 15

correct result = $15 \times \frac{5}{3} = 25$

result with the error = $15 \times \frac{3}{5} = 9$

error = $25 - 9 = 16$

percentage error

= $\frac{16}{25} \times 100 = 64\%$

24B

Pass percentage = $\frac{252}{270} \times 100 = \frac{2520}{27} = \frac{280}{3} = 93\frac{1}{3}\%$

25C

Let John's initial salary = Rs.100

After decreasing by 50%, John's salary = Rs. 50 (*because it will become half*)

After subsequently increasing by 50%, John's salary

= $50 \times \frac{100 + 50}{100} = 50 \times \frac{150}{100} = \text{Rs.75}$

Loss = $100 - 75 = \text{Rs.25}$

Loss percent = $\frac{25}{100} \times 100 = 25\%$