

### Answer with Detailed Solution

#### **Solution (1-50)**

**1. A**

$$20\% \text{ of } a = b \Rightarrow (20/100)a = b$$

$$b\% \text{ of } 20 = (b/100) \times 20 = (20a/100) \times (1/100) \times (20) =$$

$$\therefore \text{Required average} =$$

Explanation Let the candies with be  $(x + 15)$  and  $x$ .

$$\text{Therefore, } x + 15 = 60/100(x + 15 + x)$$

$$(x + 15) = 3/5(2x + 15)$$

$$5x + 75 = 6x + 45$$

$$x = 30$$

So, the marks of two students are 45 and 30

$$\Rightarrow \text{The minimum pass mark} = 125 + 40 = 165 \text{ Given}$$

$$\text{that minimum pass mark} = 33\% \text{ of the total mark} \Rightarrow$$

$$\text{Total mark} = 33/100 = 165$$

=

**6. A**

$$\text{Milk and water ratio} = 4:1$$

$$\square \times 6000 = \square 2700. \quad 100$$

Given,

$$(4x-16)/(x-4+20) = 12/13$$

$$13x-52 = 3x+48$$

$$\Rightarrow 10x=100 \Rightarrow x=10$$

$$\text{Initial quantity of milk in the vessel} = 40$$

litres **7. B**

$$4a/100 = 4\% \text{ of } a.$$

**2. B**

$$\text{Increase in 10 years} = (262500 - 175000) = 87500.$$

$$87500$$

**3. C**

$$\square \% = 5\%. \quad 10$$

**4. D**

Explanation: Suppose originally he had  $x$  oranges.

$$\text{Then, } (100 - 30)\% \text{ of } x = 140.$$

$$70/100 \times x = 140$$

$$x = (140 \times 100)/70 = 200.$$

**5. A**

Given that the student got 125 marks and still he failed by 40 marks

$$\Rightarrow \text{Total mark} = 16500/33 = 500$$

**9. A**

$$\text{Number of valid votes} = 80\% \text{ of } 7500 = 6000. \text{ Valid votes polled by other candidate} = 45\% \text{ of } 6000 \quad 45$$

Let us take initial quantity of a container

be  $x$  Remaining milk = Initial

$$(1 - \text{Replaced/Initial})^n \quad 12.8 = x (1 - 4/x)^2$$

$$12.8x = x^2 + 16 - 8x$$

$$5x^2 - 104x + 80 = 0$$

Simplify the above equation, we get  $x = 20$

and 0.8 (Eliminate)

**8. D**

**10. C**

Let their marks be  $(x + 9)$  and  $x$ .

$$X+9=56/100(2x+9)$$

$$25(x+9)=14(2x+9)$$

$$3x=99$$

$$x=33$$

So, their marks are 42 and 33 **11.D**

$$(100 - 40)\% \text{ of } x = 420.$$

$$60$$

$$\frac{x}{100} \times x = 420$$

$$420 \times 100$$

$$\begin{aligned} 5\% \text{ of } A + 4\% \text{ of } B &= \frac{2}{3} (6\% \text{ of } A + 8\% \text{ of } B) \\ \Rightarrow \frac{5}{100} A + \frac{4}{100} B &= \frac{2}{3} \left( \frac{6}{100} A + \frac{8}{100} B \right) \\ \Rightarrow \frac{1}{20} A + \frac{1}{25} B &= \frac{1}{25} A + \frac{4}{75} B \\ \Rightarrow \left( \frac{1}{20} - \frac{1}{25} \right) A &= \left( \frac{4}{75} - \frac{1}{25} \right) B \\ \Rightarrow \frac{1}{100} A &= \frac{1}{75} B \\ \frac{A}{100} &= \frac{4}{75} \\ \frac{B}{75} &= \frac{3}{4} \\ \therefore \text{ Required ratio} &= 4 : 3 \end{aligned}$$

$$\frac{x}{60} = 12. \text{ A } \frac{700}{60} = 700.$$

Let the original price be Rs. 100.

New final price = 120 % of (75 % of Rs. 100) = Rs.

$$(120/100 * 75/100 * 100) = \text{Rs. } 90.$$

$$\text{Decrease} = 10\%$$

**13. D**

$$\begin{aligned} \text{Present population} &= 160000 * (1 + 3/100)(1 + 5/200)(1 \\ &+ 5/100) \\ &= 177366. \end{aligned}$$

**14. D**

$$x = 80 \% \text{ of } y$$

$$\Rightarrow x = (80/100) y$$

$$\Rightarrow y/x = 5/4$$

$$\begin{aligned} \text{Required percentage} &= [(y/2x) * 100] \% = (5/8 * 100) \% \\ &= 62.5\% \end{aligned}$$

**15. A**

$$\text{Saving} = 50\% \text{ of } (100 - 40)\% \text{ of } (100 - 30)\% \text{ of Rs.}$$

$$18,400$$

$$= \text{Rs. } (50/100 * 60/100 * 70/100 * 18400)$$

$$= \text{Rs. } 3864.$$

**16. C**

Let the number be x, Then

$$75\% \text{ of } x + 75 = x$$

$$\Rightarrow x - 75x/100 = 75$$

$$\Rightarrow x = 300 .$$

**17. A**

$$\text{Total no. of votes polled} = (1800 + 3300 + 3900) = 9000.$$

$$\text{Required percentage} = (1800/9000 * 100)\% = 20\%. \text{ **18. D**}$$

**D**

Suppose originally he had x units.

$$\text{Then, } (100 - 65)\% \text{ of } x = 175.$$

$$35/100 x = 175$$

$$x = 500$$

**19. B**

$$\begin{aligned} \text{Population increase in 10 years} &= (22500 - 18000) = \\ &4500. \end{aligned}$$

$$\text{Increase}\% = (4500/18000 * 100)\% = 25\%$$

$$\text{Required average} = (25/10)\% = 2.5\%$$

**20. B**

Let the large number be x.

$$\text{Then } x - 20 = 20x/100$$

$$\Rightarrow x - x/5 = 20$$

$$\Rightarrow x = 25$$

**21. B**

$$\text{Let the number be x. Then, } x - (2/5)x = 510$$

$$\Rightarrow 3x/5 = 510$$

$$\Rightarrow x = [510 * (5/3)]$$

$$=850$$

$$10 \% \text{ of } 850$$

$$= 85.$$

**22. A**  
 CP of Mixture =  $44/110 \times 100 = \text{Rs. } 40$

$$\therefore \text{Now she needs } 800 - (160 + 192 + 200)$$

$$= 800 - 552 = \text{Rs. } 248 \text{ more}$$

**24. D**  
 Let the two numbers be Y and Z, such that  
 $15\% \text{ of } Y = 21\% \text{ of } Z$   
 Then,  $18\% \text{ of } Y = ? \% \text{ of } Z$   
 $15\% \text{ of } Y = 21\% \text{ of } Z$   
 $18\% \text{ of } Y = ? \% \text{ of } Z$   
 $\therefore 15 \times ? = 21 \times 18$   
 $\therefore ? = \frac{21 \times 18}{15} = 25.2\%$

**25. C**  
 Total votes = a.  
 This means that, Votes of candidate 1 + Votes of candidate 2 = a

$$\text{We know that, Votes of candidate 1} = 40\% \text{ of } a = \frac{40a}{100}$$

$$\text{Hence, Votes of candidate 2} = \frac{60a}{100}$$

$$(100\% - 40\%) \text{ of } a = 60\% \text{ of } a$$

$$\Rightarrow x : y = 4 : 3$$

$$\text{1st candidate lost by } 1000 \text{ votes} = \text{difference of votes between both candidates}$$

$$\frac{60a}{100} - \frac{40a}{100} = 2000$$

$$\therefore a = 10,000.$$

**26. C**

**23. A**  
 Required amount = 800  
 From her brother she got =  $800 \times \frac{20}{100} = 160$  From her mother she got =  $(800 - 160) \times \frac{30}{100} = 640 \times \frac{30}{100} = 192$   
 From the Bank she got Rs. 200

$$\text{Population after 4 years} = 60,000 \left(1 + \frac{10}{100}\right)^4$$

$$= \frac{60,000 \times 11 \times 11 \times 11 \times 11}{10 \times 10 \times 10 \times 10} = 87,846$$

**27. B**  
 The original fraction is  $\frac{x}{y} \times \frac{250}{y} \times \frac{450}{51} = \frac{25}{17}$   
 $= 15/17.$

**28. B**  
 $n(A) = 34, n(B) = 42, n(A \cap B) = 20.$   
 So,  $n(A \cup B) = n(A) + n(B) - n(A \cap B) = 34 + 42 - 20 = 56.$

Percentage failed in either or both the subjects = 56.  
 Hence, percentage passed =  $(100 - 56)\% = 44\%.$

**29. A**  
 Given  $15\% \text{ of } x = 20\% \text{ of } y$   
 $\Rightarrow 15x = 20y$   
 $\Rightarrow x/y = 20/15$

**30. C**  
 $\frac{80}{100} + \frac{66}{100} + \frac{x}{200} = \frac{320}{400}$

**31. C**  
 Let two numbers be x and y. It is given that,  $8\% \text{ of } x = 10\% \text{ of } y$  Therefore  
 $x = 10y = 5y$

8 4

Difference between two numbers  $(x - y) = 1550$   $x + y = 235$

Substituting the value of x, we get

5

$$-y = 1550$$

4

y

$$= 1550$$

4

$$y = 1550 \times 4 = 6200$$

x =

**32. D**

$$\text{CP of mixture} = 62.4/120 \times 100 = \text{Rs. } 52$$

$$\text{Required kg} = 20/1 \times 1 = 20 \text{ kg}$$

**33. A**

Let the daily sale be Rs. 100

$$100 \times (75/100) \times (130/100) = 97.5$$

$$\text{Decrease} = 100 - 97.5 = 2.5\%$$

**34. C**

Let the smaller no. be x and the larger number be y

$$. 0.8x + 4 = 0.4y$$

$$\Rightarrow 4y - 8x = 40$$

$$\text{and } y - x = 85$$

$$X = 15.$$

**38. B**

$$40\% - \text{looser}, 60\% - \text{winner, defeated } 15000 = 20\%$$

$$\text{The total income as } 100\% \text{ so } (100\% - 35\% + 20\% + 25\%) = 80\%$$

$$\text{And now } (100\% - 80\%) = 20\%$$

$$\text{Purchase } 7200 \times 25 / 20 = 9000.$$

**42. C**

$$17\% \text{ of votes} = 680$$

$$\text{Then, total votes} = 4000$$

$$\text{Out of this, } 15\% \text{ were invalid} = 4000 \times (15/100) = 600$$

$$\text{Then the total valid votes} = 3400$$

**43. C**

$$\text{Let one kg of sugar earlier} = \text{Rs. } 100$$

5

$$\Rightarrow x = 75 \text{ and } y = 160$$

**35. B**

$$:(2/5)(1/3)(3/7) \times x = 15.$$

$$X = (15 \times (7/3) \times (5/2) \times 3) = 525/2. \text{ 40\% of}$$

$$x = (40/100)(525/2) \Rightarrow 105. \text{ 36. C}$$

$$:(120/100) \times (130/100) \times 100 = 156.$$

$$156 - 100 = 56.$$

**37. D**

$$\times 6200 = 7750 \text{ 4}$$

$$0.5/(x+10) = 2/100. \text{ 2x} = 30$$

$$\text{Winner} = 60\% = 15000 \times 3 = 45000.$$

**39. C**

Let the price of the petrol be Rs 100.

Now New Price is 120.

She intend to spend is Rs 110.

$$\text{Amount become } 120 - 110 = 10$$

$$10/120 \times 100 = 8 \frac{1}{3} \% \text{ Reduction}$$

**40. C**

let his income be 100%

$$\text{Then spend } (20 + 15 + 25 + 10) = 70\%$$

Remaining 30% saving

$$30\% = 6900$$

$$100\% = \text{Rs } 23,000$$

**41. A**

$$50 \text{ kg of sugar earlier} = \text{Rs. } 5000$$

$$\text{Now 1 kg of sugar} = \text{Rs. } 97$$

$$\text{Quantity to buy now} = 5000/97 = 51.5 \text{ kg}$$

**44. C**

$$\text{Quantity of pulp in 100kg of fresh fruit} = (100 - 70)$$

$$\times 100 = 30 \text{ kg}$$

$$\text{Quantity of dry fruit be } x \text{ kg}$$

$$(100 - 20) \% \text{ of } x = 30$$

$$(80/100) x = 30$$

$$X = (30 \times 100)/80 = 37.5$$

**45. B**

$$25\% \text{ of four-fifth of } 30\% \text{ of a number is } 301.5$$

Let the number be x.

$$25/100 * 4/5 * 30/100 * x = 301.5$$

$$X = 5025.$$

**46. C**

let original price is x rupees per kg

$$1200/(4x/5) - 1200/x = 5$$

We will get  $x = 60$ , so reduced price  $= (4*60)/5 = 48$

**47. E**

$$(30/100)*T = P - 10$$

$$(40/100)*T = P + 15$$

U will get  $P = 85$

**48. D**

Option D, Cannot be determined.

**49. A**

$$\text{Decrease in expenditure} = (15/115)*100 = 300/23 \% = 13$$

$$1/3\%$$

**50. B**

Let the monthly salary of Mahesh be x,

$$X*(55/100)*(60/100) = 16500$$

$$X = 16500*(100/55)*(100/60)$$

$$X = \text{Rs. } 50000$$

Monthly salary of Mahesh = Rs. 50000