

### Statement Test 3

1. Ratio of the marked price of article 'M' to cost price of article 'N' is 7:5, respectively. Article 'M' is sold after giving a discount of 25% and profit earned on article 'N' is 20%. If difference between marked and selling price of article 'M' is Rs. 140 then find the selling price of article 'N'.

1.Rs. 480 2.Rs. 540 3.Rs. 550 4.Rs. 660 5.None of these

2. A seller added  $(m - 40)$  litres of water to  $(m + 80)$  litres of milk. He then replaced half the quantity of mixture with 30 litres of water such that the ratio of milk to water became 4:3. Find the ratio of milk to water in the initial mixture. 1.5:4 2.7:5 3.2:1 4.3:2 5.4:3

3. Priti and suman together can complete a piece of work in 52 days while suman and shiv together can complete the same work in 36 days. priti and suman together worked on it for 44 days and then shiv alone completed the remaining work in 8 days. If priti, suman and shiv started a certain work and worked together till its completion for which they received Rs. 900 as total wage, then share of priti out of total wage will be:

1.Rs.200 2.Rs.450 3.Rs.250 4.Rs.300 5.None of these

4. Sahil and Sunil started a business by investing Rs. 2800 and Rs. 3500, respectively. After 6 months, Rinki entered into the business by investing Rs. 4200. At the end of year, total profit earned by all of them together was Rs. 4000. If 40% of the total profit deducted as a tax then find the profit share of Sahil. 1.Rs. 200 2.Rs. 400 3.Rs. 600 4.Rs. 800 5.Rs. 1000

5. Shalini deposited Rs. 'X' in a bank offering compound interest of 12% p.a. compounded annually. After 2 years he invested the amount received from the bank in scheme 'P' and 'Q' in the ratio of 9:5 respectively. Scheme 'Q' offers compound interest of 20% p.a. compounded annually while scheme 'P' offers simple interest of 15% p.a. If total interest received by him from schemes P and Q together at the end of 2 years is Rs. 2195.2, then find the value of 'X'.

1.5500 2.4500 3.5000 4.4000 5.None of these

6. There are 3 red balls, \_\_\_\_\_ black balls and 'x' blue balls in a bag such that 'x' is 25% more than number of black balls. If three balls are picked at random then the probability of getting two red balls and 1 blue ball will be \_\_\_\_\_. I. 4, 7/44 II. 8, 3/133 III. 12, 3/1634

1.Only I and III 2.Only II 3.Only III 4.Only II and III 5.Only I

7. Three years ago, Rajiv's age was represented by the expression  $(4m - 3)$  years, and three years from now, Veneet's age will be represented by the expression  $(7m + 3)$  years. Four years ago, the ratio of Veneet's age to Amit's age was 5:4, respectively. If Rajiv's age is '5m/3' years younger than Amit's age, determine the present age of Rajiv. 1.12 2.24 3.36 4.48 5.None of these

8. Two circular parks has area  $A_1$  and  $A_2$  respectively, they touches externally. Average value of  $A_1$  and  $A_2$  is  $40\pi$  km<sup>2</sup> and distance between their centres is 12 km. Find the radius of the larger park? 1.8 km 2.9 km 3.10 km 4.7 km 5.None of these

9. The ratio of the perimeter of a square field and another field which is in shape of an equilateral triangle is 8:9, respectively. If the cost of cultivating the square field at the rate of Rs. 4.5/m<sup>2</sup> is Rs. 10368, then find the cost of fencing the triangular field at the rate of Rs. 2.5/metre.

A.Rs. 620 B.Rs. 540 C.Rs. 360 D.Rs. 750 E.Rs. 600

10. A shopkeeper bought \_\_\_\_\_ eggs at the rate of Rs. 4/egg. \_\_\_\_\_ eggs broke during transportation, so the shopkeeper sold the remaining eggs at the rate of Rs. 6/egg. In this transaction shopkeeper earns a profit of Rs. \_\_\_\_\_. The values given in which of the following options will fill the blanks in the same order in which it is given to make the above statement true: A. 168, 26, 180 B. 72, 12, 84 C. 50, 10, 40.

A.Only A B.Only B and C C.Only A and C D.Only A and B E.None of these

11. The average age of a group of 60 students is 15 years. If 3 students whose ages are 17 years, 24 years and \_\_\_\_\_ years is replaced by 3 new students whose ages are \_\_\_\_\_ years, 22 years and 31 years, then the new average age of the group increases by 0.5 years. The values given in which of the following options will fill the blanks in the same order in which it is given to make the above statement true: A. 27, 45 B. 44, 64 C. 19, 37

A.Only A B.Only C C.Only A and C D.Only B and C E.All A, B and C

12. Before rain a boat can cover 72 km in still water and same distance downstream in 4 hours and 3 hours respectively. Due to rain the speed of the stream is increased by 25% whereas due to low visibility the speed of the boat in still water is decreased by 25%. Find the time taken by the boat to cover 147 km downstream and 48 km upstream after rain.

A.14 hours B.14 hour 30 minutes C.15 hours D.15 hour 30 minutes E.None of these

13. 'A' and 'B' started walking towards each other at the same time from point 'X' and point 'Y', respectively. 'A' is walking at 6 m/s and 'B' is walking at 8 m/s. If distance between 'X' and 'Y' is 24

metres and they're travelling back and forth between 'X' and 'Y', then find the total distance covered by 'B' by the time he meets 'A' for the second time.

A.(280/7) metres B.(232/7) metres C.(288/7) metres D.(224/7) metres E.None of these

14. A boat is travelling from point 'A' towards point 'B' with a speed of 120 km/h. If the current is flowing from point 'A' towards point 'B' with a speed which is equal to  $(1/3)^{th}$  of the speed of the boat in still water and distance between point 'A' and point 'B' is 600 km, then find the time taken by the boat to make three trips from point 'A' to point 'B' and three trips from point 'B' to point 'A'.

A.36 hours B.32 hours C.40 hours D.45 hours E.30 hours

15. While working with their normal efficiency, 'A' alone can build a wall in 18 hours while 'A' and 'B' can together build it in 8.4 hours. If 'A' and 'B' work together for 5 hours where 'A' works at 120% his normal efficiency while 'B' works at 70% of his normal efficiency, then how much part of the wall will be built in the given time?

A.(3/8) part B.(5/9) part C.(6/11) part D.(4/9) part E.(3/7) part

16. 'A', 'B' and 'C' together started a business by investing Rs. 6,300, Rs. 5,600 and Rs. 8,400, respectively. If 'A', 'B' and 'C' invested their sum for 12 months, 'y' months and  $(y - 1)$  months, respectively and total profit received by 'A' and 'B' together was Rs. 10,750 out of which profit share of 'A' was Rs. 6,750, then find the total profit received by all three together.

A.Rs. 16,000 B.Rs. 16,750 C.Rs. 15,600 D.Rs. 14,750 E.Rs. 15,750

17. In a stream flowing at 8 m/s, a cargo ship while travelling in upstream takes 25 seconds to cross a pole and 30 seconds to cross a 160 metre long bridge. The upstream speed of the cargo ship is 28% more than the downstream speed of a 580 metre long cruise ship. Find the time taken by the cargo ship to cross the cruise ship when both ships are travelling in downstream of the same stream. A.40 seconds B.48 seconds C.50 seconds D.60 seconds E.None of these

18. The water level of a cuboidal tank with length and breadth of 15 metre and 14 metres rises by 1 metre for every 1 hour of rain. If the quantity of water stored in the cuboidal tank after 198 minutes of rain is emptied into a cylindrical vessel of base radius 7 metres and curved surface area of 264 m<sup>2</sup>, then find the percentage of the cylindrical tank filled.

A.80% B.60% C.70% D.75% E.50%

19. The incomes of 'A' and 'C' are in the ratio 4:3, respectively. 'A' and 'C' spend 37.5% and 75% of their respective incomes and the savings of 'B' is 60% of the sum of savings of 'A' and 'C'. If 'B' saves Rs. 3,900, which is Rs. 300 more than his expense, then find the sum of incomes of 'A', 'B' and 'C'. A.Rs. 21,500 B.Rs. 23,000 C.Rs. 19,800 D.Rs. 22,500 E.Rs. 18,750

20. 'B' alone can complete a work in 20 days. 'A' and 'B' together can complete 75% of the same work in \_\_\_\_\_ days. 'A' alone can complete the entire work in \_\_\_\_\_ days. The values given in which of the following options will fill the blanks in the same order in which it is given so as to make the statement true? I. 6, (40/3) II. (80/7), (80/3) III. 7, 12.5

A.Only II B.Only I and III C.Only II and III D.Only I E.All I, II and III

21. The compound interest earned on investing Rs. 8,000 for 2 years at compound interest of 15% p.a., compounded annually is Rs. \_\_\_\_\_ more/less than the simple interest earned on investing Rs. 4500 for 4 years at simple interest of \_\_\_\_\_% p.a. The values given in which of the following options will fill the blanks in the same order in which it is given so as to make the statement true?

I. 1200, 8% II. 1500, 6% III. 300, 16%

A.Only II B.Only I and II C.Only II and III D.Only III E.None of the above

22. Article 'A' having cost price of Rs. 350 is marked 'x%' above its cost price and sold after offering a discount of 25%. Article 'B' having cost price of Rs. 375 is marked 20% above its cost price and sold after offering a discount of 16%. The selling price of articles 'A' and 'B' are same. What is the profit earned on selling article 'A'?

A.Rs.  $(4x/9)$  B.Rs.  $(x - 18)$  C.Rs.  $(2x - 70)$  D.Rs.  $\{(x/2) + 6\}$  E.Rs.  $(x - 20)$

23. The ratio of number of hours taken by Arjun and Govind to complete a task alone is 8:5, respectively. While working together, Arjun and Govind can complete the work in 200/13 hours. If Arjun and Govind work at twice and half of their respective efficiencies, then how long would it take them to complete the task while working together?

A.60/13 hours B.90/17 hours C.100/7 hours D.181/7 hours E.None of the above

24. The cost price of 15 kg of wheat is equal to the selling price of 10 kg wheat, the cost price of 18 kg of rice is equal to the selling price of 15 kg rice, and the cost price of 15 kg of millet is equal to the selling price of 20 kg millet. If the ratio of cost price of wheat, rice and millet (per kg) is 4:5:6 respectively, then find the overall percentage profit or loss on selling 1 kg wheat, 2 kg rice and 1 kg millet. A.12.5% B.25% C.33.33% D.37.5% E.50%

**1. Answer: A**

Let, the marked price of article 'M' to cost price of article 'N' be Rs.  $7x$  and Rs.  $5x$ , respectively.

ATQ,

$$7x - 7x \times 0.75 = 140$$

$$\text{Or, } x = 140/1.75 = 80$$

$$\text{Cost price of article 'N'} = 5 \times 80 = \text{Rs. } 400$$

$$\text{Selling price of article 'N'} = 400 \times 1.2 = \text{Rs. } 480$$

Hence Answer is option A.

**2. Answer: C**

According to the question,

$$\{0.5 \times (m - 40) + 30\} / \{0.5(m + 80)\} = 3/4$$

$$\text{Or, } 4 \times (0.5m - 20 + 30) = 3 \times 0.5(m + 80)$$

$$\text{Or, } 2m + 40 = 1.5m + 120$$

$$\text{Or, } 0.5m = 80$$

$$\text{Or, } m = 80/0.5 = 160$$

$$\text{Required ratio} = (m + 80) : (m - 40) = 240 : 120 = 2 : 1$$

Hence answer is option C

**3. Answer: C**

Let, total amount of work = 468 units (LCM of 36 and 52)

$$\text{Amount of work done by Priti and Suman together in one day} = 468/52 = 9 \text{ units}$$

$$\text{Amount of work done by suman and Shiv together in one day} = 468/36 = 13 \text{ units}$$

$$\text{Amount of work done by Priti and Suman together in 44 days} = 44 \times 9 = 396 \text{ units}$$

$$\text{Remaining work} = 468 - 396 = 72 \text{ units}$$

$$\text{Efficiency of Shiv} = 72/8 = 9 \text{ units per day}$$

$$\text{Efficiency of Suman} = 13 - 9 = 4 \text{ units per day}$$

$$\text{Efficiency of Priti} = 9 - 4 = 5 \text{ units per day}$$

$$\text{Share of priti} = 5/18 \times 900 = \text{Rs. } 250$$

Hence, answer is option C

**4. Answer: D**

$$\text{Respective ratio of profit share of Sahil, Sunil and Rinki} = (2800 \times 12) : (3500 \times 12) : (4200 \times 6) = 4 : 5 : 3$$

$$\text{After tax deduction, total profit} = 4000 \times 0.6 = \text{Rs. } 2400$$

$$\text{Profit share of Sahil} = 2400 \times [4/(4 + 5 + 3)] = \text{Rs. } 800$$

Hence answer is option D

**5. Answer: C**

Let amount invested in scheme 'P' and scheme 'Q' be Rs. ' $9p$ ' and Rs. ' $5p$ ', respectively.

$$\text{So, } 0.15 \times 2 \times 9p + 0.44 \times 5p = 2195.2$$

$$\text{Or, } 2.7p + 2.2p = 2195.2$$

$$\text{Or, } 4.9p = 2195.2$$

$$\text{Or, } p = 448$$

$$\text{So, } X = (9 \times 448 + 5 \times 448) / (1.12 \times 1.12) = \text{Rs. } 5000$$

Hence answer is option C

**6. Answer: B**

For I:

$$\text{Number of black balls} = 4$$

$$\text{Number of blue balls} = 1.25 \times 4 = 5$$

$$\text{Required probability} = \{({}^3C_2 \times {}^5C_1) / {}^{12}C_3\} = 3/44$$

Therefore, I is false.

For II:

$$\text{Number of black balls} = 8$$

$$\text{Number of blue balls} = 1.25 \times 8 = 10$$

$$\text{Required probability} = \{({}^3C_2 \times {}^{10}C_1) / {}^{21}C_3\} = 3/133$$

Therefore, II is true.

For III:

$$\text{Number of black balls} = 12$$

$$\text{Number of blue balls} = 1.25 \times 12 = 15$$

$$\text{Required probability} = \{({}^3C_2 \times {}^{15}C_1) / {}^{30}C_3\} = 9/812$$

Therefore, III is false.

Hence answer is option B

**7. Answer: D**

Let R be the present age of Rajiv, V be the present age of Veneet and A be the present age of Amit.

Three years ago, Rajiv's age was  $(4m - 3)$  years:

$$R - 3 = 4m - 3$$

$$R = 4m \quad \dots(i)$$

Three years from now, Veneet's age will be  $(7m + 3)$  years:

$$V + 3 = 7m + 3$$

$$V = 7m \dots(ii)$$

Four years ago, the ratio of Veneet's age to Amit's age was 5:4:

$$(V - 4) / (A - 4) = 5/4 \quad \dots(iii)$$

Rajiv's age is ' $5m/3$ ' years younger than Amit's age:

$$A - R = 5m/3$$

From (iii)

$$(V - 4) / (A - 4) = 5/4$$

To simplify, we can cross-multiply:

$$4(V - 4) = 5(A - 4)$$

$$4V - 16 = 5A - 20$$

$$5A - 4V = 4 \dots(iv)$$

$$\text{As } R = 4m$$

$$\text{So, } A - R = 5m/3$$

$$A = 5m/3 + 4m$$

$$A = 17m/3$$

From (iv),

$$(85m)/3 - 28m = 4$$

$$(85m - 84m)/3 = 4$$

$$M = 12$$

$$\text{So, } R = 48$$

Therefore, the present age of Rajiv is 48 years.

Hence answer is option D

**8. Answer: A**

Let a and b, the radius of two parks respectively.

Now,

$$\pi a^2 + \pi b^2 = 80\pi$$

$$(a^2 + b^2) = 80 \dots(1)$$

$$\text{Also, } (a + b) = 12$$

On squaring the above equation

$$(a^2 + b^2 + 2ab) = 144$$

$$2ab = 144 - 80 = 64$$

$$\text{So, } (a - b) = (80 - 64)^{1/2} = 4$$

$$\text{So, radius of bigger park} = (12 + 4)/2 = 8 \text{ km}$$

Hence answer is option A

#### 9. Solution

Let each side of the square field be 'a' metres

$$\text{Therefore, } a^2 = 10368/4.5$$

$$\text{Or, } a^2 = 2304$$

$$\text{Or, } a = 48 \text{ metres}$$

$$\text{Therefore, perimeter of the square} = 4a = 192 \text{ metres}$$

$$\text{Perimeter of the equilateral triangular field} = 192 \times 9/8 = 216 \text{ metres}$$

$$\text{Therefore, cost of fencing the equilateral triangular field} = 216 \times 2.5 = \text{Rs. } 540$$

Hence, option b.

#### 10. Solution

Option A:

$$\text{Profit} = (168 - 26) \times 6 - 168 \times 4$$

$$= 852 - 672 = 180$$

So, option A can be the answer.

Option B:

$$\text{Profit} = (72 - 12) \times 6 - 72 \times 4$$

$$= 360 - 288 = 72$$

So, option B cannot be the answer.

Option C:

$$\text{Profit} = (50 - 10) \times 6 - 50 \times 4$$

$$= 240 - 200 = 40$$

So, option C can be the answer.

Hence, option c.

#### 11. Solution

Since, the new average increases by 0.5 years.

$$\text{So, sum of the ages of the added students} - \text{sum of the ages of the students who left} = 60 \times 0.5 =$$

$$30 \text{ years}$$

Option A:

$$(45 + 22 + 31) - (17 + 24 + 27) = 30 \text{ years}$$

So, option A can be the answer.

Option B:

$$(64 + 22 + 31) - (17 + 24 + 44) = 32 \text{ years}$$

So, option B cannot be the answer.

Option C:

$$(37 + 22 + 31) - (17 + 24 + 19) = 30 \text{ years}$$

So, option C can be the answer.

Hence, option c.

#### 12. Solution

$$\text{Speed of the boat in still water before rain} = 72/4 = 18 \text{ km/h}$$

$$\text{Downstream speed of the boat before rain} = 72/3 = 24 \text{ km/h}$$

$$\text{Speed of the stream before rain} = 24 - 18 = 6 \text{ km/h}$$

$$\text{Speed of the boat in still water after rain} = 18 \times 0.75 = 13.5 \text{ km/h}$$

$$\text{Speed of the stream after rain} = 6 \times 1.25 = 7.5 \text{ km/h}$$

$$\text{So, the time taken} = 147/(13.5 + 7.5) + 48/(13.5 - 7.5) = 7 + 8 = 15 \text{ hours}$$

Hence, option c.

#### 13. Solution

$$\text{Distance covered by 'B' by the time 'A' reaches 'Y'} = 24 \div 6 \times 8 = 32 \text{ metres}$$

$$\text{Additional distance covered by 'B'} = 32 - 24 = 8 \text{ metres}$$

$$\text{Distance between 'A' and 'B' when 'A' starts walking back towards 'X'} = 24 - 8 = 16 \text{ metres}$$

$$\text{Time taken by 'A' and 'B' to cover 16 metres} = 16 \div (6 + 8) = (8/7) \text{ seconds}$$

$$\text{Distance covered by 'B' in } (8/7) \text{ metres} = (8/7) \times 8 = (64/7) \text{ metres}$$

$$\text{So, total distance covered by 'B'} = 32 + (64/7) = (288/7) \text{ metres}$$

Hence, option c.

#### 14. Solution

Let the speed of the boat in still water be '3x' km/h

$$\text{Speed of the current} = 3x \times (1/3) = 'x' \text{ km/h}$$

$$\text{Downstream speed of the boat} = 3x + x = '4x' \text{ km/h}$$

ATQ;

$$120 = 4x$$

$$\text{So, } x = 30 \text{ km/h}$$

$$\text{So, speed of boat in still water} = 3 \times 30 = 90 \text{ km/h}$$

$$\text{So, time taken by the boat to make 3 trips from point 'A' to point 'B'} = 600 \times 3 \div (90 + 30) = 15 \text{ hours}$$

$$\text{And, time taken by the boat to make 3 trips from point 'B' to point 'A'} = 600 \times 3 \div (90 - 30) = 30 \text{ hours}$$

$$\text{Total time taken} = 15 + 30 = 45 \text{ hours}$$

Hence, option d.

#### 15. Solution

Let the total work done to build the wall = 126 units

$$\text{Then, normal efficiency of 'A'} = 126 \div 18 = 7 \text{ units/hour}$$

$$\text{Normal efficiency of 'A' and 'B' together} = 126 \div 8.4 = 15 \text{ units/hour}$$

$$\text{So, normal efficiency of 'B' alone} = 15 - 7 = 8 \text{ units/hour}$$

$$120\% \text{ of efficiency of 'A'} = 7 \times 1.2 = 8.4 \text{ units/hour}$$

$$70\% \text{ of efficiency of 'B'} = 8 \times 0.7 = 5.6 \text{ units/hour}$$

$$\text{So, work done by 'A' and 'B' together in 5 hours} = (8.4 + 5.6) \times 5 = 70 \text{ units}$$

$$\text{So, part of the wall completed} = (70/126) = (5/9) \text{ part}$$

Hence, option b.

#### 16. Solution

$$\text{Ratio of profit shares of 'A' and 'B', respectively} = (6300 \times 12):(5600 \times y) = 6750:(10750 - 6750)$$

$$\text{Or, } 75600:5600y = 6750:4000 = 27:16$$

$$\text{So, } y = 16 \times 75600 \div (27 \times 5600) = 8$$

So, time for which 'C' invested his sum = 7 months

$$\text{Ratio of profit share of 'B' and 'C'} = (5600 \times 8):(8400 \times 7) = 16:21$$

$$\text{So, profit share of 'C'} = 4000 \times (21/16) = \text{Rs. } 5,250$$

$$\text{So, total profit earned} = 10750 + 5250 = \text{Rs. } 16,000$$

Hence, option a.

#### 17. Solution

Let the speed of the cargo ship in still water be 'y' m/s

Let the length of the cargo ship be 'k' metres

$$\text{Distance covered by the cargo ship in upstream in 25 seconds} = 'k' \text{ metres}$$

$$\text{Distance covered by the cargo ship in upstream in 30 seconds} = (k + 160) \text{ metres}$$

$$\text{So, distance covered by the cargo ship in upstream in } (30 - 25) \text{ seconds} = k + 160 - k = 160 \text{ metres}$$

$$\text{So, upstream speed of the cargo ship} = (160/5) = 32 \text{ m/s}$$

$$\text{So, length of the cargo ship} = 32 \times 25 = 800 \text{ metres}$$

$$\text{Downstream speed of the cruise ship} = 32 \div 1.28 = 25 \text{ m/s}$$

$$\text{Downstream speed of the cargo ship} = 32 + 8 + 8 = 48 \text{ m/s}$$

$$\text{So, relative speed of the cargo ship with respect to the cruise ship downstream} = 48 - 25 = 23 \text{ m/s}$$

$$\text{So, time taken by the cargo ship to cross the cruise ship when travelling downstream} = (800 + 580) \div 23$$

$$= 60 \text{ seconds}$$

Hence, option d.

#### 18. Solution

$$\text{Volume of water stored in the cuboidal tank after 1 hour of rain} = 15 \times 14 \times 1 = 210 \text{ m}^3$$

$$\text{Curved surface area of the cylindrical vessel} = 2 \times \pi \times \text{radius} \times \text{height} = 264 \text{ m}^2$$

$$\text{Volume of the cylindrical vessel} = \pi \times \text{radius}^2 \times \text{height} = 264 \div 2 \times 7 = 924 \text{ m}^3$$

198 minutes =  $(198/60) = 3.3$  hours

So, total volume of rain water filled in 3.3 hours =  $210 \times 3.3 = 693 \text{ m}^3$

Therefore, required percentage =  $(693/924) \times 100 = 75\%$

Hence, option d.

### 19. Solution

Let the income of 'A' = Rs. '16y'

Then, income of 'C' =  $16y \times (3/4) = \text{Rs. '12y'}$

Savings of 'A' =  $16y \times (1 - 0.375) = \text{Rs. '10y'}$

Savings of 'C' =  $12y \times (1 - 0.75) = \text{Rs. '3y'}$

Savings of 'B' =  $(10y + 3y) \times 0.60 = \text{Rs. '7.8y'}$

ATQ;

$7.8y = 3900$

So,  $y = (3900 \div 7.8) = 500$

So, income of 'A' =  $16 \times 500 = \text{Rs. 8,000}$

Income of 'B' =  $3900 + (3900 - 300) = \text{Rs. 7,500}$

Income of 'C' =  $12 \times 500 = \text{Rs. 6,000}$

So, sum of incomes of 'A', 'B' and 'C' =  $8000 + 7500 + 6000 = \text{Rs. 21,500}$

Hence, option a.

### 20. Solution

From I:

Let total work = L.C.M of 20 and 6 = 60 units

Then, efficiency of 'B' =  $(60/20) = 3$  units/day

75% of the work =  $60 \times 0.75 = 45$  units

Combined efficiency of 'A' and 'B' =  $45 \div 6 = 7.5$  units/day

So, efficiency of 'A' =  $7.5 - 3 = 4.5$  units/day

So, time taken by 'A' alone to complete the entire work =  $60 \div 4.5 = (40/3)$  days

So, I is true.

From II:

Let total work = L.C.M of 20 and  $(80/7) = 560$  units

So, efficiency of 'B' =  $560 \div 20 = 28$  units/day

75% of total work =  $560 \times 0.75 = 420$  units

Combined efficiency of 'A' and 'B' =  $420 \div (80/7) = 36.75$  units/day

So, efficiency of 'A' alone =  $36.75 - 28 = 8.75$  units/day

So time taken by 'A' alone to complete the entire work =  $560 \div 8.75 = 64$  days  $\neq (80/3)$

So, II is false.

From III:

Let the total work = L.C.M of 20 and 7 = 140 units

Then, efficiency of 'B' alone =  $140 \div 20 = 7$  units/day

75% of total work =  $140 \times 0.75 = 105$  units/day

So, combined efficiency of 'A' and 'B' =  $105 \div 7 = 15$  units/day

So, efficiency of 'A' alone =  $15 - 7 = 8$  units/day

Time taken by 'A' alone to complete the entire work =  $(140/8)$  days  $\neq 12.5$  days

So, III is not true.

Hence, option d.

### 21. Solution

Compound interest earned =  $8000 \times \{1 + (15/100)\}^2 - 8000 = \text{Rs. 2,580}$

From I:

Simple interest earned =  $(4500 \times 8 \times 4) \div 100 = \text{Rs. 1,440}$

So, difference in interests earned =  $2580 - 1440 = \text{Rs. 1,140} \neq \text{Rs. 1,200}$

So, I is not true.

From II:

Simple interest earned =  $(4500 \times 6 \times 4) \div 100 = \text{Rs. 1,080}$

So, difference in interest =  $2580 - 1080 = \text{Rs. 1,500}$

So, II is true.

From III:

Simple interest earned =  $(4500 \times 16 \times 4) \div 100 = \text{Rs. 2,880}$

So, difference in interest =  $2880 - 2580 = \text{Rs. 300}$

So, III is true.

Hence, option c.

### 22. Solution

Selling price of article 'B' =  $375 \times 1.2 \times 0.84 = \text{Rs. 378} =$  selling price of article 'A'

So, marked price of article 'A' =  $378 \div 0.75 = \text{Rs. 504}$

So,  $x = \{(504 - 350) \div 350\} \times 100 = 44$

Profit earned on selling article 'A' =  $378 - 350 = \text{Rs. 28}$

Since,  $(x/2) + 6 = (44/2) + 6 = 22 + 6 = 28$

Hence, option d.

### 23. Solution

Let the number of hours taken by Arjun and Govind to complete the task be '8x' hours and '5x' hours respectively.

According to the question,

$1/8x + 1/5x = 13/200$

On solving we get,  $x = 5$

Working at twice his efficiency, Arjun can complete the task in  $4x = 20$  hours and while working at half his efficiency, Govind can complete the task in  $10x = 50$  hours

Time taken by Arjun and Govind to complete the task =  $1/(1/20 + 1/50) = 1/(7/100) = 100/7$  hours

Hence, option c.

### 24. Solution

Let, the cost price of wheat, rice, and millet (per kg) be Rs. 4x, Rs. 5x, and Rs. 6x respectively.

So, selling price of wheat =  $(15/10) \times 4x = \text{Rs. } 6x$

So, selling price of rice =  $(18/15) \times 5x = \text{Rs. } 6x$

So, selling price of millet =  $(15/20) \times 6x = \text{Rs. } 4.5x$

So, total cost price of 1 kg wheat, 2 kg rice and 1 kg millet =  $4x \times 1 + 5x \times 2 + 6x \times 1 = 4x + 10x + 6x = \text{Rs. } 20x$

So, total selling price of 1 kg wheat, 2 kg rice and 1 kg millet =  $6x \times 1 + 6x \times 2 + 4.5x \times 1 = 6x + 12x + 4.5x = \text{Rs. } 22.5x$

Therefore, required profit percentage =  $\{(22.5x - 20x)/20x\} \times 100 = \{(2.5x)/20x\} \times 100 = 2.5 \times 5 = 12.5\%$

Hence, option a.