Chapter 4

Percentage an Problems on Ages

1. Cost Price of two laptops is same. One of the laptops is sold at a profit of 15% and the selling price of another one laptop is Rs.3400 more than the first one. The net profit is 20%. What is the cost price of each laptop?

A 36000 B 40000 C 48000 D 34000`

Solution: Let cost price of laptop be Rs. x

∴  Profit =10015x​Rs

∴  selling price =Rs(10015x​+x)=Rs. 100115x​

New selling price =Rs. (100115x​−100115x​×10010​)

=Rs. 100115x​(10090​)

=Rs. 10001035x​

∴  Profit =(10001035x​−x)=Rs. 100035x​

Now, 100035x​=1050

∴ x=30,000

∴  Cost price of Laptop =Rs. 30,000

2. In an office there are 40% female employees. 50% of the male employees are UG graduates. The total 52% of employees are UG graduates out of 1800 employees. What is the number of female employees who are UG graduates?

A 362 B 412 C 396 D 428

Solution: Total employees = 1800  
female employees = 40%  
male employees = 60%  
50% of male employees = UG graduates = 30%  
Female employees who are UG graduates = 22%  
22% of 1800 = 396

3. Ravi got 70% in English and 56% in Biology and the maximum marks of both papers is 100. What percent does he score in Maths, if he scores 60% marks in all the three subjects? Maximum Marks of Maths paper is 200.

A 37 B 47 C 67 D 57

Solution:70+56+x=60% of all three subjects

70+56+x=60% of 400

X=240-126=114

%=114/200\*100=57%

4. Ankita is 25 years old. If Rahul’s age is 25% greater than that of Ankita then how much percent Ankita’s age is less than Rahul’s age?

A 10 % B 20 % C 30 % D 40 %

Solution: Ankita's age = 25  
Let x be the rahul age  
x = 25+ 25% of 25  
x = 25+ 25 x 25/100  
x= 31.25  
Rahul age = 31.25  
Percentage decrease = (31.25-25)/31.25 \* 100% = 20%

5. Mr.Ravi’s salary was reduced by 25% for three months. But after the three months, his salary was increased to the original salary. What is the percentage increase in salary of Mr.Ravi?

A 33.33 % B 42.85 % C 38.50 % D 40 %

Solution: Let salary be =100

3 months salary =100-25%=75

Next 3 months salary increased =25 in 75 rs

% increase =(25/75)×100%=33.33%

6. In an election only two candidates A and B contested 30% of the voters did not vote and 1600 votes were declared as invalid. The winner, a got 4800 votes more than his opponent thus he secured 51% votes of the total voters on the voter list. Percentage votes of the loser candidate, B out of the total voters on the voter list is:

A 3 % B 4 % C 5 % D 6 %

Solution: Total voters:100%

30%did not vote,so 70%votes cast

1600 votes are invalid

valid votes=70%-1600

Step-by-step explanation: winner got 51% of total voters list and 4800 more than loser.

so loser got 51%-4800

add winner and loser and equalize with valid votes

51%+51%-4800=70%-1600

1%=100

loser votes=300/10000(total votes)

=3%

7. In a school there are 2000 students. On January 2nd, all the students were present in the school except 4% of the boys and on January 3rd, all the students are present in the school except 28/3 % of the girls, but in both the days’ number of students present in the school, were same. The number of girls in the school is?

A 400 B 600 C 800 D 1200

Solution: The ratio of students who like orange and total number of student participate in the survey = \frac{34}{120} 120 34

Let x students out of 2,000 students like orange.

Thus, In this case, the ratio of students who like orange and total number of student participate in the survey = \frac{x}{2000} 2000 x

By the proportional reasoning, Both ratio must be equal.

That is, \frac{x}{2000}=\frac{34}{120} 2000 x = 120 34

⇒ x = 2000\times \frac{34}{120}x=2000× 120 34

⇒ x = \frac{68,000}{120}x=120 68,000

⇒ x = 566.666666667\approx 567x=566.666666667≈567

8. A school has raised 75% of the amount it needs for a new building by receiving an average donation of Rs. 1200 from the parents of the students. The people already solicited represents the parents of 60% of the students. If the School is to raise exactly the amount needed for the new building, what should be the average donation from the remaining students to be solicited?

A 600 B 700 C 800 D 900

Solution:  Let the number of people be x who has been asked for donations.

⇒  People already solicited = 60%ofx=0.6x.

⇒  Remaining people = 40%ofx=0.4x.

⇒  Amount collected from the people solicited = 600×0.6x=360x

⇒  Here, 360x is 75% of amount collected.

⇒  So, Remaining 25% amount = 120x.

⇒  Thus, Average donation from remaining people = RemainingpeopleRemainingamount​=0.4x120x​=300

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9. The monthly income of Shyama and Kamal together is Rs.28000. The income of Shyama and Kamal is increased by 25% and 12.5% respectively. The new income of Kamal becomes 120% of the new salary of Shyama. What is the new income of Shyama?

A 13000 B 14000 C 15000 D 16000

Solution: Let shyama's income be 'x'

     Kamal's income be 'y'

x + y = 28,000 ⇒ y = 28,000-x

new incomes,

shyama's income = x + (x) 25%

kamal's income = y + (y) 12.5%

according to the question,

y + (y) 12.5% = { x + (x) 25%} 120%

1.125 y = (1.25 x ) 120%

1.125 y = {1.25( 28,000- y) } 120%

2.625 y = 42,000

y (Kamal's old Income ) = 16,000

kamal's new income = 18,000

10. In a class of 60 students, 40% of the students passed in Reasoning, 5% of the students failed in Quants and Reasoning, and 20% of the students passed in both the subjects. Find the number of student passed only in Quants?

A 13 B 23 C 33 D 43

Solution: Total students failed = 5% of 60

= 5/100 \* 60 = 3

Total students passed in both = 20% of 60 = 20/100 \* 60 = 12

Total students passed in reasoning = 40% of 60 = 40/100 \* 60 = 24

Students passed in reasoning only = 24 - 12 = 12

Students passed in quants = 60 - 12 - 12 - 3 = 33

11. 500 kg of ore contained a certain amount of iron. After the first blast furnace process, 200 kg of slag containing 12.5% of iron was removed. The percentage of iron in the remaining ore was found to be 20% more than the percentage in the original ore. How many kg of iron were there in the original 500 kg ore?

A 54.2 B 58.5 C 89.2 D 46.3

Solution: Let x be the original percent of iron in the ore. Then rotal iron content would be -

Total iron = 500 × x/100

Total iron = 5x

Iron that was removed in the slag is -

Iron removed = 200 × 12.5/100

Iron removed = 25 kg

Now remaining iron would be 5x-25 kg in 300 kg ore. Given that this is 20% more than original iron.

x/100 × (120/100) = (5x-25)/300

3.6x = 5x - 25

1.4x = 25

x = 17.85 %

Total iron in the original ore was thus -

Total iron = 5x

Total iron = 5 × 17.85

Total iron = 89.29 kg

12. The maximum marks per paper in 3 subjects in Mathematics, Physics and Chemistry are set in the ratio 1: 2: 3 respectively. Giri obtained 40% in Mathematics, 60% in Physics and 35% in Chemistry papers. What is overall percentage marks did he get overall?

A 44 % B 32 % C 50 % D 60 %

Solution: 40\*1/100  : 60\*2/100 : 35\*3/100 = 0.4:1.2:1.05

Overall % =100\* [0.4+1.2+1.05]/1+2+3 = 265/6 = 44.16 = 44%

13. In an examination, 50% of the students passed in Science and 75% passed in Social, while 20% students failed in both the subjects. If 270 students passed in both subjects, find the total number of students who appeared in the exam?

A 400 B 540 C 600 D 750

Solution:no of students passed in both subjects:50+75-x=80

X=45% 45% of x=270

X=270\*100/45=600

14. Fresh fruits contain 75% while dry fruits contain 20% water. If the weight of dry fruits is 300 kg, what was its total weight when it was fresh?

A 900 B 850 C 920 D 960

Solution: Quantity of water in 300 kg dry fruits, = (20 /100) \*300 = 60 kg Quantity of fruit alone= 300-60 =240 kg 25 kg fruit piece in 100 kg fresh fruits For 240 = (100 \*240)/25 = 960 kg.

15. In a college election 35% voted for Person A, whereas 42% voted for Person B. The remaining people were not vote to any person. If the difference between those who vote for Person B in the election and those who are uncertain was 570, how many people are participated in the college election?

A 1500 B 2000 C 2500 D 3000

Solution: Let the number of individuals involved in election be x.

Percentage of those who were not vote = 100-(35+42) =

23%

The difference between those who voted

42% of x – 23% of x = 570

19% of x = 570

x=570\*100/19 = 3000

16. In a factory there are three types of bulbs L1, L2 and L3 which produces 20%, 15% and 32% of the total products respectively. L1, L2 and L3 produces 3%, 7% and 2% defective products, respectively. Find the percentage of non-defective products?

A 46 % B 30 % C 56 % D 64 %

Solution: (20\*0.97)+(15\*0.93)+(32\*0.98) = 19.4+13.95+31.36

= 64.71

17. James’ father was 30 years old when he was born. His mother’s age was 24 when his sister who is 5 years younger to him, was born. What is the difference between the age of James’ father and mother?

A 8 B 9 C 10 D 11

Solution: James' age =F-30  
Sister's age =F-35  
M=24+ Sister's age  
M=24+F-35  
∴∴ F-M=11

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18. The respective ratio between the present age of Monika and Deepak is 5:x. Monika is 9 years younger than Prem. Prem’s age after 9 years will be 33 years. The difference between Deepak’s and Monika’s age is same as the present age of Prem. What is the value of x?

A 11 B 13 C 15 D 17

Solution: Present age of Parineeta is 33 - 9 = 24 years  
  
Age of Manisha = 24 - 9 = 15 years  
  
But from the given information, difference Mamsha and Deepali's age is 24 years  
  
Deepali's Age =15+24=39 years

Thus, Deepali's present age is 39 years.

Now, as the ratio of Manisha's age and Deepali's age is https://tex.z-dn.net/?f=5%3Ax, so...

ManishaDeepali=5xManishaDeepali=5x

1539=5x1539=5x

15x=9515x=95

x=19515x=19515

∴x=13

19. Three years ago, Poorvi was thrice as old as his sister Reena. After three years Poorvi will be twice as old as Reena. What is the present age of Reena?

A 9 years B 10 years C 11 years D 12 years

Solution: P – 3 = 3 \*(R – 3) —(1)  
P + 3 = 2 \*(R + 3) —(2)  
Solving eqn (1) and (2)  R = 9

20. Fifteen years ago, Rita’s mother was thrice of Rita’s age and two years ago Rita’s Mother was twice of Rita’s age. What is the present age of Rita’s Mother?

A 47 years B 49 years C 52 years D 54 years

Solution: Rita’s mother age = R1  
Rita’s age = R2  
R1 – 15 = 3 \*(R2 – 15) —(1)  
R1 – 2 = 2 \*(R2 – 2) —(2) From eqn (1) and (2) R1 = 54

21. Mr.Suresh has three daughters namely Ramya, Anita and Kiran. Ramya is the eldest daughter of Mr.Suresh while Kiran is the youngest one. The present ages of all three of them are square numbers. The sum of their ages after 5 years is 44. What is the age of Ramya after two years?

A 18 B 17 C 16 D 15

Solution: Square numbers – a, b, c  
(a + 5) + (b + 5)+ (c + 5) = 44  
a + b + c = 44 – 15 = 29  
Possible values of a, b, c = 4, 9, 16 [Out of 1, 4, 9, 16, 25] Ramya’s present age = 16; after two years = 18

22. If 6 years are subtracted from the present age of Ravi and the remainder is divided by 12, then the present age of his grandson Pranav is obtained. If Pranav is 2 years younger to Mohit whose age is 8 years, then what is Ravi’s present age?

A 72 B 74 C 76 D 78

23. One year back, Ria was six times as old as her daughter. Six years hence, Ria’s age will exceed her daughter’s age by 15 years. The ratio of the present ages of Ria and her daughter is?

A 15 ∶ 4 B 19 ∶ 4 C 15 ∶ 2 D 19 ∶ 2

Solution: Ages of Ria and her daughter = 6x, x  
[6x + 1 + 6] – [x + 1 + 6] = 15  
5x = 15; x = 3  
Ratio = 6x + 1 : x + 1 = 19 : 4

24. Suresh age is 125% of what it was ten years ago, but 250/3% of what it will be after ten years. What is the present age of Suresh?

A 40 B 50 C 60 D 70

Solution: Suresh’s age before 10 years = x  
125x/100 = x + 10  
125x = 100x + 1000 ⇒ x = 40  
Present age = x + 10 = 50

25. Ajay got married 6 years ago. His present age is 5/4 times his age at the time of his marriage. Ajay’s brother was 5 years younger to him at the time of his marriage. What is the present age of Ajay’s brother?

A 22 B 25 C 15 D 19

Solution:present age of ajay=x;

Present age of ajays sister=y

X=(x-6)(5/4)

X=30

Present age of ajays brother=30-5=25

26. 15 years ago the average age of a family of four members was 40 years. Two children were born in this span of 15 years. The present average of the family remains unchanged. Among the two children who were born during the 15 years, if the older child at present is 8 years older than the younger one, what is the ratio of the present age of the older child to the present age of the younger Child?

A 7 ∶ 4 B 7 ∶ 5 C 7 ∶ 6 D 7 ∶ 3

Solution: 15 years ago Total age of a family of four members = 160  
Sum of the Present age of a family of four members = 160 + (15\*4) = 220  
Sum of the Present age of a family of six members = 40\*6 = 240  
x+x+8 = 20  
x=6  
present age of the older child to the present age of the younger Child = 14:6 = 7:3

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27. James’ present age is 2/7th of his father’s present age. James’ brother is three year older to James. The respective ratio between present ages of James’ father and James’ brother is 14:5. What is the present age of James?

A 12 B `13 C 14 D 15

Solution: James’ father present age = x  
James’ age = 2/7 x  
James’ brother age = 2/7 x + 3  
x/(2/7x + 3) = 14/5  
x = 42  
James’ age = 2/7 x = 2/7 \* 42 = 12

28. Eight years ago, Poorvi’s age was equal to the sum of the present ages of her one son and one daughter. Five years hence, the respective ratio between the ages of her daughter and her son that time will be 7:6. If Poorvi’s husband is 7 years elder to her and his present age is three times the present age of their son, what is the present age of the daughter?

A 15 B 13 C 23 D 25

Solution: P – 8 = S + D —(1)  
6D + 30 = 7S + 35 —(2)  
H = 7 + P  
H = 3S  
3S = 7 + P —-(3)  
Solving eqn (1),(2) and (3) D = 23

29. At present, the respective ratio between the ages of A and B is 3:4 and that between A and C is 1:2. Six years hence, the sum of A, B and C will be 96 years. What is the present age of A?

A 12 B 14 C 16 D 18

Solution: The ratio between A, B and C is = 3:4:6  
The sum of present age of A,B and C = 96 – 18 = 78  
13 x = 78  
x = 6  
Present age of A = 3x = 18

30. The present age of Ramya is one-fourth that of her father. After 6 years, the father’s age will be twice the age of Kiran. If kiran celebrated fifth birthday 8 year ago, what is the Ramya’s Present age?

A 3 B 5 C 6 D 8

Solution: Kiran’s present age = 8 + 5 = 13  
kiran’s age after 6 years = 13 + 6 = 19  
Kiran’s father age = 2 \* 19 = 38  
Father’s present age = 32  
Ramya’s present age = 32 / 4 = 8

31. B is eight years older than A and 8 years younger than C. 12 years hence, respective ratio of the ages of A and C will be 5:9. What is the sum of present ages of A, B and C?

A 46 B 48 C 58 D 60

Solution: B = A + 8  
B = C – 8  
C – 8 = A + 8  
C – A = 16  
4x = 16  
x = 4  
12 years hence, A = 5x, C = 9x B = A + C => A= 20, B = 28, C = 36  
Sum of present ages of A, B and C = 20 + 28 + 36 – 36 = 48 years.

32. The sum of present ages Ria and Abi is 48 years. Today Abi is 4 years older than Shweta. The respective ratio of the present ages of Ria and Shweta is 4:7. What was Abi’s age two years ago?

A 30 B 32 C 28 D 34

Solution: R + A = 48 —(1)  
A = S + 4 –(2)  
R/S = 4/7  
R + S + 4 = 48 => R + S = 44  
11x =44  
x = 4  
Shweta’s age = 28  
Abi’s present age = 28 + 4 = 32  
Abi’s age two years ago = 30

33. The sum of the ages of 4 members of a family 5 year ago was 94 year. Today when the daughter has been married off and replaced by a daughter-in-law, the sum of their ages is 92 year. Assuming that there has been no other change in the family structure and all the people are alive, what is the difference between the age of daughter and the age of daughter in law?

A 22 B 25 C 19 D 18

Solution: 5 year ago, Sum of the ages of 4 members = 94  
Present age with daughter = 94 + 20 = 114  
Present age with daughter-in-law = 92  
Difference between the age of daughter and the age of daughter in law = 114 – 92 = 22 years.

34. Ajay’s present age is 1.5 times of Himanshu’s present age. If after 4 years, Ajay’s age will be twice of Himanshu’s age 4 years ago. What is the difference between the present ages of Ajay and Himanshu?

A 12 B 23 C 15 D 17

Solution: A = 1.5 \* H  
A + 4 = 2 \* (H – 4)  
A + 4 = 2H – 8  
A + 12 = 2H  
1.5H + 12 = 2H  
H = 24  
A = 24 \* 1.5 = 36  
Difference = 36 – 24 = 12

35. If Saurabh is as much elder than Shyam as he is younger to Suresh and sum of the ages of Shyam and Suresh is 46 year, then what will be the age of Saurabh after five years?

A 25 B 26 C 27 D 28

Solution: Let the present ages of Saurabh is x year and he is younger to Suresh by y year  
Then Suresh’s age = x + y  
Shyam’s age = x – y  
(x + y) + (x – y) = 46  
x = 23  
The age of Saurabh after five years is – 28

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