Problems on Ages

1. The age of father is 4 times the age of his son. If 5 years ago father's age was 7 times the age of his son at that time, then what is father's present age?
   (a) 40 years (b) 45 years (c) 50 years (d) 55 years

2. The age of Mr. Gupta is four times the age of his son. After ten years, the age of Mr. Gupta will be only twice the age of his son. Find the present age of Mr. Gupta's son.
   (a) 4 years (b) 5 years (c) 6 years (d) 7 years

3. 10 years ago Anu's mother was 4 times older than her daughter. After 10 years, the mother will be twice older than her daughter. Find the present age of Anu is
   (a) 5 years (b) 10 years (c) 15 years (d) 20 years

4. The sum of the ages of A and B is 42 years. 3 years back, the age of A was 5 times the age of B. Find the difference between the present ages of A and B.
   (a) 20 years (b) 22 years (c) 24 years (d) 26 years

5. The sum of the ages of a son and father is 56 years. After four years, the age of the father will be three times that of his son. Find their respective ages.
   (a) 41 years, 15 years (b) 42 years, 14 years (c) 43 years, 13 years (d) 44 years, 12 years

6. The ratio of the age of father and son at present is 6:1. After 5 years, the ratio will become 7:2. Find the present age of the son.
   (a) 5 years (b) 6 years (c) 7 years (d) 8 years

7. 6 years ago Mahesh was twice as old as Suresh. If the ratio of their present ages is 9:5 then, what is the difference between their present ages?
   (a) 21 years (b) 22 years (c) 23 years (d) 24 years

8. 10, years ago, Mohan was thrice as old as Ram was but 10 years hence, he will be only twice as old as Ram. Find Mohan's present age.
   (a) 60 years (b) 80 years (c) 70 years (d) 76 years

9. The ages of Ram and Mohan differ by 16 years. 6 years ago, Mohan's age was thrice as that of Ram's, find their present ages
   (a) 14 years, 30 years (b) 12 years, 28 years (c) 16 years, 34 years (d) 18 years, 38 years

10. 15 years hence, Rohit will be just four times as old as he was 15 years ago. How old is Rohit at present?
    (a) 20 (b) 25 (c) 30 (d) 35

11. If twice the son's age be added to the father's age, the sum is 70 years and if twice the father's age is added to the son's age, the sum is 95 years. Then father's age is:
    (a) 40 years (b) 35 years (c) 42 years (d) 45 years

12. 3 years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is the same today? What is the age of the child?
(a) 3 years (b) 5 years (c) 2 years (d) 1 year

13. The ages of A and B are in the ratio 6:5 and sum of their ages is 44 years. The ratio of their ages after 8 years will be:
(a) 4:5 (b) 3:4 (c) 3:7 (d) 8:7

14. Ratio of Ashok's age to Pradeep's age is 4:3. Ashok will be 26 years old after 6 years. How old is Pradeep's now?
(a) 18 years (b) 21 years (c) 15 years (d) 24 years

15. Jayesh is as much younger to Anil as he is older to Prashant. If the sum of the ages of Anil and Prashant is 48 years, what is the age of Jayesh?
(a) 20 years (b) 24 years (c) 30 years (d) Cannot be determined

16. 5 years ago Mr.Sohanlal was thrice as old as his son and 10 years hence he will be twice as old as his son. Mr.Sohanlal's present age (in years) is:
(a) 35 (b) 45 (c) 50 (d) 55

17. One year ago a father was four times as old as his son. In 6 years' time his age exceeds twice his son's age by 9 years. Ratio of their ages is:
(a) 13:4 (b) 12:5 (c) 11:3 (d) 9:2

18. The ages of A, B and C together is 185 years. B is twice as old as A and C is 17 years older than A. Then, the respective ages of A, B and C are:
(a) 40, 86 and 59 years (b) 42, 84 and 59 years (c) 40, 80 and 65 years (d) None of these

19. A father's age is three times the sum of the ages of his two children, but 20 years hence his age will be equal to the sum of their ages. Then, the father's age is:
(a) 30 years (b) 40 years (c) 35 years (d) 45 years

20. The average age of women and child workers in factory was 15 years. The average age of all the 16 children was 8 years and the average age of women workers was 22 years. If 10 women workers were married, then the number of unmarried women workers is :
(a) 16 (b) 12 (c) 8 (d) 6

21. After replacing an old member by a new member, it was found that the average age of five members of a club is same as it was 3 years ago. The difference between the ages of the replaced and the new members is:
(a) 2 years (b) 4 years (c) 8 years (d) 15 years

22. The ratio of a's and b's ages is 4:5. If the difference between the present age of A and B 5 years hence is 3, then what is the sum of present ages of A and B?
    (a) 68 years (b) 72 years (c) 76 years (d) 64 years

23. One year ago the ratio between Samir and Ashok's age was 4:3. One year hence the ratio of their ages will be 5:4. What is the sum of their present ages in years?
    (a) 12 years (b) 15 years (c) 16 years (d) Cannot be determined

24. Three times the present age of a father is equal to eight times the present age of his son. 8 years hence the father will be twice as old as his son at that time. What are their present ages?
    (a) 35, 15 (b) 32, 12 (c) 40, 15 (d) 27, 8

25. The ratio of the ages of Ram and Rahim 10 years ago was 1 : 3. The ratio of their ages 5 years hence will be 2 : 3. Then the ratio of their present ages is:
    (a) 1:2 (b) 3:5 (c) 3:4 (d) 2:5

Partnership

- **In *partnership,* two or more persons carry on a business and share the profits of the business at an agreed proportion. Persons who have entered into a partnership with one another are individually called *partners* and collectively called a *firm.* The name under which their business is carried on is called the *firm name.* The partnership may be simple or compound type.**
- **<u>Simple Partnership</u> is one in which the capital of each partner is invested in the business for a certain time span.**
- **<u>Compound Partnership</u> is one in which the capital of the partners is invested for different time periods. Again, a partner may be a working partner or a sleeping partner.**
- **<u>Sleeping Partner</u> is one who invests the capital in the business but does not actively participate in the day-to-day activities of the business.**
- **<u>A Working Partner</u> besides investing capital, takes part in running the business. For his work, he is either paid a certain amount of salary and also a share of the profit.**

<u>FORMULAE</u>

1. **If capital of two partners is Rs. C_1 and Rs. C_2 for the same period and the total profit be Rs. P, then shares of the partners in the profit**

   are Rs. $\left(\frac{C_1 \times \mathrm{P}}{C_1+C_2}\right)$ **and Rs.** $\left(\frac{C_2 \times \mathrm{P}}{C_1+C_2}\right)$

2. **If capitals of three partners be Rs. C_1, Rs. C_2 and Rs. C_3 for the same period and the total profit be RS P, then shares of the partners in the profit are Rs. $\left(\frac{C_1 \times P}{C_1+C_2+C_3}\right)$, Rs. $\left(\frac{C_2 \times P}{C_1+C_2+C_3}\right)$ and Rs. $\left(\frac{C_3 \times P}{C_1+C_2+C_3}\right)$.**

3. **If capitals of two partners be Rs. C_1, and Rs. C_2 for the periods t_1 and t_2, and the total profit be Rs. P, then shares of the partners in the profits are: Rs. $\left(\frac{C_1 \times t_1 \times P}{C_1 t_1+C_2 t_2}\right)$, Rs. $\left(\frac{C_2 \times t_2 \times P}{C_1 t_1+C_2 t_2}\right)$**

4. **If the capital of two partners is Rs. C_1, and Rs. C_2 for the period t_1 and t_2, respectively, then $\left(\frac{\text{Profit of } A}{\text{Profit of } B}\right) = \left(\frac{C_1 \times t_1}{C_2 \times t_2}\right)$**

5. **If the capital of three partners be Rs. C_1, Rs. C_2 and Rs. C_3 for the periods t_1, t_2 and t_3, respectively, then**

   profit of A : profit of B : profit of C = $C_1 \times t_1 : C_2 \times t_2 : C_3 \times t_3$

   loss of A : loss of B :loss of C = $C_1 \times t_1 : C_2 \times t_2 : C_3 \times t_3$

6. **If the capitals of three partners in a business invested in the ratio of $C_1 : C_2 : C_3$ and their profits are in the ratio $P_1 : P_2 : P_3$, then**

   Ratio of the timing of their investments, $= \frac{P_1}{C_1} : \frac{P_2}{C_2} : \frac{P_3}{C_3}$

7. **Three partners invested their capitals in abusiness. If the timing of their investments is in the ratio of $t_1 : t_2 : t_3$ and their profits are in the ratio $P_1 : P_2 : P_3$, then the ratio of their capitals invested is $= \frac{P_1}{t_1} : \frac{P_2}{t_2} : \frac{P_3}{t_3}$.**

Problems

1. **A, B and C invested Rs. 20,000, Rs. 50,000 and Rs. 40,000, in a business. The net profit for the year was Rs. 12,100. This net profit was divided in proportion to investments. Find out the amount of profit each partner has earned.**

   a. Rs. 2,200, Rs. 5,200, and Rs. 4,200 b. Rs. 2,200, Rs. 5,500, and Rs. 4,200

c. Rs. 2,200, Rs. 5,500, and Rs. 4,400 d. None

2. **A, and B are two partners in a business.A contributes Rs. 1,200 for 5 months and B contributes Rs. 750 for 4 months. If the total profit is Rs. 450, find out their respective shares.**

   a. Rs. 200, Rs. 350 b. Rs. 300, Rs. 150 c. Rs. 200, Rs. 150 d. None

3. **There are three partners A, B and C in a business. A invests Rs. 2000 for 5 months, B invests Rs. 1200 for 6 months and C invests Rs. 2500 for 3 months. Find out the ratio of their shares in the profit.**

   a. 100 : 72 : 75 b. 72 : 100 : 75 c. 100 : 75 : 72 d. None

4. **Anu, Manu and Tanu invested capital in a business with the ratio of 4 : 6 : 9. At the end of the business, they received their shares of profits in the ratio of 2:3:5. Find the ratio of time for which they invested their capital.**

   a. 10 : 9 : 10 b. 10 : 9 : 9 c. 9 : 10 : 10 d. 9 : 9 : 10

5. **Gupta, Singhal and Kansal start a business. If the ratio of their periods of investments is 1 : 2 : 5 and their profits are in the ratio of 3 : 4 : 5, find the ratio of capitals of Gupta, Singhal, and Kansal.**

   a. 3 : 2 : 1 b. 1 : 2 : 3 c. 3 : 1 : 2 d. 2 : 3 : 1.

6. **Nikita and Nishita enter into a partnership by investing `50,000 and `40,000, respectively. They agreed to share profits in the ratio of their capital. Find out the share of Nikita when the profit of the business is `22500 after a year.**

   a. 1500 b. 9500 c. 10500 d. 12500

7. **Niki, Nisha, and Anu formed a partnership with investments of `75,000, `60,000, and `40,000 respectively. After 3 years of operation, the partnership earned a net profit of `26,250. What was the share of Anu in the profit?**

   a. 6000 b. 5000 c. 8000 d. 7000

8. **Mahesh, Suresh, and Ganesh entered into a partnership business. Mahesh invested `16,000 for 9 months. Suresh invested `12,000 for 6 months and Ganesh invested `8,000 for 12 months. At the end of a year, there was a profit of `26,000. Find out the share of Suresh in the profit.**

   a. 8000 b. 7500 c.6000 d. 6500

9. **A starts a business with an investment of `3500. Five months later B joins A as a partner. After a year, the profits are divided by a ratio of 2:3. How much did B contribute?**

   a. 7000 b. 11000 c. 9000 d. 10000

10. **Gupta and Bansal enter into a partnership with their capitals in the ratio of 5:6. At the end of 8 months, Gupta withdraws his capital. If they receive their shares profits in the ratio of 5:9, find out how long Bansal's capital was invested in the business?**

    a. 10 months b. 12 months c. 14 months d. 13 months.

11. **A, B, and C rented a pasture. A puts in 12 oxen for 6 months, B 8 oxen for 7 months, and C 6 oxen for 8 months. If the rent of the field is `396, what amount of rent was paid by A?**

    a. 126 b. 108 c. 162 d. 168.

12. **A starts a business with a capital of `1200. B and C join with some investments after 3 and 6 months, respectively. If, at the end of a year, the profit is divided in the ratio of 2 : 3: 5, what is B's investment in the business?**

    a. 2400 b. 1800 c. 3600 d. 6000

13. **A, B, and C entered into a partnership by investing `12000, `15000, and `18000, respectively. A is also a working partner and receives 15% of the**

annual profit for his work. If B and C received `8500 and `10200 from the annual profit as their shares, what amount did A receive from the annual profit?

a. 10,500 b. 11,500 c. 11,300 d. 14,000.

14. A and B started a business with initial investments in the ratio of 5:7. If, after one year, their profits were in the ratio of 1:2 and the period for A's investment was for 7 months, B invested the money for:

a. 6 months b. 2.5 months c. 10 months d. 4 months

15. A, B and C invested capitals in the ratio 3:5:9; the timing of their investments being in the ratio 2:3:1. In what ratio would their profits be distributed?

a. 2:5:3 b. 3:2:5 c. 7:5:3 d. None

16. A and B enter into a partnership. A supplies whole of the capital amounting to `45000 with the condition that the profits are to be equally distributed and that B pays A interest on half of the capital at 10% per annum, but receives, `120 per month for carrying on the concern. When B's income is 1/2 of A's income, their total yearly profit is:

a. 9180 b. 7150 c. 3060 d. 1440

17. Sumit, Punit, and Ramit started a business by investing their capital in the ratio of 1:2:3. At the end of the business term, they received their shares of profit in the ratio of 1:2:3. Find out the ratio of time for which they invested their capitals.

a. 1:1:1 b. 2:3:4 c. 2:4:3 d. none

18. A , and B jointly invest `2100 and `3100 in a firm. A is an active partner, hence he receives 25% of the profit separately. If their business yields `1040 as profit, what will be the profit share for each of them?

a. 415,625 b. 575,465 c. 515,525 d. 560,480.

19. A and B enter into a partnership for a year. A contributes `1500 and B `2000. After 4 months, they admit C who contributes `2250. If B withdraws his contribution after 9 months, at the end of the year they share profit in the ratio:

a. 2:1:3 b. 1:3:2 c. 1:1:2 d. 1:1:1

20. A, B and C starts a business. If the ratio of their periods of investments is 2:3:6 and their profits are in the ratio of 4:5:6, then the ratio of capitals of A,B, and C is:

a. 6:8:10 b. 12:10:6 c. 10:12:6 d. none

PROFIT AND LOSS

IMPORTANT FACTS

Cost Price: The price at which an article is purchased, is called its cost price. abbreviated as C.P.

Selling Price: The price at which an article is sold, is called its selling price, abbreviated as S.P

Profit or Gain: If S.P. is greater than C.P., the seller is said to have a profit or gain.

Loss: If S.P. is less than C.P., the seller is said to have incurred a loss.

FORMULAE

1. Gain = (S.P.) - (C.P.)

2. Loss = (CP) - (SP)

3. Lass or gain is always reckoned on C.P.

4. Gain% = [Gain x 100] / C.P.

5. Loss % = [Loss x 100] / C.P

6. S.P. = (100 + Gain%) x C.P / 100

7. S.P. = (100 – Loss %) x C.P. / 100

8. C.P. = [100 x S.P.] / (100 + Gain%)

9. C.P. = [100 x S.P.] / (100 - Loss%)

10. If an article is sold at a gain of say, 35%, then SP 135% of C.P.

11. If an article is sold at a loss of say, 35%, then S.P = 65% of C.P.

12. When a person sells two similar items, one at a gain of say, x %, and the other at a loss of x%, then the seller always incurs a loss given by

Loss % = $[(\text{Common Loss and Gain\% }) / 10]^2 = [x /10]^2$

13. If a trader professes to sell his goods at cost price, but uses false weights, then

Gain % = $[(\text{Error} / (\text{True value-Error})) * 100]^2$ %

SOLVED EXAMPLES

Ex. 1. A man buys an article for Rs. 27.50 and sells it for Rs. 28.60. Find his gain percent.

Sol. C.P = Rs. 27.50, S.P. = Rs. 28.60.

So, Gain = Rs. (28.60-27.50) = Rs. 1.10.

Gain% = (1.10 / 27.50) x 100 = 4%.

Ex. 2. If a radio is purchased for Rs. 490 and sold for Rs. 465.50, find the loss percent.

Sol : C.P. = Rs. 490, S.P. = Rs. 465.50.

Loss = Rs. (490-465.50) = Rs. 24.50.

Loss % = (24.50 / 490) x 100 = 5 %

Ex. 3. Find S.P, when (i) CP = Rs. 56.25, Gain 20% (ii) CP = Rs. 80.40, Loss = 5%

Sol. (i) SP = 120% of Rs. 56.25 = Rs. (120 / 100) * 56.25 = Rs.67.50

(ii) S.P. = 85% of Rs. 80.40 = Rs (85 / 100) * 80.40 = Rs. 68.34.

Ex. 4. Find C.P, when (i) S.P. = Rs. 40.60, Gain= 16% (ii) S.P. = Rs. 51.70, Loss = 12%

Sol. (i) C.P. = Rs. (100 / 116) * 40.60 = Rs. 35.

(ii) C.P. = Rs. (100 / 88) x 51.70 = Rs. 58.75.

Ex. 5. A person incurs 5% loss by selling a watch for Rs. 1140. At what price should the watch be sold to earn 5% profit?

Sol. Let the new SP be Rs. x. Then,

(100 - loss) : (1st SP) = (100+ gain) : (2nd S.P.)

Implies (100-5) / 1140 = (100+5) / x

X = (105 * 1140) / 95 = 1260.

New SP = Rs. 1260

Ex. 6. A book was sold for Rs. 27.50 with a profit of 10%. If it were sold for Rs. 25.75, then what would have been the percentage of profit or loss?

Sol. S.P. Rs. 27.50, Profit = 10%.

So, CP = Rs. (100 / 110) x 27.50 = Rs. 25.

When S.P. = Rs. 25.75, profit = Rs. (25.75 - 25) = Rs. 0.75,

Profit% = (0.75 / 25) *100 = 3%

Ex. 7. If the cost price is 96% of the selling price, then what is the profit percent?

Sol. Let SP. = Rs. 100. Then, C.P. = Rs. 96; Profit = Rs. 4.

Profit % = (4 / 96) * 100 = 25/6 = 4.17%

Ex. 8. The C.P. of 21 articles is equal to S.P. of 18 articles. Find the gain or loss percent.

Sol. Let CP. of each article be Re. 1. Then, C.P. of 18 articles = Rs. 18, S.P. of 18 articles - Rs. 21.

Gain% = (2 /18)x100 = $16\frac{2}{3}$ %

More Problems on Profit and Loss for Practice

1. If books bought at prices ranging from Ra. 200 to Rs. 350 are sold at prices ranging from Rs. 300 to Rs. 425, what is the greatest possible profit that might be made in selling eight books ?

   (a) Rs. 400 (b) Rs. 600 (c) Cannot be determined (d) None of these

2. A shopkeeper sold an article for Rs. 2090.42. Approximately, what will be the percentage profit if he sold that article for Rs. 2602.58 ?

   (a) 15% (b) 20% (c) 25% (d) 30%

3. Alfred buys an old scooter for Rs. 4700 and spends Rs 800 on its repairs. If he sells the scooter for Rs. 5800, his gain percent is:

   (a) $4\frac{4}{7}\%$ (b) $5\frac{5}{11}\%$ (c) 10% (d) 12%,

4. A shopkeeper purchased 70 kg of potatoes for Rs. 420 and sold the whole lot at the rate of Rs. 6.50 per kg. What will be his gain percent ?

   (a) $4\frac{1}{6}\%$ (b) $6\frac{1}{4}\%$ (c) $8\frac{1}{3}\%$ (d) 20%

5. Sam purchased 20 dozens of toys at the rate of Rs. 375 per dozen. He sold each one of them at the rate of Rs. 33. What was his percentage profit ?

   (a) 3.5 (b) 4.5 (c) 5.6 (d) 6.5 (e) None of these

6. 100 oranges are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen. The percentage of profit or loss is:

   (a) $14\frac{2}{7}\%$ gain (b) 15% gain (c) $14\frac{2}{7}\%$ loss (d) 15% loss

7. A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. What in the selling price of the cycle?

   (a) Rs. 1090 (b) Rs. 1160 (c) Rs. 1190 (d) Rs. 1202

8. A sells an article which costs him Rs. 400 to B at a profit of 20%. B then sells it to C, making a profit of 10% on the price he paid to A. How much does C pay B?

   (a) Rs. 472 (b) Rs. 476 (c) Rs. 528 (d) Rs 532

9. Peter purchased a machine for Rs. 80,000 and spent Rs. 5000 on repair and Rs. 1000 on transport and sold it with 25% profit. At what price did he sell the machine ?

(a) Rs. 1,05,100 (b) Rs. 1,06,250 (c) Rs. 1,07,500 (d) Rs. 1,17,5001 (e) NOTA

10. By selling an article for Rs. 100, a man gains Rs. 15. Then, his gain% is:

(a) 15% (b) $12\frac{2}{3}\%$ (c) $17\frac{11}{17}\%$ (d) $17\frac{1}{4}\%$

11. When a commodity is sold for Rs. 34.80, there is a loss of 2%. What is the cost price of the commodity ?

(a) Rs. 26.10 (b) Rs. 43 (c) Rs. 43.20 (d) Rs. 46.40

12. A shopkeeper expects a gain of $22\frac{1}{2}\%$ on his cost price. If in a week, his sale was of Rs. 392, what was his profit ?

(a) Rs. 18.20 (b) Rs. 70 (c) Rs. 72 (d) Rs. 88.25

13. The sale price of an article including the sales tax is Rs. 616. The rate of sales tax is 10%. If the shopkeeper has made a profit of 12%, then the cost price of the article is:

(a) Rs. 500 (b) Rs. 515 (c) Rs. 550 (d) Rs. 600

14. Saransh purchased 120 reams of paper at Rs. 80 per ream. He spent Rs. 280 on transportation, paid octroi at the rate of 40 paise per ream and paid Rs. 72 to the coolie. If he wants to have a gain of 8%, what must be the selling price per ream?

(a) Rs. 86 (b) Rs. 87.48 (c) Rs. 89 (d) Rs. 90

15. A person bought 20 litres of milk at the rate of Rs. 8 per litre. He got it churned after spending Rs. 10 and 5 kg of cream and 20 litres of toned milk were obtained. If he sold the cream at Rs. 30 per kg and toned milk at Rs. 4 per litre, his profit in the transaction is:

(a) 25% (b) 35.3% (c) 37.5% (d) 42.55

Answers

1. Least CP = Rs. (200*8)= Rs. 1600, and Greatest SP Rs (425 x 8) = Rs. 3400.

   Required profit Rs. (3400-1600) = Rs 1800.

2. Profit =Rs. (2602.58 - 2090,42) = Rs. 512.16

   Profit % = (512.16 / 2090.42) *100 = 24.5% = 25%

3. CP = Rs. (4700 + 800) = Rs. 5500, SP = Rs 5800

   Gain % = (300 /5500) x100 = $5\frac{5}{11}\%$

4. CP of 1 kg = (420/70) = Rs.6 and SP. of 1 kg = Rs. 6.50,

Gain % = (0.50/6) *100 = 25/3 % = $8\frac{1}{3}$ %

5. CP of 1 toy = Rs (375/12)= Rs. 31.25. and S.P. of 1 toy = Rs.33

   Profit% = (1.75/31.25)*100 % = 25/5% = 5.6%

6. C.P. of 1 orange = Rs 3.50. and SP of 1 orange = Rs.4

   Gain% = (0.50/3.50)*100 = 100/7= $14\frac{2}{7}$

7. S.P. = 85% of Rs. 1400 = Rs. (85/100) x1400 = Rs. 1190.

8. C.P. for B = 120% of Rs. 400 = Rs. (120/100) x400 = Rs. 480.

   C.P. for C = 110% of Rs. 480 = Rs. (110/100) x480 = Rs. 528.

9. C.P. =Rs. (80000+ 5000+ 1000) =Rs. 86000, Profit 25%

   S.P. =125% of Rs. 86000 = Rs.(125/100)*86000=Rs.107500

10. S.P. = Rs. 100, gain = Rs. 15 and C.P = 100 – 15 = Rs. 85/-

    Gain % = (15/85)*100=300/17 % = $17\frac{11}{17}$ %

11. C.P. = Rs. (100/ 75) x 34.80 =Rs. 46.40%

12. CP = Rs.(100/122.50)*392=Rs (1000/1225)*392=320

    Profit = Rs 392-320= Rs. 72.

13. 110% of SP = 616 implies SP = Rs.(616×100) / 110 =Rs. 560

    CP =Rs. (100 /112) x 560 = Rs 500.

14. Total investment = Rs. 120 * 80 + 280 + (40/100)*120+72)=Rs.10000/-

    S.P of 120 reams = 108% of Rs.10000 = Rs.10800

    SP per ream- Rs. (10800 /120) = Rs. 90

15. Investment =Rs. (20 * 8 + 10) = Rs 170,

    Receipt =Rs.(30*5+20*4) = Rs. 230

    Gain% =(60/170) x100=35.3%

ARITHMETIC REASONING

1. Five children take part in a tournament. Each one has to play every other one. How many games must they play?
   a) 8 b) 10 c) 24 d) 30 Ans: 10
2. There are some benches in the classroom. If 4 students sit on each bench, then 3 benches are left unoccupied. However, if 3 students sit on each bench, 3 students are left standing. How many students are there in the class?
   a) 36 b) 48 c) 56 d) 64 Ans: 48
3. In a certain office 1/3 of the workers are women, 1/2 of the women are married and 1/3 of the married women have children. If 3/4 of the men are married and 2/3 of the married men have children, what part of the workers are without children?
   a) 5/18 b) 4/9 c) 11/18 d) 17/36 Ans: 11/18
4. A Shepherd had 17 sheep. All but 9 died. How many was he left with?
   a) Nil b) 8 c) 9 d) 17 Ans: 9
5. An institution organized a competition and 1/5 of the girls and 1/8 of the boys participated in the same. What fraction of the total number of students took part in the competition?
   a) 2/13 b) 13/40 c) Data inadequate d) None of the above. Ans: 2/13
6. Three friends had dinner at a restaurant. When the bill was received, Tanya paid. What fraction of the bill did Veena pay?
   a) 1/3 b) 3/11 c)12/31 d) 5/8 Ans: 3/11
7. In an examination, a student score 4 marks for every correct answer and loses one mark for every wrong answer. If he attempts all 60 questions and secures 130 marks, the no. of questions he attempts correctly is
   a) 35 b) 38 c) 40 d) 42 Ans: 38
8. A man has a certain no. of small boxes to pack into parcels. If he packs 3, 4, 5, or 6 he is left with one over; if he packs 7 in a parcel, none is left over. What is the no. of boxes, he may have to pack?
   a) 106 b) 301 c) 308 d) 420 Ans: 301
9. A, B, C, and D play a game of cards. A says to B, “If I give you 8 cards, you will have as many as C has and I shall have 3 less than what C has. Also, if I take 6 cards from C, I shall have twice as many as D has”, If B and D together have 50 cards, how many cards has A got?
   a) 40 b) 37 c) 27 d) 23. Ans: 40
10. A group consisting of 25 teachers, 20 engineers, 18 doctors, and 12 salesmen visited a fair and spent Rs.1330 altogether. It was found that 5

teachers spent as much as 4 engineers, 12 engineers spent as much as 9 doctors and 6 doctors spent as much as 8 salesmen. If every person in a professional group spent the same amount, find the amount spent by each engineer?

a) Rs.14 b) Rs 17.50 c) Rs. 18 d) Rs.21 Ans: 17.50

11. From a no. of apples ,a man sells half the no. of existing apples plus 1 to the first customer, sells 1/3 rd of the remaining apples plus 1 to the second customer and 1/5 th of the remaining apples plus 1 to the third customer. He then finds that he has 3 apples left . How many apples did he have originally?

a) 15 b) 18 c) 20 d) 25 Ans: 20

12. Consider the following data and answer questions given below

Candidates appeared – 10500 Passed in all five subjects – 5685

Passed in 3 subjects only- 1498 Passed in 2 subjects only – 1250

Passed in 1 subject only – 835 Failed in English only- 78

Failed in Maths only -275 Failed in Physics only – 149

Failed in Chemistry only – 147 Failed in Biology only – 221

How many students failed in all subjects

a) 4815 b) 3317 c) 2867 d) 362 Ans: 362

13. How many students passed in at least 4 subjects

a) 6555 b) 5685 c) 1705 d) 870 Ans: 6555

14. How many candidates failed in because of having failed in 4 or less subjects

a) 4815 b) 4453 c) 3618 d) 2368 Ans: 4453

15. At the end of a conference the 10 people present all shake hands with each other once. How many handshakes are altogether ?

a) 20 b) 45 c) 55 d) 90 Ans: 45

16. The total no. of digits used in numbering the pages of a book having 366 pages is

a) 732 b) 990 c) 1098 d) 1305 Ans: 990

17. A Pineapple costs Rs. 7 each. A watermelon costs Rs. 5 each. X spends Rs. 38 on these fruits. The no. of Pineapple purchased is

a) 2 b) 3 c) 4 d) Data inadequate Ans: 4

18. If you write down all the numbers from 1 to 100, then how many times do you write 3?

a) 11 b) 18 c) 20 d) 21 Ans: 20

19. A farmer built a fence around his square plot. He used 27 fence poles on each side of the square. How many poles did he need altogether?
    a) 100 b) 104 c) 108 d) None Ans: 104
20. A man has Rs. 480 in the denominations of one-rupee, five-rupee notes, and ten-rupee notes. The no. of notes of each denomination is equal. What is the total no. of notes that he has?
    a) 45 b) 60 c) 75 d) 90 Ans: 90

NUMBER SYSTEM

1. 579 x 9999 =?

   a. 656541 b. 578421 c. 56162641 d. 51611

2. 976 x 237 + 976 x 763 =?

   a. 769000 b. 697000 c. 976000 d. 679000

3. 986 x 307 – 968 x 207 =?

   a. 98600 b. 68900 c. 96800 d. 69800

4. 796 x 796 – 204 x 204 =?

   a. 529000 b. 925000 c. 952000 d. 592000

5. 387 x 387 + 113 x 113 + 2 x 387 x 113 =?

   a. 250000 b. 200000 c. 300000 d.350000

6. 87 x 87 + 61 x 61 – 2 x 87 x 61 =?

   a. 667 b. 676 c. 767 d.766

7. Find the total number of prime factors in the product $4^{11} \times 7^5 \times 11^2$

   a. 26 b. 28 c. 29 d.30

8. (6+15+24+33+...+105) =?

   a. 666 b. 777 c. 888 d. 999

9. The difference between the place value and the face value of 6 in the numeral 856973 is

   a. 9954 b. 9945 c. 4995 d.5994

10. The difference between the local value and the face value of 7 in the numeral 32675149 is

    a. 99963 b. 69993 c. 99936 d. 39996

11. The difference between the place values of two sevens in the numeral 69758472 is

    a. 699930 b. 999603 c. 369990 d. 699903

12. $(1000^9 / 10^{24})$ =?

    a. 10 b. 100 c. 1000 d. 10000

13. 587 x 999 =?

a) a 586431 b. 586413 c. 586314 d. 586134

Ratio and Proportion

Ratio

A *ratio* is a comparison of two quantities by division.

- **If *a* and *b* are two numbers, the ratio of *a* to *b* is (*a/b)* or *a* ÷ *b* and is denoted by *a*:*b*. The two quantities that are being compared are called *terms*.**
- **The first is called *antecedent* and the second term is called *consequent*.**

Types of Ratios

1. Duplicate Ratio:

The ratio of the squares of two numbers is called the *duplicate ratio* of the two numbers.

For example, $\frac{3^2}{4^2}(OR)\ \frac{9}{16}$ is called the duplicate ratio of $\frac{3}{4}$

2. Triplicate Ratio:

The ratio of the cubes of two numbers is called the *triplicate ratio* of the two numbers.

For example, $\frac{3^3}{4^3}(OR)\ \frac{27}{81}$ is triplicate ratio of $\frac{3}{4}$

3. Sub-duplicate Ratio:

The ratio of the square roots of two numbers is called the *sub-duplicate ratio* of two numbers.

For example, $\frac{3}{4}$ is the sub-duplicate ratio of $\frac{9}{16}$

4. Sub-triplicate Ratio:

The ratio of the cube roots of two numbers is called the *sub-triplicate ratio* of two numbers.

For example, $\frac{2}{3}$ is the sub-triplicate ratio of $\frac{8}{27}$

5. Inverse Ratio or Reciprocal Ratio:

Thus, if $a:b$ be the given ratio, then $\frac{1}{a}:\frac{1}{b}(OR)\,b:a$ is its inverse ratio

For example, $\frac{3}{5}$ is the inverse ratio of $\frac{5}{3}$

6. Compound Ratio:

Thus, if $a:b\ and\ c:d$ are two given ratios, then $ac:bd$ is the compound ratio of the given ratio

For example, if $\frac{3}{4},\frac{4}{5}and\ \frac{5}{7}$ be the given ratios, then their compound ratio is $\frac{3*4*5}{4*5*7}=\frac{3}{7}$

Proportion

The equality of two ratios is called *proportion*. If $\frac{a}{b}=\frac{c}{d}$ then a,b,c,d are said to be in proportion and we write $a:b::c:d$ .This is read as "*a* is to *b* as *c* is to *d*".

Here, *a*, *d* are known as *extremes* and *b*, *c* are known as *means*.

Basic Formulae

- If four quantities are in proportion, then Product of Means = Product of Extremes

- **Fourth proportional:** If $a:b::c:x$, then x is called the *fourth proportional* of a, b, c.

  We have, $\frac{a}{b}=\frac{c}{x}\Rightarrow x=\frac{bc}{a}$

  Third Proportional: If $a:b::b:x$, then x is called the third proportional of a, b. We have, $\frac{a}{b}=\frac{b}{x}\Rightarrow x=\frac{b^2}{a}$

  Mean Proportional: If $a:x::x:b$, then x is called the *mean* or *second proportional* of a, b. We have, $\frac{a}{x}=\frac{x}{b}\Rightarrow x=\sqrt{ab}$

- If $\frac{a}{b}=\frac{c}{d}$ then

  $(i)\ \frac{a+b}{b}=\frac{c+d}{d}$ $(Componendo)$

  $(ii)\ \frac{a-b}{b}=\frac{c-d}{d}$ $(Dividendo)$

  $(iii)\ \frac{a+b}{a-b}=\frac{c+d}{c-d}$ $(Componendo\ and\ Dividendo)$

- If two numbers are in the ratio of $a:b$ and the sum of these numbers is x, then these numbers will be $\frac{ax}{a+b}\ \&\ \frac{bx}{a+b}$ respectively.
- If three numbers are in the ratio of $a:b:c$ and the sum of these numbers is x, then these numbers will be $\frac{ax}{a+b+c}, \frac{bx}{a+b+c}\ \&\ \frac{cx}{a+b+c}$ respectively.
- If two numbers are in the ratio of $a:b$ and difference between these numbers is x, then these numbers will be

  $(i)\ \frac{ax}{a-b}\ \&\ \frac{bx}{a-b}\ Where\ a>b$

  $(ii)\ \frac{ax}{b-a}\ \&\ \frac{bx}{b-a}\ Where\ b>a$

  $If\ a:b=n_1:d_1\ and\ b:c=n_2:d_2\ then\ \ a:b:c=(n_1*n_2):(d_1*n_2):(d_1*d_2)$

- $If\ a:b=n_1:d_1\ ,\ b:c=n_2:d_2\ and\ c:d=n_3:d_3\ then$

  $a:b:c:d=(n_1*n_2*n_3):(d_1*n_2*n_3):(d_1*d_2*n_3):(d_1*d_2*d_3)$

PROBLEMS:

1. **Find a fourth proportional to the numbers 2, 5, 4.**
   (a) 6 (b) 8 (c) 10 (d) 12
2. **Find the Mean proportional between 48 and 12**
   (a) 12 (b) 24 (c) 34 (d) 44
3. **Two numbers are in the ratio of 4:5 and the sum of these numbers is 27. Find the two numbers**
   (a) 12, 15 (b) 9, 18 (c) 18, 9 (d) 15, 12
4. **Three numbers are in the ratio of 3:4:8 and the sum of these numbers is 975. Find the three numbers.**
   (a) 195, 260,520 (b) 205,270,530 (c) 200,265,525 (d) None of these

5. Two numbers are in the ratio of 4:5. If the difference between these numbers is 24, then find the numbers.

(a) 116, 140 (b) 100, 124 (c) 96, 120 (d) None of these

6. If A:B = 3:4 and B:C = 8:9, find A:B:C.

(a) 4:6:8 (b) 6:8:9 (c) 5:6:9 (d) None of these

7. If A:B = 2:3, B:C = 4:5 and C:D = 6:7, find A:D.

(a) 16:35 (b) 24:35 (c) 24:30 (d) 16:30

8. Find the value of x in the following proportion: 27:72 :: x:8

(a) 5 (b) 7 (c) 3 (d) None of these

9. Find a fourth proportional to the numbers 60, 48, 30.

(a) 36 (b) 24 (c) 48 (d) None of these

10. Find a third proportional to the numbers 4, 42.

(a) 441 (b) 541 (c) 641 (d) None of these

11. If 18 : x = x : 8, then x is equal to:

(a) 12 (b) 16 (c) 18 (d) None of these

12. The mean proportional between 64 and 81 is:

(a) 48 (b) 68 (c) 72 (d) None of these

13. The ratio of two numbers is 3:4 and their sum is 420. The greater of the two numbers is:

(a) 360 (b) 240 (c) 180 (d) None of these

14. In a ratio 11:14, if the antecedent is 55, the consequent is:

(a) 70 (b) 90 (c) 60 (d) None of these

15. If A:B = 5:7 and B:C = 6:11, find A:B:C.

(a) 55:77:66 (b) 30:42:77 (c) 35:49:42 (d) None of these

16. If A:B = 3:4 and B:C = 8:9, find A:C.

(a) 1:3 (b) 3:2 (c)2:3 (d) None of these

17. If A:B = 8:15, B:C = 5:8 and C:D = 4:5, find A:D.

(a) 2:7 (b) 4:15 (c) 8:15 (d) 15:4

18. If A:B:C = 2:3:4, then (A/B):(B/C):(C/A) is

(a) 4:9:16 (b) 8:9:12 (c) 8:9:16 (d) 8:9:24

19. The compound ratio of (2:3), (6:11) and (11:2) is

(a) 1:2 (b) 2:1 (c) 11:24 (d) 36:121

20. If 0.4 of a number is equal to 0.06 of another number, the ratio of that numbers is

(a) 2:3 (b) 3:4 (c) 3:20 (d) 20:3

21. The least whole number which when subtracted from both the terms of the ratio 6:7 gives ratio less than 16:21

(a) 2 (b) 3 (c) 4 (d) 6

22. A and B are two alloys of gold and copper prepared by mixing metals in the ratio 7:2 and 7:11 respectively. If equal quantities of the alloys are melted to form a third alloy C, the ratio of gold and copper in C will be

(a) 5:7 (b) 5:9 (c) 7:5 (d) 9:5

23. If A:B = 2:3, B:C = 4:5 and C:D = 6:7, find A:B:C:D.

(a) 16:22:30:35 (b) 16:24:15:35 (c) 16:24:30:35

(d) 18:24:30:35

24. If 2A=3B=4C then A:B:C is

(a) 2:3:4 (b) 4:3:2 (c) 6:4:3 (d) 20:15:2

25. If 2A=3B and 4B =5C then A:C is

(a) 4:3 (b) 8:15 (c) 15:8 (d) 3:4

26. If 0.75: x :: 5:8 then x is

(a) 1.12 (b) 1.20 (c) 1.25 (d) 1.30

27. If x : y = 5 : 2 then (8x+9y) : (8x + 2y) is

(a) 22:29 (b) 26:61 (c) 29:22 (d) 61:26

28. If 15% of x = 20% of y then x:y is

(a) 3:4 (b) 4:3 (c) 17:16 (d) 16:17

29. Which of the following ratios is greatest?

(a) 7:15 (b) 15:23 (c) 17:25 (d) 21:29

30. What is the ratio whose terms differ by 40 and the measure of which is (2/7)?

(a) 16:56 (b) 14:56 (c) 15:56 (d) 16:72

PERCENTAGE

1. Find a number whose 4% is 72.
   (a) 1200 (b) 1400 (c) 1600 (d) 1800
2. In an examination, a student must get 60% marks to pass. If a student, who gets 120 marks, fails by 60 marks, find the maximum marks.
   (a) 200 (b) 300 (c) 400 (d) 500
3. In an examination, 42% students failed in Mathematics and 52% failed in Science. If 17% failed in both the subjects, find the percentage of those who passed in both the subjects.
   (a) 21 % (b) 22 % (c) 23 % (d) 24 %
4. What % is equivalent to 5(1/4)?
   (a) 525% (b) 425% (c) 625% (d) None of these
5. Express 8(1/3)% as a fraction?
   (a) 1/22 (b) 1/13 (c) 1/14 (d) 1/12
6. 20% of 30% of 20% of Rs.850 is:
   (a) Rs.9.50 (b) Rs.10.20 (c) Rs.10.50 (d) None of these
7. The population of a town is decreased by 20% and 25% in two successive years. What per cent population is decreased after two years?
   (a) 50 % (b) 40 % (c) 60% (d) None of these
8. A shopkeeper marks the prices of his goods at 25% higher than the original price. After that, he allows a discount of 12%. What profit or loss did he make?
   (a) 10% profit (b) 15% profit (c) 10% loss (d) 15% loss
9. A number is increased by 20% and then decreased by 20%, the final value of the number:
   (a) No change (b) Decrease by 2%(c) Increase by 4%(d) Decrease by 4%.
10. 6(2/3)% expressed in its lowest term is?
    (a) 2/15 (b) 1/15 (c) 3/20 (d) None of these
11. 37(1/2)% of Rs. 48 is?
    (a) Rs.20 (b) Rs.16 (c) Rs.18 (d) None of these
12. ? × 15 = 37.5% of 220
    (a) 5.5 (b) 7.5 (c) 6.5 (d) None of these
13. If A's income is 25% less than that of B, then how much per cent is B's income more than that of A?

(a) 33(1/3) % (b) 66(2/3) % (c) 11(2/3) % (d) None

14. If 200% of a number is 90, then what is the 80% of that number?
    (a) 48 (b) 36 (c) 24 (d) None of these
15. The difference between a discount of 35% and two successive discounts of 20% and 20% on a certain bill was Rs.22. Find the amount of the bill.
    (a) Rs.3200 (b) Rs.2200 (c) Rs.1800 (d) None of these
16. The radius of a sphere is increased by 10%. The surface area increases by
    (a) 21 % (b) 31 % (c) 41 % (d) None of these
17. 28% of 450 + 45 % of 280 = ?
    (a) 248 (b) 236 (c) 252 (d) None of these
18. [16(2/3)% of 600 gm] – [33(1/3)% of 180 gm] = ?
    (a) 40gm (b) 36gm (c) 24 gm (d) None of these
19. 2 is what percent of 50 ?
    (a) 2 % (b) 3 % (c) 4 % (d) None of these
20. (1/2) is what percent of (1/3) ?
    (a) 150 % (b)1 40 % (c) 160% (d) None of these
21. What percent of 2 metric tons is 40 quintals?
    (a) 150 % (b) 200 % (c) 250% (d) None of these
22. What percent of 6.5 litres is 130 ml ?
    (a) 5 % (b) 2 % (c) 6% (d) None of these
23. Sixty five percent of a number is 21 less than four – fifth of that number. What is the number?
    (a) 120 (b) 150 (c) 160 (d) 140
24. In an election between two candidates, 75% of the voters cast their votes, out of which 2 % of the votes were declared invalid. A candidate got 9261 votes which were 75% of the total valid votes. Find the total number of votes enrolled in that election?
    (a) 12800 (b) 14800 (c) 16800 (d) 18800
25. If 50 % of (x - y) = 30 % of (x + y), then what percent of x is y?
    (a) 15 % (b) 25 % (c) 50% (d) None of these
26. Subtracting 40% of a number from the number, we get the result as 30. The number is:
    (a) 28 (b) 50 (c) 52 (d) 70

27. The number which exceeds 16% of it by 42:

(a) 50 (b) 52 (c) 58 (d) 60

28. By how much percent is four-fifth of 70 lesser than five-seventh of 112.

(a) 10 (b) 20 (c) 30 (d) 40

29. If 75% of a number is added to 75, then the result is the number itself. The number is.

(a) 40 (b) 50 (c) 60 (d) 70

30. If p% of p is 36, then p is =?

(a) 15 (b) 60 (c) 600 (d) 3600

3. Averages – Worksheet

1. The average marks obtained by 200 students in a certain examination is 45. Find the total marks.

(a) 6000 (b) 7000 (c) 8000 (d) 9000

2. Total temperature for the month of September is 840°C. If the average temperature of that month is 28°C, find out the number of days is the month of September.

- (a) 30 (b) 27 (c) 28 (d) 29

3. Find the average of first 81 natural numbers.

- (a) 31 (b) 21 (c) 41 (d) 51

4. What is the average of squares of the natural numbers from 1 to 41?

- (a) 381 (b) 581 (c) 481 (d) 681

5. The average of 7 numbers is 5. If the average of fi rst six of these numbers is 4, find the seventh number :

- (a) 14 (b) 12 (c) 11 (d) 15

6. Out of three numbers, the first is twice the second and is half of the third. If the average of the three numbers is 56, the three numbers in order are:

- (a) 48, 96, 24 (b) 48, 24, 96 (c) 96, 24, 48 (d) 96, 48, 24

7. Find the average of consecutive odd numbers 21, 23, 25, 27, 29, 31, 33, 35.

- (a) 28 (b) 38 (c) 48 (d) 58

8. Find the average of squares of first 19 consecutive even numbers.

- (a) 220 (b) 320 (c) 420 (d) 520

9. Find the average of squares of consecutive even numbers from 1 to 25.

- (a) 234 (b) 334 (c) 434 (d) 534

10. Find the average of squares of consecutive odd numbers from 1 to 31.

- (a) 241 (b) 341 (c) 441 (d) 541

11. A man goes to a certain place at a speed of 30 Km/h and returns to the original place at a speed of 20 Km/h, find out his average speed during this up and down journey.

- (a) 24 km/hr (b) 34 km/hr (c) 44 km/hr (d) 54 km/hr

12.There are 35 students in a hostel. If the number of students increased by 7, the expenses of the mess were increased by Rs.42 per day while the average expenditure per head decreased by Rs.1. Find out the actual expenditure of the mess.

(a) Rs.480 (b) Rs.440 (c) Rs.520 (d) Rs.420

13. An aero plane travels 2500 Km, 1200 Km and 500 Km at 500 Km/h, 400 Km/h, and 250 Km/h, respectively. The average speed is:

(a) 420 Km/h (b) 410 Km/h (c) 405 Km/h (d) 575 Km/h

14. The average of 10 numbers is 7. What will be the new average if each of the numbers is multiplied by 8?

(a) 45 (b) 52 (c) 56 (d) 55

15. A batsman in his 17th innings, makes a score of 85 runs, and thereby, increases his average by 3 runs. What is his average after the 17th innings? He had never been 'not out'.

(a) 47 (b) 37 (c) 39 (d) 43

16. In an examination, out of 20 students in a class, in Mathematics 2 students scored 100 marks, 3 students scored 0, and average marks for rest of the students was 40. What is the average mark of the whole class?'

(a) 32 marks (b) 35 marks (c) 40 marks (d) 45 marks

17.The average age of a committee of 8 members is 40 years. A member, aged 55 years, retired and he was replaced by a member aged 39 years. The average age of the present committee is:

- (a) 39 years (b) 38 years (c) 36 years (d) 35 years

18. The average weight of 10 students is increased by half a Kg when one of the students weighing 50 Kg is replaced by a new student. Find out the weight of the new student.

(a) 55 Kg (b) 60 Kg (c) 45 Kg (d) 40 Kg

19. The average income of A for 15 days is Rs.70. The average for first five days is Rs.60 and that for the last nine days is Rs.80. A's income for the sixth day is:

(a) Rs.80 (b) Rs.60 (c) Rs.40 (d) Rs.30

20. The average of marks obtained by 120 candidates was 35. If the average of marks of passed candidates was 39 and that of failed candidates was 15, the number of candidates who passed the examination is:

(a) 100 (b) 110 (c) 120 (d) 150

H.C.F & L.CM - Worksheet

PROBLEMS:

1. **The number of Prime factors in the expression $6^{10} \times 7^{17} \times 11^{27}$ is**
   (a) 54 (b) 64 (c) 71 (d) 81
2. **Find the greatest number which will divide 3962, 4085 and 4167 leaving the same remainder in each case.**
   (a) 37 (b) 39 (c) 41 (d) 43
3. **Three pieces of timber 42 m, 49 m and 63 m long have to be divided into planks of the same length. What is the greatest possible length of each plank?**
   (a) 7m (b) 14m (c) 42m (d) 63m
4. **The H.C.F. and L.C.M. of two numbers are 44 and 264, respectively. If the first number is divided by 2, the quotient is 44. The other number is:**
   (a) 33 (b) 66 (c) 132 (d) 264
5. **The largest natural number which exactly divides the product of any four consecutive natural numbers, is:**
   (a) 6 (b) 12 (c) 24 (d) 120
6. **Find the least number which when divided by 2, 3, 4, 5 and 6 leaves 1, 2, 3, 4 and 5 as remainders, respectively, but when divided by 7 leaves no remainder.**
   (a) 210 (b) 119 (c) 126 (d) 154
7. **The H.C.F. of two numbers is 11 and their L.C.M. is 693. If one of the numbers is 77, find the other.**
   (a) 909 (b) 119 (c) 66 (d) 99
8. **What is the L.C.M. of 25, 30, 35 and 40?**
   (a) 3800 (b) 4200 (c) 4400 (d) None of these
9. **What is the H.C.F. of 27, 18 and 36?**
   (a) 7 (b) 11 (c) 9 (d) None of these
10. **Find the greatest number that will divide 964, 1238 and 1400 leaving remainders 41, 31 and 51, respectively.**
    (a) 71 (b) 81 (c) 61 (d) 73
11. **Find the greatest number of four digits which is exactly divisible by 24, 28, 30 and 35.**
    (a) 9225 (b) 9240 (c) 9250 (d) 9260
12. **What is the smallest number which when increased by 3 is divisible by 16, 24, 30 and 32?**
    (a) 480 (b) 475 (c) 472 (d) 477
13. **A merchant has 435 litres, 493 litres and 551 litres of three different kinds of milk. Find the least number of casks of equal size required to store all the milk**
    (a) 51 (b) 61 (c) 47 (d) 45
14. **The sum of two numbers is 216 and their H.C.F. is 27. The numbers are**
    (a) 54, 162 (b) 108, 118 (c) 27, 189 (d) None of these

15. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds, respectively. If they all change simultaneously at 8:20:00 hours; then they will again change simultaneously at

(a) 8:27:12 hours (b) 8:27:24 hours (c) 8:27:36 hours (d) 8:27:48 hours

16. The product of two numbers is 6760 and their H.C.F. is 13. How many such pairs can be formed?

(a) 2 (b) 3 (c) 4 (d) only one

17. A wholesale tea dealer has 408 kilograms, 468 kilograms and 516 kilograms of three different qualities of tea. He wants it all to be packed into boxes of equal size without mixing. Find the capacity of the largest possible box.

(a) 50 (b) 36 (c) 24 (d) 12

18. A room is 4 m 37 cm long and 3 m 23 cm broad. It is required to pave the floor with minimum square slabs. Find the number of slabs required for this purpose.

(a) 485 (b) 431 (c) 391 (d) 381

19. Three different containers contain different quantities of mixture of milk and water, whose measurements are 403 Kg, 434 Kg and 465 Kg. What biggest measure must be there to measure all the different quantities exactly?

(a) 1 Kg (b) 7 Kg (c) 31 Kg (d) 41 Kg

20. The L.C.M. and G.C.D. of two numbers are 1530 and 51, respectively. Find how many such pairs are possible?

(a) 2 (b) 3 (c) 4 (d) only one

21. Find the two largest numbers of four digits having 531 as their H.C.F.

(a) 9231, 9762 (b) 9027, 9558 (c) 9037, 9568 (d) 9127, 9658

22. Find the greatest number of five digits which when divided by 8, 9 and 10 leaves 3 as remainder in each case.

(a) 99996 (b) 99723 (c) 99983 (d) None of these

23. Find the greatest number of four digits which must be added to 5231 so that the fi nal number becomes exactly divisible by 12, 15, 27, 32 and 40.

(a) 7929 (b) 7829 (c) 9729 (d) 7729

24. What least value which should be added to 1812 to make it divisible by 7, 11 and 14?

(a) 12 (b) 36 (c) 72 (d) 154

25. How many numbers are there from 300 to 700 which are divisible by 2, 3 and 7?

(a) 7 (b) 8 (c) 9 (d) 10

26. The product of two 2 digit numbers is 2160 and their H.C.F. is 12. The numbers are

(a) (12, 60) (b) (72, 30) (c) (36, 60) (d) (60, 72)

27. Find the greatest number that will divide 390, 495 and 300 without leaving a remainder

(a) 5 (b) 15 (c) 25 (d) 35

28. Three numbers are in the ratio 1 : 2 : 3 and their HCF is 12. The numbers are

(a) 12, 24, 36 (b) 5, 10, 15 (c) 4, 8, 12 (d) 10, 20, 30

29. If the students of 9th class are arranged in rows of 6, 8, 12 or 16, no student is left behind. The possible number of students in the class is

(a) 60 (b) 72 (c) 80 (d) 96

30. The greatest number that divides 411, 684, 821 and leaves 3, 4 and 5 as remainders, respectively is

(a) 254 (b) 146 (c) 136 (d) 204