

ARITHMETICAL REASONING

In this topic we will discuss various forms of Arithmetical Reasoning questions which are based on different types. We have distributed all different types here.

Type1: General Intelligence Questions

Examples:

1. **In a chess tournament each of six players will play every other player exactly once. How many matches will be played during the tournament?**

(A) 12 (B) 15 (C) 30 (D) 36

Sol. (B) Clearly, we will consider the following matches:

(i) matches of first player with other 5 players:

(ii) matches of second player with 4 players other than the first player;

(iii) matches of third player with 3 players other than the first and second players

(iv) matches of fourth player with 2 players other than the first three players and match of fifth player with the sixth one.

So, number of matches played during the tournament = $5 + 4 + 3 + 2 + 1 = 15$

2. **A man has a certain number of small boxes to pack into parcels. If he packs 3, 4, 5 or 6 in a parcel, he is left with one over; if he packs 7 in a parcel, none is left over. What is the number of boxes, he may have to pack?**

(A) 106 (B) 301 (C) 309 (D) 400

Sol. (B) Clearly, the required number would be such that it leaves a remainder of 1 when divided by 3, 4, 5 or 6 and no remainder when divided by 7. Such a number is 301

Hence is 301

3. **In a group of cows and hens, the number of legs are 14 more than twice the number of heads. The number of cows is**

(A) 5 (B) 7 (C) 10 (D) 12

Sol. (B) Let the number of cows be x and the number of hens be y . Then number of legs in the group = $4x + 2y$

Number of heads in the group = $x + y$

So, $4x + 2y = 2(x + y) + 14$ or $4x + 2y = 2x + 2y + 14$

Or $2x = 14$ or $x = 7$

Number of cows = 7

Type2: Data Based Question

Examples:

Direction: The following questions are based on the given data for an examination, choose the correct option for each of the following questions.

Given data is:

(A) Candidates appeared 10500

(B) Passed in all the five subjects 5685

(C) Passed in three subjects only 1498

(D) Passed in two subjects only 250

(E) Passed in one subject only 35

(F) Failed in English only 78

(G) Failed Maths only 75

(I) Failed in Physics only 149

(J) Failed in Chemistry only 47

(K) Failed in Biology 21

4. **How many candidates failed in all the subjects?**

(A) 4815 (B) 3317 (C) 2867 (D) 362

Sol. (D) Clearly, candidates failed in all the subjects (Candidates appeared) – (Candidates failed in 1, 2, 3 or 5 subjects + Candidates failed in 1 subject only = $10500 - (5685 + 1498 + 1250 + 835 + 78 + 275 + 149 + 147 + 221) = 10500 - 10138 = 362$)

5. **How many candidates passed at least in four subjects?**

(A) 6555 (B) 5685 (C) 1705 (D) 870

Sol. (A) Candidates passed at least in four subjects
 = (Candidates passed in 4 subjects) + (Candidates passed in all 5 subjects)
 = (Candidates failed in only 1 subjects) + (Candidates passed in all 5 subjects)
 $(78 + 275 + 149 + 147 + 221) + 5685$
 $= 870 + 5685 = 6555$

6. **How many candidates failed because of having failed in four or less subjects?**

(A) 4815 (B) 4453 (C) 3618 (D) 2368

Sol. (B) Candidates failed in four or less subjects
 (Candidates failed in only 1 subjects) + (Candidates failed in only 2 subjects) + (Candidates failed in only 3 subjects) +
 (Candidates failed in only 4 subjects)
 = (Candidates failed on only 3 subjects) + (Candidates passed in only 3 subjects) + (Candidates passed in only 2 subjects) + (Candidates passed in only 1 subject)
 $= (78 + 275 + 149 + 221) + 1498 + 1250 + 835$
 $= 4453$

Type 3: Problems Based on Age

Examples:

7. **Reena is twice as old as Sunita. Three years ago, she was three times as old as Sunita. How old is Reena now?**

Sol. (D) Let Sunita's present age be x years
 Then, Reena's present age = $2x$ years
 Three years ago, Sunita's age = $(x - 3)$ and Reena's age = $(2x - 3)$
 So, $(2x - 3) = 3(x - 3)$ or $2x - 3 = 3x - 9$ or $x = 6$
 Reena's present age $2x = 12$ years

8. **The age of a father is twice that of the elder son. Ten years hence the age of the father will three times that of the younger son. If the difference of ages of the two sons is 15 years, the age of the father is**

(A) 50 years (B) 55 years (C) 60 years (D) 70 years

Sol. (A) Let the age of the elder son be x
 Then, age of younger son = $(x - 15)$; and
 Age of the father = $2x$
 Father's age = $2x = 50$ years

9. **In a family, a couple has a son and a daughter. The age of the father is three times that of his daughter and the age of the son is half of his mother. The wife is 9 years younger to her husband and the brother is seven years older than his sister. What is the age of the mother?**

(A) 40 years (B) 45 years (C) 50 year (D) 60 years

Sol. (D) Let the daughter's age be x . Then, fathers age = $3x$
 Mother's age = $3x - 9$, Son's age = $x + 7$
 So, $(x + 7) = \frac{3x - 9}{2}$ or $2x + 14 = 3x - 9$ or $x = 23$
 \therefore Mother's age = $(3x - 9) = (69 - 9) = 60$ years

Type 4: Problems Based on Percentages

Definition of percentage: If a decimal fraction has 100 as its denominator it is called a percentage.

➤ Important Rule

Rule 1: For expressing 'a' % as a fraction then $a\% = \frac{a}{100}$ i.e., divide 'a' by 100 and reduce it to the lowest form.

Rule 2: For expressing a fraction a/b as a percent.

$$\text{then } \left(\frac{a}{b} \times 100 \right)$$

Rule 3: Percentage increase or decrease in a value Increase or decrease percentage

$$\frac{\text{Increase or decrease in the value}}{\text{initial value}} \times 100$$

Rule 4: If 'A' income is x% more. than that of 'B' then 'B' incomes is less than that of 'A' by $\left[\frac{x}{(100+x)} \times 100 \right] \%$

Rule 5: If 'A' income is x% less than that of B than B income is more than that of A by $\left[\frac{x}{(100-x)} \times 100 \right] \%$

Rule 6: Let the present population which increase r% per year then

$$(i) \text{ Population after } t \text{ year} = P \left[1 + \frac{r}{100} \right]^t$$

$$(ii) \text{ Population } t \text{ year after} = \frac{P}{\left[1 + \frac{r}{100} \right]^t}$$

Note: If in any case the population decrease, then the $r = -r$.

Rule 7: If the price of an item increased by r%, then reduction in consumption so that the expenditure is not increased

$$\text{in } \left[\frac{r}{r+100} \times 100 \right] \%$$

Rule 8: If the price of commodity decreases by r%, then the increase in consumptions, that the expenditure remains the

same is: $\left[\left(\frac{r}{100-r} \right) \times 100 \right] \%$

Examples:

10. In a town, 65% people watched the news on television, 40% read a newspaper and 25% read a newspaper and watched the news on television also. What percent of the people neither watched the news on television nor read a news paper?

(A) 5 (B) 10 (C) 15 (D) 20

Sol. (D) Let the total number of people be 100

Let circle X represent people who watched television and Y represent people who read newspaper.

Then, $A + B = 65$, $B + C = 40$, $B = 25$

Solving, we get: $A = 40$, $B = 25$, $C = 15$

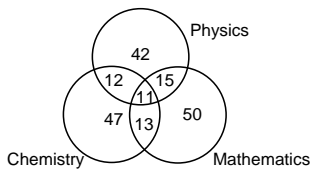
\therefore Number of persons who neither watched television nor read news paper

$$= 100 - (A + B + C) = 100 - (40 + 25 + 15)$$

$$= 100 - 80 = 20$$

So, required percentage = 20%

Direction (Questions 24 to 26): The diagram given below shows the number of students who got distinction in three subjects in three subjects out of 500 students. Study the diagram carefully and answer the question that follow



11. What is the percentage of students who got distinction in two subjects?
 (A) 8% (B) 9 (C) 10 (D) 12%

Sol. (A) Number of students who got distinction in two subjects = $(15 + 13 + 12) = 40$
 \therefore Required percentage = $\left(\frac{40}{500} \times 100\right)\% = 8\%$

12. What is the percentage of students who got distinction?

(A) 28% (B) 35% (C) 38% (D) 12%

Sol. (C) Number of students who got distinction = $(50 + 47 + 42 + 12 + 11 + 13 + 15) = 190$
 \therefore Required percentage = $\left(\frac{190}{500} \times 100\right)\% = 38\%$

13. The percentage of students with distinction marks in Mathematics is
 (A) 17.8% (B) 18.6% (C) 19.2% (D) 20.6

Sol. (A) Number of students with distinction marks in Mathematics = $(50 + 13 + 11 + 15) = 89$
 \therefore Required percentage = $\left(\frac{89}{500} \times 100\right)\% = 17.8\%$

Type 5: Problems Based on Average

Average: A single expression representing the whole group is selected which may convey a fairly adequate idea of the whole group. This single expression is known as average. It is also known as mean.

$$\text{Average} = \frac{\text{sum of observation}}{\text{number of observation}}$$

Examples:

14. The average age of 11 players of a cricket team is decreased by 2 months when two of them ages 17 years and 20 years are :

(A) 18 year 3 month (B) 17 year 1 month
 (C) 17 year 7 month (D) 17 year 11 month

Sol. (C) Total decrease = (11×2) month
 $= 1$ year 10 month
 \therefore Total age of reserves
 $= (17 + 20)$ years – [1 years 10 month]
 $= 35$ years 2 month
 \therefore Average age of reserves = 17 years 7 months

15. The mean temperature of monday to Wednesday was 37°C and tuesday to thursday was 34°C If the temperature on thursday was $\frac{4}{5}$ th that of monday the temperature on thursday was :

(A) 34°C (B) 35.5°C (C) 36°C (D) 36.5°C

Sol. (C) Sum of temperature on $[M + T + W] = (37 \times 3)^\circ = 111^\circ$... (i)
 Sum of temperature on $[T + W + Th] = (34 \times 3)^\circ = 102^\circ$
 Sum of temperature on $[T + W + \frac{4}{5}M] = 102^\circ$... (ii)
 \therefore Subtract equation (i) and (ii)
 $\frac{1}{5}$ th of temperature on Monday
 $= (111^\circ - 102^\circ) = 9^\circ$
 or temperature on Monday = 45°
 \therefore Temperature on Thursday = $\frac{4}{5} \times 45 = 36^\circ\text{C}$

Type 6: Problems Based on Work and Wages

Direct proportion: Two quantities are said to be directly proportional if for increase (decrease) in one the other increase (decrease proportionality).

Indirect proportion: Two quantities are indirect proportion if on the increase (or decrease) in one, another decreases (increased proportionality).

Chain rule: The method of finding fourth proportional when other three are given is called the rule is repeated to find some value is called as chain rule.

Decimal fraction: When a fraction (i.e., of form x/y) has a denominator 10, 100, 1000 etc. then we call the fraction as a decimal fraction.

Important rule and formula :

- (1) If a person can do a piece of work in 'n' days he/she will do $1/n$ of the work in one day.
- (2) If a number of persons doing a piece of job is increased (or decreased) in a certain ratio the time needed to do the same work will be decreased (or increased) in the same ratio.
- (3) Wages are distributed in proportion to the work done and indirect (or inverse) proportion to the time taken by the individual.

Examples:

16. If 4 examiners can examine a certain number of answer books in 8 days by working 5 hours a day; for how many hours a day would 2 examiners have to work in order to examine twice the number of answer books in 20 days?

(A) 6 hour (B) 8 hour (C) 9 hour (D) 7.30 hour

Sol. (B) Less examiners, more hours per day (indirect) More days, less hours per day (indirect)
 More answer books more hours per day (direct)

$$\begin{array}{ccc} \text{Examiners} & 2 : 4 & \\ \text{Days} & 20 : 8 & \end{array} :: 5 : x$$

$$\therefore x = \left(\frac{4 \times 8 \times 2 \times 5}{2 \times 20 \times 1} \right) = 8 \text{ hours per day}$$

Type 7: Problems Based on Time, Speed and Distance

$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{Distance} = \text{speed} \times \text{time}$$

Conversion factor: $1 \text{ km/h} = \frac{5}{18} \text{ m/sec}$

$$1 \text{ m/sec} = \frac{18}{5} \text{ km/h}$$

Important points:

(i) The time taken by a train x metre long is passing a signal post or a pole or a standing man is the same as the time by the train to cover a distance of x metre.

(ii) The time taken by a train x metres long in passing a bridge or a tunnel or a train at rest or a platform of length y metre is the same as the time taken by the train to cover a distance of $(x + y)$ metres.

(iii) If two trains or two bodies are moving in the same direction with a speed of s km/hr and t km/hr respectively such that $s > t$, then their relative speed $(s - t)$ km/hr.

If faster train has length x km and slower train has length y km time taken by faster train to cross the slower train. $\left(\frac{x+y}{s-t}\right)$ hr

(iv) If two trains or two bodies are moving in opposite direction with a speed of s km/hr and t km/hr respectively then, relative speed $= (s + t)$ km/hr If x km and y km be the length of the train, then time taken by the train to cross each other $= \left(\frac{x+y}{s+t}\right)$ hours.

(v) If two trains start at the same time from two points A and B towards each other and after crossing they take a and b hours in reaching B and A respectively, then (A's speed): (B's speed) $= (\sqrt{b} : \sqrt{a})$

Examples:

17. A certain distance is covered at a certain speed. If half their distance is covered in doubled the time. The ratio of the two speed is

(A) 4:1 (B) 1:4 (C) 2:1 (D) 1 : 2

Sol. (A) Let x km be covered in y hours. Then 1st

$$\text{speed} = \left[\frac{x}{y}\right] \text{ km per hour}$$

$$2^{\text{nd}} \text{ speed} = \frac{1}{2} \frac{x}{2y} = \frac{x}{4y} \text{ km per hour}$$

$$\text{Ratio of speed } \frac{x}{y} : \frac{x}{4y} \Rightarrow 1 : \frac{1}{4} = 4:1$$

18. A man sitting in the train which is travelling at the rate of 50 km/hr observes that it takes 9 seconds for a goods train travelling in the opposite direction to pass him. If the goods train is 187.5 m long. The speed of the train is :

(A) 75 km/hr (B) 45 km/hr

(C) 25 km/hr (D) none of these

Sol. (C) In 9 second, the goods train covers 187.5 metres.

∴ In 1 hour, the goods train cover

$$= \left[\frac{187.5}{9} \times \frac{60 \times 60}{1000} \right] \text{ km} = 75 \text{ km}$$

So the speed of goods train relative to man = 75 km/hour

∴ Speed of goods train

$$= (75 - 50) \text{ km/hr} = 25 \text{ km/hour}$$

19. Two trains of equal length are running on parallel lines in the same direction at the rate of 46 km/hr and 36 km/hr. The faster train passes the slower train in 36 seconds, the length of each train is :

(A) 50 m (B) 80 m (C) 72 m (D) none of these

Sol. (A) Speed of faster train relative to slower one = $(46 - 36) \text{ km/hr} = \left(10 \times \frac{5}{18} \right) \text{ m/sec}$

$$= \frac{25}{9} \text{ m/sec}$$

$$\text{Distance covered in 36 seconds} = \left(\frac{25}{9} \times 36 \right) \text{ m}$$

$$= 100 \text{ metres}$$

$$\therefore 2(\text{length of each train}) = 100 \text{ metre}$$

$$\text{or length of each train} = 50 \text{ metre}$$

Type 8: Problems Based on Boat and streams

1. If the speed of a boat is still in water be x km/hour and the speed of the stream by y km/hour then

(i) speed of boat along the stream (down stream) = $(x + y)$ km/hr.

(ii) speed of boat against the stream (up stream) = $(x - y)$ km/hr.

2. If a man rate in still water is x km/hour and the rate of current is y km/hour, then

(i) man's rate with the current = $(x + y)$ km/hr

(ii) man's rate against the current = $(x - y)$ km/hr

3. (i) Rate of still water = $1/2$ [rate with the current + rate against the current]

(ii) Rate of current = $1/2$ [rate with the current - rate against the current]

Examples:

20. The current of a stream runs at the rate of 2 km/hr. A motor boat goes 10 km upstream and back again to the starting point in 55 minutes. The speed of the motor boat in still water :

(A) 22 km/hr (B) 18 km/hr

(C) 65 km/hr (D) none of these

Sol. (A) Let the speed of boat in still water be x km/hr

Speed downstream = $(x + 2)$ km/hr

Speed upstream = $(x - 2)$ km/hr

$$= \left[\frac{10}{x+2} + \frac{10}{x-2} \right] \text{ hr}$$

$$\therefore \frac{10}{x+2} + \frac{10}{x-2} = \frac{55}{60} \Rightarrow 11x^2 - 240x - 44 = 6$$

$$(x - 22)(11x + 2) = 0 \quad x = 22$$

$$\therefore \text{Speed of boat in still water} = 22 \text{ km/hr}$$

21. A man can row 30 km upstream and 44 km downstream in 10 hours while he can row 40 km upstream and 55 km downstream in 13 hours. The rate of the current and the speed of the man in still water :

- (A) 8 km/hr and 5 km/hr (B) 3 km/hr and 8 km/hr
 (C) 12 km/hr and 3 km/hr (D) 2.5 km/hr and 5 km/hr

Sol. (B) Let the rates of upstream and downstream be x km/hr and y km/h respectively, then

$$\frac{30}{x} + \frac{44}{y} = 10 \quad \dots(i)$$

$$\frac{40}{x} + \frac{55}{y} = 13 \quad \dots(ii)$$

Solving equations (i) and (ii) for $\frac{1}{x}$ and $\frac{1}{y}$

$$\frac{1}{x} = \frac{1}{5} \text{ and } \frac{1}{y} = \frac{1}{11}$$

$\therefore x = 5$ km/hr and $y = 11$ km/hr

So rate of current

$$= \frac{1}{2} (11 - 5) \text{ km/hr} = 3 \text{ km/hr}$$

Rate in still water

$$= \frac{1}{2} (11 + 5) \text{ km/hr} = 8 \text{ km/hr}$$

22. A boat goes 12 km. upstream and 40 km. downstream in 8 hrs. It can go 16 km. upstream and 32 km. downstream in the same time. Then the speeds of the boat in still water and the speed of the stream are

- (A) 8 km/hr and 5 km/hr (B) 3 km/hr and 8 km/hr
 (C) 12 km/hr and 3 km/hr (D) 6 km/hr and 2 km/hr

Sol. (D) Let the speed of the boat in still water be x km/hr and the speed of the stream be y km/hr. then speed of boat in downstream is (x + y) km/hr. and the speed of boat upstream is (x - y) km/hr.

In Ist Case:- Distance covered in upstream = 12 km

$$\therefore \text{time} = \frac{12}{x - y} \text{ hr. distance covered in downstream} = 40 \text{ km}$$

$$\therefore \text{time} = \frac{40}{x + y} \text{ hr. Total time is 8 hrs.}$$

$$\therefore \frac{12}{x - y} + \frac{40}{x + y} = 8$$

In IInd Case :- Distance covered in upstream = 16km. $\therefore \text{time} = \frac{16}{x - y}$ hr.

$$\text{downstream} = 32 \text{ km. } \therefore \text{time} = \frac{32}{x + y} \text{ hr. total time taken} = 8 \text{ hr.}$$

$$\therefore \frac{16}{x - y} + \frac{32}{x + y} = 8$$

Solve them to get, x = speed of boat = 6 km/hr.

y = speed of stream = 2 km/hr.

Exercise

1. A, B, C, D and E play a game of cards. A says to B, "If you give me three cards, you will have as many as E has and if I give you three cards, you will have as many as D has" A and B together have 10 cards more than what D and E together have. If B has two cards more than what C has and the total number of cards be 133, how many cards does B have?
 (A) 22 (B) 23 (C) 25 (D) 35
2. In a caravan in addition to 50 hens, there are 45 goats and 8 camels with some keepers. If the total number of feet be 224 more than the number of heads in the caravan, the number of keepers is
 (A) 5 (B) 29 (C) 31 (D) 35
3. A certain number of horses and an equal number of men are going somewhere. Half of the owners are on their horses' back while the remaining ones are walking along leading their horses. If the number of legs walking on the ground is 70, how many horses are there?
 (A) 10 (B) 12 (C) 14 (D) 16
4. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 75 questions and secures 125 marks, the number of questions he attempts correctly, is
 (A) 35 (B) 40 (C) 42 (D) 46

Directions (Q. 5-9)

The following questions are based on the information given below:

Data on 450 candidates, who took an examination in Social Sciences, Mathematics and Science is given below

| | |
|--------------------------------------|------------|
| Passed in all the subjects | 167 |
| Failed in all the subject | 60 |
| Failed in Social Sciences | 175 |
| Failed in Mathematics | 199 |
| Failed in Science | 191 |
| Passed in Social Science only | 62 |
| Passed in Mathematics only | 48 |
| Passed in Science only | 52 |

5. How many failed in Social Science only?
 (A) 15 (B) 21 (C) 30 (D) 42
6. How many failed in one subject only?
 (A) 152 (B) 144 (C) 61 (D) 56
7. How many passed in Mathematics and at least one more subject ?
 (A) 210 (B) 203 (C) 170 (D) 94
8. How many failed in two subjects only?
 (A) 56 (B) 61 (C) 152 (D) 162
9. How many passed atleast in one subject?
 (A) 450 (B) 390 (C) 304 (D) 167
10. A is three times as old as B. C was twice as old as A four years ago. In four years' time, A will be 31. What is the present age of B and C?
 (A) 9, 46 (B) 9, 50 (C) 10, 46 (D) 10, 50
11. A father tells his son, "I was of your present age when you were born" If the father is 36 now, how old was the boy 5 years back?
 (A) 13 (B) 15 (C) 17 (D) 20

12. Ravi's brother is 3 years senior to him. His father was 28 years of age when his sister was born while his mother was 26 years of age when he was born. If his sister was 4 years of age when his brother was born, what was the age of Ravi's father and mother respectively when his brother was born?
 (A) 32 years, 23 years (B) 32 years, 29 years
 (C) 35 years, 29 years (D) 35 years, 33 years
13. When Rahul was born, his father was 32 years older than his brother and his mother was 25 years older than his sister. If Rahul's brother is 6 years older than him and his mother is 3 years younger than his father, how old was Rahul's sister when he was born?
 (A) 7 years (B) 10 years (C) 14 years (D) 19 years
14. In a group of 15 people, 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English both?
 (A) 0 (B) 3 (C) 4 (D) 5
15. There are 50 students admitted to a nursery class. Some students can speak only English and some can speak only Hindi. Ten students can speak both English and Hindi. If the number of students who can speak English is 21, then how many students can speak Hindi, how many can speak Hindi, how many can speak only Hindi and how many can speak only English?
 (A) 39, 29 and 11 respectively
 (B) 37, 27 and 13 respectively
 (C) 28, 18 and 22 respectively
 (D) 21, 11 and 29 respectively

Directions (Q. 5-9)

Study the information given below and answer the questions that follow:

A publishing firm publishes newspapers A, B and C.

In an effort to persuade advertisers to insert advertisements in these newspapers, the firm sends out the following statement to possible advertisers.

A survey of representative sample of the whole population shows that –

Newspaper A is read by 26%
 Newspaper B is read by 25%
 Newspaper C is read by 14%
 Newspaper A and B are read by 11%
 Newspaper B and C are read by 10%
 Newspaper C and A are read by 9%
 Newspaper C only is read by 0%

16. The percentage of readers who read all the three newspaper is
 (A) 1 (B) 4 (C) 5 (D) 6
17. The percentage of readers who read at least one of the three newspapers is
 (A) 2 (B) 4 (C) 5 (D) 6
18. The percentage of readers who read A and B but not C, is
 (A) 40 (B) 50 (C) 60 (D) 65
19. A number of friends decides to go on a picnic and planned to spend Rs 96 on eatables. Four of them, however, did not turn up. As a consequence, the remaining ones had to contribute Rs. 4 each extra. The number of those who attended the picnic was
 (A) 8 (B) 12 (C) 16 (D) 24
20. A shepherd had 17 sheep. All but nine died. How many was he left with ?
 (A) Nil (B) 8 (C) 9 (D) 17

21. A bird shooter was asked how many birds he had in the bag. He replied that there were all sparrows but six, all pigeons but six, and all docks but six. How many birds had he in all?
 (A) 9 (B) 18 (C) 27 (D) 36
22. What is the smallest number of ducks that could swim in this formation – two ducks in front of a duck, two ducks behind a duck and a duck between two ducks?
 (A) 3 (B) 5 (C) 7 (D) 9
23. A group of 1200 persons consisting of a captains and soldiers is traveling in a train. For every 15 soldiers there is on captain. The number of captains in the group is
 (A) 85 (B) 80 (C) 75 (D) 70
24. Aruna cut a cake into two halves and cuts one half into smaller pieces of equal size. Each of the small pieces is twenty grams in weight. If she has seven pieces of the cake in all with her, how heavy was the original cake?
 (A) 120 grams (B) 140 grams (C) 240 grams
 (D) 280 grams (E) none
25. First bunch of bananas has $1/4$ again as many bananas as a second bunch. If the second bunch has 3 bananas less than the first bunch, then the number of bananas in the first bunch are
 (A) 9 (B) 10 (C) 12 (D) 15
26. At the end of a business conference the ten people present all shake hands with each other once. How many handshakes will there be altogether?
27. A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly?
 (A) 12 (B) 44 (C) 42 (D) 40
28. The number of boys in a class is three times the number of girls. Which one of the following numbers cannot represent the total number of children in the class?
 (A) 48 (B) 44 (C) 42 (D) 4
29. A placed three sheets with two carbons to get two extra copies of the original. Then he decided to get more carbon copies and folded the paper in such a way that the upper half of the sheets were on top of the lower half. Then he typed. How many carbon copies did he get?
 (A) 1 (B) 2 (C) 3 (D) 4
30. A motorist knows four different routes from Bristol to Birmingham. From Birmingham to Sheffield he knows three different routes and from Sheffield to Carlisle he knows two different routes. How many routes does he know from Bristol to Carlisle?
 (A) 4 (B) 8 (C) 12 (D) 24
31. In a class, there are 18 boys who are over 160cm tall. If these constitute three fourths of the boys and the total number of boys is two third of the total number of students in the class, what is the number of girls in the class?
 (A) 6 (B) 12 (C) 18 (D) 24
32. A bus starts from city X. The number of women in the bus is half of the number of men. In city Y, 10 men leave the bus and five women enter. Now, number of men and women is equal. In the beginning, how many passengers entered the bus?
 (A) 15 (B) 30 (C) 36 (D) 45
33. In a class 20% of the members own only two cars each, 40% of the remaining own three cars each and the remaining members own only one car each. Which of the following statements is definitely true from the given statements?
 (A) Only 20% of the total members own three cars each.
 (B) 48% of the total members own three cars each
 (C) 60% of the total members own at least two cars each
 (D) 80% of the total members own at least one car.

34. Between two book-ends in your study are displayed your five favourite puzzle books. If you decide to arrange the five books in ever possible combination and moved just one book every minute, how would it take you?
 (A) 1 hour (B) 2 hours (C) 3 hours (D)4 hours
35. I have a few sweets to be distributed. If I keep 2, 3, or 4 in a pack, I am left with one sweet. If I keep 5 in a pack, I am left with none. What is the minimum number of sweets I can have to pack and distribute?
 (A) 25 (B) 37 (C) 54 (D) 65
36. If 40% of 40% of $x = 40$, then thevalue of Xis :
 (A) 100 (B) 400 (C) 250 (D) 1000
37. A man received 10% increase in his salary. His new salary Rs. 5060 his original salary was :
 (A) Rs. 4362 (B) Rs. 4400
 (C) Rs. 4600 (D) Rs. 4560
38. In an examination, 52% of the candidates failed is English 42% failed in Mathematics and 17% failed in both. The number of those who have passed in both the subjects is :
 (A) 23% (B) 35% (C) 25% (D)40%
39. The price of cooking oil has increased by 25%. The percentage of reduction that a family should effect in the use of cooking oil so as not to increase the expenditure on this account is :
 (A) 15% (B) 20% (C) 25% (D) 30%
40. The length and breadth of a square are increased by 30% and 20% respectively. The area of the rectangle so formed exceeds the area of the square by :
 (A) 20% (B) 36% (C) 50% (D)56%

Answer Key

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|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| C | D | C | B | A | C | B | D | B | C | A | A | B | B | A | C | D | A | A | C | |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | |
| A | A | C | C | D | B | B | C | B | D | B | D | B | B | A | C | A | A | B | D | |
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