Quantitative Aptitude Development

Prof. Ravikant Wairagade

BE, M.Tech., MBA, NET

Assistant Professor

Department of Management Technology, NIT, Nagpur

"Success in a career is usually determined by a collection of aptitudes."

- 70 % of world's recruitment companies use aptitude test as a part of their recruitment procedure

- Aptitude tests often permit potential companies to learn more about candidate's personality and abilities

- Employers wish to be certain that they are going to recruit the right individual who is able to work with company's clients and build up a reputation

Importance of Aptitude Tests

- Aptitude testing evaluates how an individual reacts to situations and accomplishes tasks in his or her daily life.

- Aptitude tests are designed to measure a person's capacity in a specific area, such as mechanical, spatial, sensory, clerical, numerical, verbal, logic and reason.

- Equalizer

- Opens opportunities

Contents of Aptitude Test

- Problems on Trains
- Time and Distance
- Height and Distance
- Time and Work
- Simple Interest
- Compound Interest
- Profit and Loss
- Partnership Percentage
- Problems on Ages
- Calendar
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- Average
- Area Volume and Surface Area

- Permutation and Combination
- Problems on Numbers
- Problems on H.C.F and L.C.M
- Decimal Fraction Simplification
- Square Root and Cube Root
- Surds and Indices
- Ratio and Proportion
- Chain Rule
- Pipes and Cistern
- Boats and Streams
- Logarithm
- Races and Games
- Stocks and Shares
- Probability

List of Topics for Logical Reasoning

1. Number Series
2. Letter and Symbol Series
3. Verbal Classification
4. Essential Part
5. Analogies
6. Artificial Language
7. Matching Definitions
8. Making Judgments
9. Verbal Reasoning
10. Logic Problems
11. Logic Games
12. Analyzing Arguments

PROBLEMS ON AGES

1. Rajeev's age after 15 years will be 5 times his age 5 years back. What is the present age of Rajeev ?

Sol. Let Rajeev's present age be x years. Then,

Rajeev's age after 15 years = (x + 15) years.

Rajeev's age 5 years back = (x - 5) years.

Therefore x + 15 = 5 (x - 5)x + 15 = 5x - 25

4x = 40

x = 10.

Hence, Rajeev's present age = 10 years.

10. A man is four times as old as his son. Five years ago, the man was nine times as old his son was at that time. What is the present age of a man ?

Sol. Let son's age = x, then man's age =4x.

9(x - 5) = (4x-5) or x=8.

Man's present age = (4x + 7) = 35 years

8. The Ratio of Ages of Mona and Sona is 4:5. Twelve Years hence, their ages will be in the ratio of 5:6. What will be Sona's age after 6 years ?

Sol. Let their present ages be 4x & 6x

Then (4x + 12)/(5x + 12) = 5/6 or x=12

Sona's age after 6 years = (5x +6) = 66 years

8. The Ratio of Ages of Mona and Sona is 4:5. Twelve Years hence, their ages will be in the ratio of 5:6. What will be Sona's age after 6 years ?

Sol. Let their present ages be 4x & 6x

Then (4x + 12)/(5x + 12) = 5/6 or x=12

Sona's age after 6 years = (5x +6) = 66 years

11. The sum of ages of Aruna and her mother is 49 years. Also, 7 years ago, the mothers age was 4 times Aruna's age. Find the present age of Aruna's mother.

Sol. Let Aruna's age 7 years ago be x.

Mother's age 7 years ago = 4x

(x + 7) + (4x + 7) =49 or x=7

Mother's present age = (4x + 7) = 35 years

12. The ages of A and B differ by 16 years. If 6 years ago, the elder one be 3 times as old as the younger one, find their present ages.

Sol.

Let A's age = x

& B's age = (x + 16)3(x - 6)

= (x + 16 - 6) or x=14

A's age = 14 years & B's age = 30 years.

12. The ages of A and B differ by 16 years. If 6 years ago, the elder one be 3 times as old as the younger one, find their present ages.

Sol.

Let A's age = x & B's age = (x + 16)

3(x - 6) = (x + 16 - 6) or x=14

A's age = 14 years & B's age = 30 years.

3. The product of the ages of Ankit and Nikita is 240. If twice the age of Nikita is more than Ankit's age by 4 years, what is Nikita's age?

Sol. Let Ankit's age be x years. Then, Nikita's age = 240/x years.

$2 * (240 /x) - x = 4$

$480 - x^2 = 4x$

$X^2 + 4x - 480 = 0$

$(x+24)(x-20) = 0$

$x = 20$.

Hence, Nikita's age = 240/x = 240/20 years = 12 years.

4. The present age of a father is 3 years more than three times the age of his son. Three years hence, father's age will be 10 years more than twice the age of the son. Find the present age of the father.

Sol. Let the son's present age be x years. Then, father's present age = (3x + 3) years

(3x + 3 + 3) = 2 (x + 3) + 10

3x + 6 = 2x + 16

x = 10.

Hence,

father's present age = (3x + 3) = ((3 * 10) + 3) years

= 33 years.

5. Rohit was 4 times as old as his son 8 years ago. After 8 years, Rohit will be twice as old as his son. What are their present ages?

Sol. Let son's age 8 years ago be x years. Then, Rohit's age 8 years ago = 4x years.

Son's age after 8 years = (x + 8) + 8 = (x + 16) years.

Rohit's age after 8 years = (4x + 8) + 8 = (4x+ 16) years.

2 (x + 16) = 4x + 16

2x = 16 => x = 8.

Hence, son's 'present age = (x + 8) = 16 years.

Rohit's present age = (4x + 8) = 40 years.

6. One year ago, the ratio of Gaurav's and Sachin's age was 6: 7 respectively. Four years hence, this ratio would become 7: 8. How old is Sachin ?

Sol. Let Gaurav's and Sachin's ages one year ago be 6x and 7x years respectively.

Then, Gaurav's age 4 years hence = (6x + 1) + 4
= (6x + 5) years.

Sachin's age 4 years hence = (7x + 1) + 4
= (7x + 5) years.

(6x+5): (7x + 5) = 7:8

8(6x+5) = 7 (7x + 5)48x + 40 = 49x + 35

x = 5.

Hence, Sachin's present age = (7x + 1) = 36 years.

7. Abhay's age after six years will be three-seventh of his father's age. Ten years ago the ratio of their ages was 1: 5. What is Abhay's father's age at present?

Sol. Let the ages of Abhay and his father 10 years ago be x and 5x years respectively.

Then,

Abhay's age after 6 years = (x + 10) + 6 = (x + 16) years.

Father's age after 6 years = (5x + 10) + 6 = (5x + 16) years.

y(x + 16): (5x + 16) = 3:7

7(x + 16) = 3 (5x + 16)

7x + 112 = 15x + 48

8x = 64 => x = 8.

Hence, Abhay's father's present age = (5x + 10) = 50 years.

8. The Ratio of Ages of Mona and Sona is 4:5. Twelve Years hence, their ages will be in the ratio of 5:6. What will be Sona's age after 6 years ?

9. Ramu was 4 times as old as his son 8 years ago. After 8 years, Ramu will be twice as old as his son. What their present ages ?

Sol. Let son's age 8 years ago be x years

Then Ramu's age at that time = 4x years

Son's age after 8 years = (x +8) + 8 = (x + 16) years

Ramu's age after 8 years = (4x + 8) + 8 = (4x + 16) years

2(x + 16) = 4x + 16 or x=8

Son's present age = (x + 8) = 16 years

Ramu's present age= (4x + 8) = 40 years

Wedding Anniversary

Recently I attended the twelth wedding anniversary celebration of my two good friends Jayant and Mohini. Beaming with pride, Jayant looked at his wife and said, ' At the time when we got married, Mohini was 3/4th of my age, but now she is only 5/6th ."

We began to wonder how old the couple must have been at the time of their marriage!

Can you figure it out?

RATIOS AND PROPROTIONS

Formulas on ratios and proportions:

Ratio:The ratio of two quantities a and b in the same units, is the fraction and we write it as a : b.

In the ratio *a : b, we call a as the first term or antecedent and b, the second term or consequent.*

Eg. The ratio 5 : 9 represents 5/9 with antecedent = 5, consequent = 9.

Rule: The multiplication or division of each term of a ratio by the same non-zero number does **not affect the ratio.**

Eg. 4 : 5 = 8 : 10 = 12 : 15. Also, 4 : 6 = 2 : 3.

Proportion: The equality of two ratios is called proportion.

If *a : b = c : d, we write a : b :: c : d and we say that a, b, c, d are in proportion.*

Here *a and d are called extremes, while b and c are called mean terms.*

Product of means = Product of extremes.

Thus, *a : b :: c : d* $\Leftrightarrow$ *(b x c) = (a x d).*

Fourth Proportional:

If a : b = c : d, then d is called the fourth proportional to a, b, c.

Third Proportional:

a : b = c : d, then c is called the third proportion to a and b.

Mean Proportional:

Mean proportional between *a and b is ab.*

Comparison of Ratios:

We say that (a : b) > (c : d) ⇔ a/b >c/d

Some Simple Examples

Ex. 1. *If a : b = 5 : 9 and b : c = 4: 7, find a : b : c.*

Sol. **a:b=5:9 and**   **b:c=4:7**

$$= (4 \times 9/4) : (7 \times 9/4)$$

$$= 9 : 63/4$$

a:b:c = *5:9:63/4*

=20:36:63.

2. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:

A.2 : 5

B.3 : 5

C.4 : 5

Explanation:

Let the third number be *x.*

Then, first number = 120% of *x* = 120/100 *x*

Second number = 150% of *x* =*150/100   x*

Ratio of first two numbers =6/5*x*:3/2*x*

= 12*x : 15x = 4 : 5.*

3. A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share?

A.Rs. 500

B.Rs. 1500

C.Rs. 2000

D.None of these

Explanation:

Let the shares of A, B, C and D be Rs. 5x, Rs. 2x, Rs. 4x and Rs. 3x respectively.

Then, 4x - 3x = 1000

x = 1000.

B's share = Rs. 2x

     = Rs. (2 x 1000)

     = Rs. 2000.

4. Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?

A.2 : 3 : 4

B.6 : 7 : 8

C.6 : 8 : 9

D.None of these

Explanation:

Originally, let the number of seats for Mathematics, Physics and Biology be 5*x, 7x and 8x* respectively.

Number of increased seats are (140% of 5*x), (150% of 7x) and (175% of 8x).*

*(140/100 * 5x) , (150/100 * 7x) and (175/100*8x)*

7*x,* 21/2*x* and 14*x.*

The required ratio = 7*x :21/2x:14x*

$$=21x : 28x: 14x$$

$$=2 : 3 : 4.$$

Sol. *i) Let the fourth proportional to 4, 9, 12 be x.*

Then, $4 : 9 : : 12 : x \Leftrightarrow 4 \times x = 9 \times 12 \Leftrightarrow X = (9 \times 12)/14 = 27$;

Fourth proportional to 4, 9, 12 is 27.

(ii) Let the third proportional to 16 and 36 be x.

Then, $16 : 36 : : 36 : x \Leftrightarrow 16 \times x = 36 \times 36 \Leftrightarrow x = (36 \times 36)/16 = 81$

Third proportional to 16 and 36 is 81.

(iii) Mean proportional between 0.08 and 0.18

$\sqrt{0.08 \times 0.18} = \sqrt{8/100 \times 18/100} = \sqrt{144/(100 \times 100)} = 12/100 = 0.12$

Ex. 6. *A bag contains 50 p, 25 P and 10 p coins in the ratio 5: 9: 4, amounting to Rs. 206. Find the number of coins of each type.*

Sol. Let the number of 50 p, 25 P and 10 p coins be 5x, 9x and 4x respectively.

$(5x/2)+(9x/ 4)+(4x/10)=206 \Leftrightarrow 50x + 45x + 8x$

$= 4120 \Leftrightarrow 1O3x$

$= 4120 \Leftrightarrow x=40.$

Number of 50 p coins = (5 x 40) = 200;

Number of 25 p coins = (9 x 40) = 360;

Number of 10 p coins = (4 x 40) = 160.

Ex. 7. *A mixture contains alcohol and water in the ratio 4 : 3. If 5 litres of water is added to the mixture, the ratio becomes 4: 5. Find the quantity of alcohol in the given mixture*

Sol. Let the quantity of alcohol and water be 4x litres and 3x litres respectively

$4x/(3x+5)=4/5$

$\Leftrightarrow 20x=4(3x+5)$

$\Leftrightarrow 8x=20$

$\Leftrightarrow x=2.5$

Quantity of alcohol   = (4 x 2.5) litres

= 10 litres.

MODULE OBJECTIVE:

•Decision making for **planning, policy and management** relies increasingly on the quantitative reasoning, which entails the collection, **analysis and interpretation** of quantitative data. This course is designed to introduce principles and techniques to solve averages related problems.

•Develop logical reasoning in a problem solving framework. One goal is to develop a disciplined **logical analysis** of word problems. Such reasoning is the **foundation** for buildings simple mathematical models of problems-models implicit on averages. Students will use this reasoning often (consciously or unconsciously)in engineering to find out averages. However **a logical mind** will serve a person well in any field.

Important Formula:

An average, or more accurately an arithmetic mean is, in crude terms, the sum of n different data divided by n.

The two mostly used formula in this chapter are:

- **Average**=Sum of quantities/Number of quantities.

- Suppose a man covers a certain distance at x kmph and an equal distance at y kmph, then the average speed during the whole journey is

(2xy/x+y) kmph.

Ex.1:Find the average of all prime numbers between 30 and 50?

Sol: there are five prime numbers between 30 and 50.

They are 31,37,41,43 and 47.

 Therefore the required average

=(31+37+41+43+47)/5

=199/5

=39.8.

Ex.2. find the average of first 40 natural numbers?

Sol:

sum of first n natural numbers=n(n+1)/2;

So,sum of 40 natural numbers=(40*41)/2 =820.

Therefore the required average=(820/40) =20.5.

Ex.3. find the average of first 20 multiples of 7?

Sol:

Required average =7(1+2+3+ …….+20)/20 =(7*20*21)/(20*2)

=(147/2)=73.5.

Ex.4. the average of four consecutive even numbers is 27. find the largest of these numbers?

Sol:

**let the numbers be x, x+2,x+4 and x+6.
then,**

$(x+(x+2)+(x+4)+(x+6))/4) = 27$

$\Rightarrow (4x+12)/4 = 27$

$\Rightarrow x+3=27$

$\Rightarrow x=24.$

Therefore the largest number$=(x+6)=24+6=30.$

Ex.5. there are two sections A and B of a class consisting of 36 and 44 students respectively. If the average weight of section A is 40kg and that of section B is 35kg, find the average weight of the whole class?

Sol:

total weight of(36+44) students

=(36*40+44*35)kg

=2980kg.

 Therefore weight of the total class

=(2980/80)kg

=37.25kg.

Ex:6.nine persons went to a hotel for taking their meals 8 of them spent Rs.12 each on their meals and the ninth spent Rs.8 more than the average expenditure of all the nine.What was the total money spent by them?

Sol: Let the average expenditure of all nine be Rs.x Then

12*8+(x+8)=9x   or   8x=104 or

x=13.

Total money spent

= 9x=Rs.(9*13)

=Rs.117.

Ex.7: Of the three numbers, second is twice the first and is also thrice the third. If the average of the three numbers is 44.Find the largest number.

Sol: Let the third number be x.

Then second number = 3x.

First number=3x/2.

Therefore x+3x+(3x/2)=(44*3) or   x=24

So largest number   = 2nd number

$\qquad\qquad\qquad\qquad$ =3x

$\qquad\qquad\qquad\qquad$ =72.

Ex.8:The average of 25 result is 18.The average of 1ˢᵗ 12 of them is 14 & that of last 12 is 17.Find the 13ᵗʰ result.

Sol:

Clearly 13th result

=(sum of 25 results)-(sum of 24 results)

=(18*25)-(14*12)+(17*12)

=450-(168+204)

=450-372

=78.

Numerical:

There are two sections A and B of a class, consisting of 36 and 44 students respectively. If the average weight of section A is 40kg and that of section B is 35kg, find the average weight of the whole class.

a)30kg

b)35kg

c) 42.5kg

d) 37.25kg

Answer: d

Solution: Total weight of (36+44) Students=(36x40+44x35)kg=2980kg

Therefore average weight of the whole class= (2980/80) kg

Therefore average weight=37.25kg.

NUMBER SERIES Type-I Instructions:

Start off with these simple series of numbers. Number series questions measure your **ability to reason without words**. To answer these questions, you must determine the **pattern of the numbers** in each series before you will be able to choose which **number comes next**. These questions involve only simple **arithmetic**. Although most number series items progress by adding or subtracting, some questions involve simple multiplication or division. In each series, look for **the degree and direction of change** between the numbers. In other words, do the numbers increase or decrease, and by how much?

1. Look at this series: 2, 4, 6, 8, 10, ... What number should come next?

A. 11

b. 12

c. 13

d. 14

Q 2. Look at this series: 58, 52, 46, 40, 34,.. What number should come next?

a. 26

b. 28

c. 30

d. 32

3. Look at this series: 40, 40, 47, 47, 54,...What number should come next?

a. 40

b. 44

c. 54

d. 61

4. Look at this series: 544, 509, 474, 439,...
What number should come next?

a. 404

b. 414

c. 420

d. 445

6. Look at this series: 8, 22, 8, 28, 8, ...
What number should come next?

a. 9

b. 29

c. 32

d. 34

5. Look at this series: 201, 202, 204, 207,...
What number should come next?

a. 205

b. 208

c. 210

d. 211

7. Look at this series: 80, 10, 70, 15, 60,...
What number should come next?

a. 20

b. 25

c. 30

d. 50

8. Look at this series: 36, 34, 30, 28, 24,...
What number should come next?

a. 20

b. 22

c. 23

d. 26

9. Look at this series: 22, 21, 23, 22, 24, 23,...
What number should come next?

a. 22

b. 24

c. 25

d. 26

10. Look at this series: 1,000, 200, 40,...
What number should come next?

a. 8

b. 10

c. 15

d. 20

11. Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?

a. 7

b. 10

c. 12

d. 13

12. Look at this series: 1.5, 2.3, 3.1, 3.9,...
What number should come next?

a. 4.2

b. 4.4

c. 4.7

d. 5.1

13. Look at this series: 5.2, 4.8, 4.4, 4,...
What number should come next?

a. 3

b. 3.3

c. 3.5

d. 3.6

Number Series-II Instructions:

This set contains additional, and sometimes more difficult, number series questions. Again, each question has a definite pattern. Some of the number series may be interrupted by a particular number that appears periodically in the pattern. For example, in the series 14, 16, 32, 18, 20, 32, 22, 24, 32, the number 32 appears as every third number. Sometimes, the pattern contains two alternating series. For example, in the series 1, 5, 3, 7, 5, 9, 7, the pattern is add 4, subtract 2, add 4, subtract 2, and so on. Look carefully for the pattern, and then choose which *pair of numbers* comes next. Note also that you will be choosing from five options instead of four.

14.   **84 78 72 66 60 54 48**

a. 44 34

b. 42 36

c. 42 32

d. 40 34

e. 38 32

14. 84 78 72 66 60 54 48

a. 44 34

b. 42 36

c. 42 32

d. 40 34

e. 38 32

Q 15.   3 8 13 18 23 28 33

a. 39 44

b. 38 44

c. 38 43

d. 37 42

e. 33 38

Q 16. 20 20 17 17 14 14 11

a. 8 8

b. 11 11

c. 11 14

d. 8 9

e. 11 8

Q 17.   28 25 5 21 18 5 14

a. 11 5

b. 10 7

c. 11 8

d. 5 10

e. 10 5

18. 75 65 85 55 45 85 35

a. 25 15

b. 25 85

c. 35 25

d. 85 35

e. 25 75

Q 19. 8 22 12 16 22 20 24

a. 28 32

b. 28 22

c. 22 28

d. 32 36

e. 22 26

Q20.   6 20 8 14 10 8 12…

a. 14 10

b. 2 18

c. 4 12

d. 2 14

e. 14 14

Q21. 11 16 21 26 31 36 41

a. 47 52

b. 46 52

c. 45 49

d. 46 51

e. 46 52

Q22.   8 11 21 15 18 21 22 _ _

a. 25 18

b. 25 21

c. 25 29

d. 24 21

e. 22 26

A bit challenging…

Q 23. Look at this series: 8, 43, 11, 41, __, 39, 17,...
What number should fill in the blank?

a. 8

b. 14

c. 43

d. 44

Q 24. Look at this series: 15, ___, 27, 27, 39, 39,...
What number should fill the blank?

a. 51

b. 39

c. 23

d. 15

A bit challenging…

Q 25. Look at this series: 83, 73, 93, 63, __, 93, 43, . . .

What number should fill the blank?

a. 33

b. 53

c. 73

d. 93

Q 26. Look at this series: 4, 7, 25, 10, __, 20, 16, 19,... What number should fill the blank?

a. **13**

b. **15**

c. **20**

d. **28**

Q27. Look at this series: U32, V29, ___, X23, Y20, . . . What number should fill the blank?

a. **W26**
b. **W17**
c. **Z17**
d. **Z26**

Q 28. Look at this series: J14, L16, __, P20, R22, . . . What number should fill the blank?

a. S24
b. N18
c. M18
d. T24

ALPHABETICAL SERIES

Q 29. QAR RAS SAT TAU _____

a. UAV
b. UAT
c. TAS
d. TAT

DEF DEF$_2$ DE$_2$F$_2$ _____ D$_2$E$_2$F$_3$

a. DEF$_3$

b. D$_3$EF$_3$

c. D$_2$E$_3$F

d. D$_2$E$_2$F$_2$

$ZA_5 \; Y_4B \; XC_6 \; W_3D$ _____

a. E_7V

b. V_2E

c. VE_5

d. VE_7

ANALOGIES

Here is the first of several sets of analogies.

Analogies test your **ability to see relationships** between words, objects, or concepts. There are many different types of analogy relationships: use or function, part-to-whole, classification, proportion or degree, cause and effect, similarity or difference.

In each of these verbal analogies, you will be **given a set of two related words**, followed by a third word and **four answer choices.**

Of the four choices, you must identify the one that would **best complete the second set** so that it expresses the same relationship as the first set. A good way to figure out the relationship in a given question is to **make up a sentence that describes the relationship between the first two words.** Then, try to use the same sentence to find out which of the answer choices completes the same relationship with the third word.

Q. 1.: Cup is to coffee as bowl is to

a. dish.

b. soup.

c. spoon.

d. food.

Q. 2: Exercise is to gym as eating is to

a. food.

b. dieting.

c. fitness.

d. restaurant.

Q.3: Oar is to rowboat as foot is to

a. running.

b. sneaker.

c. skateboard.

d. jumping.

Q.4: Window is to pane as book is to

a. novel.

b. glass.

c. cover.

d. page.

Q. 5: Secretly is to openly as silently is to

a. scarcely.

b. impolitely.

c. noisily.

d. quietly.

Q.6: Artist is to painting as senator is to

a. attorney.

b. law.

c. politician.

d. constituents.

Q.7: Guide is to direct as reduce is to

a. decrease.

b. maintain.

c. increase.

d. preserve.

Q.8: Play is to actor as concert is to

a. symphony.

b. musician.

c. piano.

d. percussion.

Q.9: Yard is to inch as quart is to

a. gallon.

b. ounce.

c. milk.

d. liquid.

Q. 10: Reptile is to lizard as flower is to

a. petal.

b. stem.

c. daisy.

d. alligator.

Q.11: Odometer is to mileage as compass is to

a. speed.

b. hiking.

c. needle.

d. direction.

Train Problem

Q: A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?

A.120 metres

B.180 metres

C.324 metres

D.150 metres

Solution

Answer: Option **D**

Explanation:

$$\text{Speed} = \left(60 \times \frac{5}{18}\right) \text{m/sec} = \left(\frac{50}{3}\right) \text{m/sec.}$$

$$\text{Length of the train} = (\text{Speed} \times \text{Time}) = \left(\frac{50}{3} \times 9\right) \text{m} = 150 \text{ m.}$$

Train Problem-2

Q.2) The length of the bridge, which a train 130 metres long and travelling at 45 km/hr can cross in 30 seconds, is:

A.200 m

B.225 m

C.245 m

D.250 m

Solution

Answer: Option **C**

Explanation:

Speed $= 45 \times (5/18)$ m/sec

$\qquad = (25/2)$ m/sec

Time = 30 sec.

Let the length of bridge be x metres.

Then,$(130 + x)/30 = 25/2$

$2(130 + x) = 750$

$x = \textbf{245 m.}$

Some Puzzles

Q. You are given two candles of equal size, which can burn 1 hour each. You have to measure 90 minutes with these candles. (There is no scale or clock). Also u r given a lighter.

Answer

First light up the two ends of the 1st candle (60/2=30Min).

When it will burn out, light up one end of the second candle.

(30+60=90)

A little bit tough…

Q. Try the similar problem to measure 45 minutes.

Answer:

First light-up the two ends of the 1st candle and one end of the 2nd candle **(30 Min).**

When the 1st candle will burn out ,then light up the both ends of the 2nd candle (**15 Min**)

(**15+30=45 Min**)

Puzzle : Honey Bottle

A bottle fully contains honey. The honey bottle weighed 1.5kg. Then the bottle was weighed with half of the honey, it was 900 grams. Now guess what would be the weight of the bottle?

Answer :

Let the bottle weight be x
Let the honey weight be y
The weight of the bottle with honey is 1.5kg
Therefore x + y = 1500 grams ------------------> (1)
Then the weight of the bottle with half of the honey is 900 grms
Therefore x + (y/2) = 900 grams
That is 2x + y = 1800 ------------------------------> (2)
Solving the first and second equation
2x + y = 1800
  x + y = 1500
----
  x   =   300

Therefore the weight of the bottle is 300 grams.

Puzzle 4: Basketball

Jay, Madhav, Bhim and Raj played basketball and scored different points as 24, 10, 6 and 28. Jay scored 4 times as many points as Raj. Madhav scored more points than Bhim and Raj. Find out each player's points.

Answer :

As Jay has scored 4 times more than Raj. So Jay had scored 24 and Raj 6. Madhav had scored more than Bhim and Raj. So Madhav's point is 28. Bhim is 10.

Question

A snake slides through a long cylindrical hole in the ground at 5 centimeters per second. The hole is 5.95 meters in length. The snake takes 15 seconds to enter the hole.

What is the length in centimeters of the snake ?

Answer :

The snake has entered the hole when its tail just comes into the hole. It is given that 15 seconds elapse from the time the snake's head enters the hole till its tail enters. Thus,

Length of the snake = Distance traveled in 15 seconds
= (5 cm/s) × (15 s) = 75 centimeters.

Grandpa:

"My grandson is about as many days as my son is weeks, and my grandson is as many months as I am in years. My grandson, my son and I together are 160 years. Can you tell me my age in years?"

Answer :

"This problem is conveniently solved by writing down the necessary equations. Note that there are 12 months in a year, 52 weeks in a year, and 365 days in a year.

Let m be my age in years.

If s is my son's age in years, then my son is $52s$ weeks old.
If g is my grandson's age in years, then my grandson is $365g$ days old. Thus,

$$365g = 52s.$$

Since my grandson is $12g$ months old,

$$12g = m.$$

Since my grandson, my son and I together are 160 years,

$$g + s + m = 160.$$

- The above system of 3 equations in 3 unknowns (*g*, *s* and *m*) can be solved as follows.

  $m / 12 + 365\ m / (52 \times 12) + m = 160$ or

  $52\ m + 365\ m + 624\ m = 624 \times 160$ or

  $m = 624 \times 160 / 1041 = 96$.

So, I am 96 years old."

Painting Job

- A painting job can be completed by 8 painters in 16 days. If 8 more painters join the team 2 days after starting work on the job, then how many more days are required to complete the job?

Solution:

Total effort required by 8 painters for 16 days = 8 × 16 = 128 man-days.

Initial effort by 8 painters for 2 days = 8 × 2 = 16 man-days.

Job still requires 128 − 16 = 112 man-days, and there are 16 painters available to do it.

Additional effort required by 16 painters for 112 man-days = 112 / 16 = 7 days.

Thus, 7 more days are required to complete the painting job.

Parrots and Cages Puzzle

Tara have some parrots and some cages for it. If she put 4 parrots into each cage then she will have one cage left. If she put 3 parrots into each cage then she will have one parrot left over. How many parrots and cages does she have?

Parrots and Cages Solution:

The number of parrots is equal to number of cages multiplied by 4 minus one left.That is :

$\qquad$ **P = 4(C - 1)** --> (1)

Then the number of parrots will be equal to the number of cages times three plus one left.That is :

$\qquad$ **P = 3C + 1** --> (2)

Now substitute the 1st and 2nd equations:

$\qquad$ P = 4(C - 1)

$\qquad$ P = 3C + 1

$\qquad$ **C = 5, P = 16.**

Therefore **Parrots = 16 and cages = 5.**

Ratio

A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3.

If C gets Rs. 1000 more than D, what is B's share?

Explanation:

Let the shares of A, B, C and D be Rs. 5x, Rs. 2x, Rs. 4x and Rs. 3x respectively.

Then, 4x - 3x = 1000

x = 1000.

B's share = Rs. 2x = Rs. (2 x 1000) = Rs. 2000.

Milkman

In a mixture 60 litres, the ratio of milk and water 2 : 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is?

Explanation:

Quantity of milk $= 60 \times \frac{2}{3}$ litres $= 40$ litres.

Quantity of water in it $= (60 - 40)$ litres $= 20$ litres.

New ratio $= 1 : 2$

Let quantity of water to be added further be x litres.

Then, milk : water $= \frac{40}{20 + x}$

Now, $\frac{40}{20 + x} = \frac{1}{2}$

$20 + x = 80$

$x = 60$.

Quantity of water to be added $= 60$ litres.

Time-Distance

If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is:

A.50 km

B.56 km

C.70 km

D.80 km

Explanation:

Let the actual distance travelled be *x* km.

Then,

$$x/10 = (x + 20)/14$$

$$14x = 10x + 200$$

$$4x = 200$$

$$\mathbf{x = 50 \text{ km.}}$$

Odd-man-out-and-series

Find the odd man out.

3, 5, 11, 14, 17, 21

A. 21

B. 17

C. 14

D. 3

Find the odd man out.

396, 462, 572, 427, 671, 264

A.396

B.427

C.671

D.264

Percentage

Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:

A. 39, 30 **B.** 41, 32

C. 42, 33 **D.** 43, 34

Percentage

A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?

Explanation:

Number of runs made by running = 110 - (3 x 4 + 8 x 6)

= 110 - (60)

= 50

 Required percentage =(50/110x 100)% = 45.4545%

Problems-on-ages

The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?

A. 4 years

B. 8 years

C. 10 years

D. None of these