PROBLEMS ON AGES

SOLVED 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.

2. The ages of two persons 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 the age of the younger person be x years.
Then, age of the elder person = (x + 16) years.
Therefore 3 (x - 6) = (x + 16 - 6)
3x -18 = x + 10
2x = 28
x = 14.
Hence, their present ages are 14 years and 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 Sa chin ?

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.

(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 ?

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

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

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

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.

13. In three more years, Miguel's grandfather will be six times as old as Miguel was last year. When Miguel's present age is added to his grandfather's present age, the total is 68. How old is each one now?

Sol. Miguel's present age be "m"
Grandfather's present age be "g"
Then $m + g = 68$
Miguel's age "last year" was $m - 1$
His grandfather's age "in three more years" will be $g + 3$
The grandfather's "age three years from now" is six times Miguel's "age last year"
i.e., $g + 3 = 6(m - 1)$

This gives me two equations with two variables:

$$m + g = 68$$
$$g + 3 = 6(m - 1)$$

Solving the first equation,

$$m = 68 - g$$
$$g + 3 = 6m - 6$$
$$g + 3 = 6(68 - g) - 6$$
$$g + 3 = 408 - 6g - 6$$
$$g + 3 = 402 - 6g$$
$$g + 6g = 402 - 3$$
$$7g = 399$$
$$g = 57$$

Since "g" stands for the grandfather's current age, then **the grandfather is 57.**
Since $m + g = 68$,
then $m = 11$
Miguel is presently eleven years old

14. One-half of Heather's age two years from now plus one-third of her age three years ago is twenty years. How old is she now?

Sol. This problem refers to Heather's age two years in the future and three years in the past. So I'll pick a variable and label everything clearly:

age now: H
age two years from now: $H + 2$
age three years ago: $H - 3$

From the given problem

one-half of age two years from now: $(\frac{1}{2})(H + 2) = \frac{H}{2} + 1$
one-third of age three years ago: $(\frac{1}{3})(H - 3) = \frac{H}{3} - 1$

The sum of these two numbers is twenty,

By adding them and set this equal to 20:

$^{H}/_{2} + 1 + {}^{H}/_{3} - 1 = 20$
$^{H}/_{2} + {}^{H}/_{3} = 20$
$3H + 2H = 120$
$5H = 120$
$H = 24$

Heather is 24 years old.

15. Father is aged three times more than his son Ronit. After 8 years, he would be two and a half times of Ronit's age. After further 8 years, how many times would he be of Ronit's age?

Sol. Let Ronit's present age be x years.
Then, father's present age $=(x + 3x)$ years $= 4x$ years.

$$\therefore (4x + 8) = \frac{5}{2}(x + 8)$$

$$\Rightarrow 8x + 16 = 5x + 40$$

$$\Rightarrow 3x = 24$$

$$\Rightarrow x = 8.$$

Hence, required ratio

$$= (4x + 16)/(x+16) = 48/24 = 2$$

2. 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?

Let the ages of children be x, $(x + 3)$, $(x + 6)$, $(x + 9)$ and $(x + 12)$ years.

Then, $x + (x + 3) + (x + 6) + (x + 9) + (x + 12) = 50$

$\Rightarrow 5x = 20$

$\Rightarrow x = 4.$

$\therefore$ Age of the youngest child $= x = 4$ years

3. A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

A.14 years B.19 years
C.33 years D.38 years

Answer & Explanation

Answer: Option **A**

Explanation:

Let the son's present age be x years. Then, $(38 - x) = x$

$\Rightarrow 2x = 38$.

$\Rightarrow x = 19$.

$\therefore$ Son's age 5 years back $(19 - 5) = 14$ years

4. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, the how old is B?

A.7 B.8
C.9 D.10
E.11

Answer & Explanation

Answer: Option **D**

Explanation:

Let C's age be x years. Then, B's age = $2x$ years. A's age = $(2x + 2)$ years.

$\therefore (2x + 2) + 2x + x = 27$

$\Rightarrow 5x = 25$

$\Rightarrow x = 5$.

Hence, B's age = $2x = 10$ years.

5. Present ages of Sameer and Anand are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Anand's present age in years?

A.24 B.27
C.40 D.Cannot be determined

E. None of these

Answer & Explanation

Answer: Option **A**

Explanation:

Let the present ages of Sameer and Anand be $5x$ years and $4x$ years respectively.

Then, $\frac{5x + 3}{4x + 3} = \frac{11}{9}$

$\Rightarrow 9(5x + 3) = 11(4x + 3)$

$\Rightarrow 45x + 27 = 44x + 33$

$\Rightarrow 45x - 44x = 33 - 27$

$\Rightarrow x = 6.$

$\therefore$ Anand's present age = $4x = 24$ years.

6. A man is 24 years older than his son. In two years, his age will be twice the age of his son. The present age of his son is:

A. 14 years
B. 18 years
C. 20 years
D. 22 years

Answer & Explanation

Answer: Option **D**

Explanation:

Let the son's present age be x years. Then, man's present age = $(x + 24)$ years.

$\therefore (x + 24) + 2 = 2(x + 2)$

$\Rightarrow x + 26 = 2x + 4$

$\Rightarrow x = 22.$

7. Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present?

A. 16 years
B. 18 years

C.20 years D.Cannot be determined
E.None of these

Answer & Explanation

Answer: Option **A**

Explanation:

Let the ages of Kunal and Sagar 6 years ago be $6x$ and $5x$ years respectively.

Then, $\frac{(6x + 6) + 4}{(5x + 6) + 4} = \frac{11}{10}$

$\Rightarrow 10(6x + 10) = 11(5x + 10)$

$\Rightarrow 5x = 10$

$\Rightarrow x = 2.$

$\therefore$ Sagar's present age = $(5x + 6) = 16$ years

8. The sum of the present ages of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be:
A.12 years B.14 years
C.18 years D.20 years

Answer & Explanation

Answer: Option **D**

Explanation:

Let the present ages of son and father be x and $(60 - x)$ years respectively.

Then, $(60 - x) - 6 = 5(x - 6)$

$\Rightarrow 54 - x = 5x - 30$

$\Rightarrow 6x = 84$

$\Rightarrow x = 14.$

$\therefore$ Son's age after 6 years = $(x + 6) = 20$ years

9. At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present ?

A.12 years B.15 years
C.19 and half D.21 years

Answer & Explanation

Answer: Option **B**

Explanation:

Let the present ages of Arun and Deepak be $4x$ years and $3x$ years respectively. Then,

$4x + 6 = 26 \Leftrightarrow 4x = 20$

$x = 5$.

$\therefore$ Deepak's age = $3x$ = 15 years

10. Sachin is younger than Rahul by 7 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?

A.16 years B.18 years
C.28 years D.24.5 years
E.None of these

Answer & Explanation

Answer: Option **D**

Explanation:

Let Rahul's age be x years.

Then, Sachin's age = $(x - 7)$ years.

$\therefore \frac{x - 7}{x} = \frac{7}{9}$

$\Rightarrow 9x - 63 = 7x$

$\Rightarrow 2x = 63$

$\Rightarrow x = 31.5$

Hence, Sachin's age $= (x - 7) = 24.5$ years.

11. The present ages of three persons in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).

A.8, 20, 28 B.16, 28, 36
C.20, 35, 45 D.None of these

Answer & Explanation

Answer: Option **B**

Explanation:

Let their present ages be $4x$, $7x$ and $9x$ years respectively.

Then, $(4x - 8) + (7x - 8) + (9x - 8) = 56$

$\Rightarrow 20x = 80$

$\Rightarrow x = 4$.

$\therefore$ Their present ages are $4x = 16$ years, $7x = 28$ years and $9x = 36$ years respectively.

12.Ayesha's father was 38 years of age when she was born while her mother was 36 years old when her brother four years younger to her was born. What is the difference between the ages of her parents?

A.2 years B.4 years
C.6 years D.8 years

Answer & Explanation
Answer: Option C
Explanation:
Mother's age when Ayesha's brother was born = 36 years.
Father's age when Ayesha's brother was born = (38 + 4) years = 42 years.
$\therefore$ Required difference = (42 - 36) years = 6 years

13. A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present?

A.32 years B.36 years
C.40 years D.48 years

Answer & Explanation

Answer: Option **C**

Explanation:

Let the mother's present age be x years.

Then, the person's present age $= \left(\frac{2}{5}x\right)$ years.

$\therefore \left(\frac{2}{5}x + 8\right) = \frac{1}{2}(x + 8)$

$\Rightarrow 2(2x + 40) = 5(x + 8)$

$\Rightarrow x = 40.$

14. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference between R and Q's age?

A.1 year
B.2 years
C.25 years
D.Data inadequate
E.None of these

Answer & Explanation

Answer: Option **D**

Explanation:

R - Q = R- T $\Rightarrow$ Q = T.

Also, R + T = 50 $\Rightarrow$ R + Q = 50.

So, (R - Q) cannot be determined

15. The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

A.5 : 2
B.7 : 3
C.9 : 2
D.13 : 4

Answer & Explanation

Answer: Option **B**

Explanation:

Let the ages of father and son 10 years ago be $3x$ and x years respectively.

Then, $(3x + 10) + 10 = 2[(x + 10) + 10]$

$\Rightarrow 3x + 20 = 2x + 40$

$\Rightarrow x = 20.$

$\therefore$ Required ratio = $(3x + 10) : (x + 10) = 70 : 30 = 7 : 3.$

The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

A.5 : 2 B.7 : 3
C.9 : 2 D.13 : 4

Answer & Explanation

Answer: Option B

Explanation:

Let the ages of father and son 10 years ago be 3x and x years respectively.

Then, (3x + 10) + 10 = 2[(x + 10) + 10]

$\Rightarrow$3x + 20 = 2x + 40

$\Rightarrow$x = 20.

$\therefore$ Required ratio = (3x + 10) : (x + 10) = 70 : 30 = 7 : 3.

Data sufficiency1

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

1. What is Sonia's present age?

I. Sonia's present age is five times Deepak's present age.

II. Five years ago her age was twenty-five times Deepak's age at that time.

A.I alone sufficient while II alone not sufficient to answer
B.II alone sufficient while I alone not sufficient to answer
C.Either I or II alone sufficient to answer
D.Both I and II are not sufficient to answer
E. Both I and II are necessary to answer

Answer & Explanation

Answer: Option **E**

Explanation:

I. $S = 5D \Rightarrow D = \frac{S}{5}$....(i)

II. $S - 5 = 25 (D - 5) \Leftrightarrow S = 25D - 120$ ....(ii)

Using (i) in (ii), we get $S = \left(25 \times \frac{S}{5}\right) - 120$

$\Rightarrow 4S = 120.$

$\Rightarrow S = 30.$

Thus, I and II both together give the answer. So, correct answer is (E).

2. Average age of employees working in a department is 30 years. In the next year, ten workers will retire. What will be the average age in the next year?
   I. Retirement age is 60 years.
   II. There are 50 employees in the department.

A.I alone sufficient while II alone not sufficient to answer
B.II alone sufficient while I alone not sufficient to answer
C.Either I or II alone sufficient to answer
D.Both I and II are not sufficient to answer
E. Both I and II are necessary to answer

Answer & Explanation

Answer: Option **E**

Explanation:

I. Retirement age is 60 years.

II. There are 50 employees in the department.

Average age of 50 employees = 30 years.

Total age of 50 employees = (50 x 30) years = 1500 years.

Number of employees next year = 40.

Total age of 40 employees next year (1500 + 40 - 60 x 10) = 940.

Average age next year = $\frac{940}{40}$ years = $23\frac{1}{2}$ years.

Thus, I and II together give the answer. So, correct answer is (E).

. Divya is twice as old as Shruti. What is the difference in their ages?

I. Five years hence, the ratio of their ages would be 9 : 5.

II. Ten years back, the ratio of their ages was 3 : 1.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer & Explanation

Answer: Option **C**

Explanation:

Let Divya's present age be D years and Shruti's present age b S years

Then, D = 2 x S $\Leftrightarrow$ D - 2S = 0 ....(i)

I. $\frac{D + 5}{S + 5} = \frac{9}{5}$....(ii)

II. $\frac{D - 10}{S - 10} = \frac{3}{1}$....(iii)

From (ii), we get : 5D + 25 = 9S + 45 $\Leftrightarrow$ 5D - 9S = 20 ....(iv)

From (iii), we get : D - 10 = 3S - 30 $\Leftrightarrow$ D - 3S = -20 ....(v)

Thus, from (i) and (ii), we get the answer.

Also, from (i) and (iii), we get the answer.

$\therefore$ I alone as well as II alone give the answer. Hence, the correct answer is (C).

Data sufficiency2

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

1. What is Arun's present age?
   I. Five years ago, Arun's age was double that of his son's age at that time.
   II. Present ages of Arun and his son are in the ratio of 11 : 6 respectively.
   III. Five years hence, the respective ratio of Arun's age and his son's age will become 12 : 7.

   A. Only I and II
   B. Only II and III
   C. Only I and III
   D. Any two of the three
   E. None of these

   Answer & Explanation

   Answer: Option **D**

   Explanation:

   II. Let the present ages of Arun and his son be $11x$ and $6x$ years respectively.

   I. 5 years ago, Arun's age = 2 x His son's age.

   III. 5 years hence, $\frac{\text{Arun's Age}}{\text{Son's age}} = \frac{12}{7}$

   Clearly, any two of the above will give Arun's present age.

   ∴ Correct answer is (D).

2. What is Ravi's present age?
   I. The present age of Ravi is half of that of his father.
   II. After 5 years, the ratio of Ravi's age to that of his father's age will be 6 : 11.
   III. Ravi is 5 years younger than his brother.

   A. I and II only
   B. II and III only
   C. I and III only
   D. All I, II and III
   E. Even with all the three statements answer cannot be determined.

   Answer & Explanation

   Answer: Option **A**

Explanation:

I. Let Ravi's present age be x years. Then, his father's present age = $2x$ years.

II. After 5 years, $\frac{\text{Ravi's age}}{\text{Father's age}} = \frac{6}{11}$

III. Ravi is younger than his brother.

From I and II, we get $\frac{x + 5}{2x + 5} = \frac{6}{11}$. This gives x, the answer.

Thus, I and II together give the answer. Clearly, III is redundant.

∴ Correct answer is (A).

3. What is the present age of Tanya?

I. The ratio between the present ages of Tanya and her brother Rahul is 3 : 4 respectively.

II. After 5 years the ratio between the ages of Tanya and Rahul will be 4 : 5.

III. Rahul is 5 years older than Tanya.

A. I and II only
B. II and III only
C. I and III only
D. All I, II and III
E. Any two of the three

Answer & Explanation

Answer: Option **E**

Explanation:

I. Let the present ages of Tanya and Rahul be $3x$ years and $4x$ years.

II. After 5 years, (Tanya's age) : (Rahul's age) = 4 : 5.

III. (Rahul's age) = (Tanya's age) + 5.

From I and II, we get $\frac{3x + 5}{4x + 5} = \frac{4}{5}$. This gives x.

∴ Tanya's age = $3x$ can be found. Thus, I and II give the answer.

From I and III, we get $4x = 3x + 5$. This gives x.

∴ Tanya's age = $3x$ can be found. Thus, I and III give the answer.

From III : Let Tanya's present age be t years.

Then Rahul's present age = $(t + 5)$ years.

Thus, from II and III, we get : $\frac{t}{t+5} = \frac{4}{5}$. This gives t.

Thus, II and III give the answer.

∴ Correct answer is (E).

Data sufficiency3

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

1. What will be the ratio between ages of Sam and Albert after 5 years?
   I. Sam's present age is more than Albert's present age by 4 years.
   II. Albert's present age is 20 years.
   III. The ratio of Albert's present age to Sam's present age is 5 : 6.

A. Any two of I, II and III
B. II only
C. III only
D. I or III only
E. II or III only

Answer & Explanation

Answer: Option **A**

Explanation:

Clearly, any two of the given statements will give the answer and in each case, the third is

redundant.

∴ Correct answer is (A).

2. What is the difference between the present ages of Ayush and Deepak?
   I. The ratio between Ayush's present age and his age after 8 years 4 : 5.
   II. The ratio between the present ages of Ayush and Deepak is 4 : 3.
   III. The ratio between Deepak's present age and his age four years ago is 6 : 5.

   A. Any two of I, II and III
   B. I or III only
   C. Any one of the three
   D. All I, II and III are required
   E. Even with all I, II and III, the answer cannot be obtained.

   Answer & Explanation

   Answer: Option **A**

   Explanation:

   Clearly, any two of the given statements will give the answer and in each case, the third is redundant.

Exercise

1.Three times Nancy's age is 5 more than twice Rogers age. The sum of their age is 32. find their ages.

n = Nancy's age
r = Roger's age
.
We are told:
n = 2r + 5
n + r = 32
.
Viewing as a simultaneous equations:
n -2r = 5
n + r = 32
Subtracting the second equation from the first:
-3r = -27
Dividing by -3
r = 9
Roger's age is 9.
.
substituting back into the sum:
n + r = 32
n + 9 = 32
n = 32 - 9

n = 23
Nancy's age is 23.
.
So the sum of their ages is 32.
.
But is Nancy's age 5 more than twice Roger's?
.
2(9) + 5 = 23
That checks, so all we have to do is state our answer:
Nancy is 23 years old.
Roger is 9 years old.

2. Rogers age is 1 1/3 times Stevens age. Eight years ago, Rogers age was twice Stevens age. Find Rogers age.

Ages NOW:
Let Steven's age be "x".
Roger is now (4/3)x yrs old.

Eight years AGO:
Steven was "x-8" years old.
Roger was (4/3)x-8 years old.

EQUATION:
(4/3)x-8=2(x-8)
(4/3)x-8=2x-16
(4/3)x-(6/3)x=8-16
(-2/3) x =-8
x=12
Roger's age NOW is (4/3)(12)=16 years

3. Roger is 6 years older than Zoe. Three years ago, Zoe's age was two-thirds of Roger's age. Find their present ages. *Let Roger's age be x and Zoe's age be y

Zoe's age be x
Roger will be x+6
..
3 years ago
Zoe was x-3
Roger was x+6-3=x+3 years
x-3 = 2/3 * x+3
3(x-3)=2(x+3)
3x-9=2x+6

x=15 that is Zoes's age
Roger is 15+6 = 21 years

4. Fidel is half the age of his brother. Five years ago, Fidel was one-third the age of his brother. Find the present ages of each.

brother =x
Fidel = (1/2) x
...
5 years ago
brother = x-5
Fidel = (1/2)x -5
...
(1/2)x -5 = 1/3*(x-5)
3((1/2)x-5)= x-5
3x/2-15= x-5
(3x/2)-x=15-5
x/2=10
x=20 brother's age
Fidels age = 10

5. John is twice as old as his brother. Four years ago, he was four times as old as his brother. find their present ages.

Let x= brother's age now
2x = John's age now
x-4 = brother's age 4 years ago
2x-4 = John's age 4 years ago

The EQUATION:
John's age 4 years ago was four times the brother's age 4 years ago.
2x-4=4(x-4)
2x-4=4x-16

Subtract 2x from each side:
2x-2x-4=4x-2x-16
-4= 2x-16

Add + 16 to each side:
16-4=2x-16+16
12=2x
x=6

Check:
Brother = 6 now
John = 12 now

Four years ago, John was 8 and Brother was 2, which is 4 times as old.

Dr. Robert J. Rapalje, Retired
6. A boy is twice as old as his brother - 4 years ago he was 3 times as old as his brother. What are their present ages?

If boy X is twice as old as his brother Y right now, then X = 2Y. Four years ago he was three times as old as his brother, so X - 4=3(Y - 4).
X-4 = 3(Y-4)
X-4 = 3Y-12
If X=2Y, then
2Y-4=3Y-12
2Y+8=3Y
8=Y
The brother is now 8 years old, and the boy is 2(8) or 16 years old.
7. John is twice as old as his brother. Four years ago, he was four times as old as his brother. Find their present ages.

Let j = John's present age
Let b = brother's age now
:
John is twice as old as his brother.
j = 2b
;
Four years ago, he was four times as old as his brother.
j - 4 = 4(b - 4)
j - 4 = 4b - 16
j = 4b - 16 + 4
j = 4b - 12
:
Find their present ages.
Replace j with 2b in the above equation
2b = 4b - 12
12 = 4b - 2b
12 = 2b
b = 6 yrs is bro
:
obviously, John is 12,
;
;
Prove this in the statement:
"Four years ago, he was four times as old as his brother. "

12 - 4 = 4(6 - 4)
8 = 4(2)
1

1. *Odd Days:*

   We are supposed to find the day of the week on a given date.

   For this, we use the concept of 'odd days'.

   In a given period, the number of days more than the complete weeks are called *odd days*.

2. *Leap Year:*

   (i). Every year divisible by 4 is a leap year, if it is not a century.

   (ii). Every 4^{th} century is a leap year and no other century is a leap year.

   Note: *A leap year has 366 days.*

   Examples:

   i. Each of the years 1948, 2004, 1676 etc. is a leap year.
   ii. Each of the years 400, 800, 1200, 1600, 2000 etc. is a leap year.
   iii. None of the years 2001, 2002, 2003, 2005, 1800, 2100 is a leap year.

3. *Ordinary Year:*

   The year which is not a leap year is called an *ordinary years*. An ordinary year has 365 days.

4. *Counting of Odd Days:*
   1. 1 ordinary year = 365 days = (52 weeks + 1 day.)

      ∴ 1 ordinary year has 1 odd day.

   2. 1 leap year = 366 days = (52 weeks + 2 days)

      ∴ 1 leap year has 2 odd days.

   3. 100 years = 76 ordinary years + 24 leap years

      = (76 x 1 + 24 x 2) odd days = 124 odd days.

      = (17 weeks + days) ≡ 5 odd days.

      ∴ Number of odd days in 100 years = 5.

Number of odd days in 200 years = (5 x 2) ≡ 3 odd days.

Number of odd days in 300 years = (5 x 3) ≡ 1 odd day.

Number of odd days in 400 years = (5 x 4 + 1) ≡ 0 odd day.

Similarly, each one of 800 years, 1200 years, 1600 years, 2000 years etc. has 0 odd days.

Day of the Week Related to Odd Days:

No. of days:	0	1	2	3	4	5	6
Day:	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat

1.Father is aged three times more than his son Ronit. After 8 years, he would be two and a half times of Ronit's age. After further 8 years, how many times would he be of Ronit's age?

A.2 times

B.$2\frac{1}{2}$times

C.$2\frac{3}{4}$times

D.3 times

Answer & Explanation

Answer: Option **A**

Explanation:

Let Ronit's present age be x years. Then, father's present age =(x + 3x) years = 4x years.

$\therefore (4x + 8) = \frac{5}{2}(x + 8)$

$\Rightarrow 8x + 16 = 5x + 40$

$\Rightarrow 3x = 24$

$\Rightarrow x = 8.$

Hence, required ratio = $\frac{(4x + 16)}{(x + 16)} = \frac{48}{24} = 2.$

2. 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

Answer & Explanation

Answer: Option **A**

Explanation:

Let the ages of children be x, $(x + 3)$, $(x + 6)$, $(x + 9)$ and $(x + 12)$ years.

Then, $x + (x + 3) + (x + 6) + (x + 9) + (x + 12) = 50$

$\Rightarrow 5x = 20$

$\Rightarrow x = 4$.

$\therefore$ Age of the youngest child = x = 4 years

3. A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

A.14 years
B.19 years
C.33 years
D.38 years

Answer & Explanation

Answer: Option **A**

Explanation:

Let the son's present age be x years. Then, $(38 - x) = x$

$\Rightarrow 2x = 38$.

$\Rightarrow x = 19$.

$\therefore$ Son's age 5 years back (19 - 5) = 14 years

4. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, the how old is B?

A.7
B.8
C.9
D.10
E.11

Answer & Explanation

Answer: Option **D**

Explanation:

Let C's age be x years. Then, B's age = $2x$ years. A's age = $(2x + 2)$ years.

$\therefore (2x + 2) + 2x + x = 27$

$\Rightarrow 5x = 25$

$\Rightarrow x = 5.$

Hence, B's age = $2x = 10$ years.

5. Present ages of Sameer and Anand are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Anand's present age in years?

A.24 B.27
C.40 D.Cannot be determined
E.None of these

Answer & Explanation

Answer: Option **A**

Explanation:

Let the present ages of Sameer and Anand be $5x$ years and $4x$ years respectively.

Then, $\frac{5x + 3}{4x + 3} = \frac{11}{9}$

$\Rightarrow 9(5x + 3) = 11(4x + 3)$

$\Rightarrow 45x + 27 = 44x + 33$

$\Rightarrow 45x - 44x = 33 - 27$

$\Rightarrow x = 6.$

$\therefore$ Anand's present age = $4x = 24$ years.

6. A man is 24 years older than his son. In two years, his age will be twice the age of his son.

The present age of his son is:

A.14 years B.18 years
C.20 years D.22 years

Answer & Explanation

Answer: Option **D**

Explanation:

Let the son's present age be x years. Then, man's present age = $(x + 24)$ years.

$\therefore (x + 24) + 2 = 2(x + 2)$

$\Rightarrow x + 26 = 2x + 4$

$\Rightarrow x = 22.$

7. Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present?

A.16 years B.18 years
C.20 years D.Cannot be determined
E.None of these

Answer & Explanation

Answer: Option **A**

Explanation:

Let the ages of Kunal and Sagar 6 years ago be $6x$ and $5x$ years respectively.

Then, $\frac{(6x + 6) + 4}{(5x + 6) + 4} = \frac{11}{10}$

$\Rightarrow 10(6x + 10) = 11(5x + 10)$

$\Rightarrow 5x = 10$

$\Rightarrow x = 2.$

$\therefore$ Sagar's present age = $(5x + 6) = 16$ years

8. The sum of the present ages of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be:

A.12 years
B.14 years
C.18 years
D.20 years

Answer & Explanation

Answer: Option **D**

Explanation:

Let the present ages of son and father be x and $(60 - x)$ years respectively.

Then, $(60 - x) - 6 = 5(x - 6)$

$\Rightarrow 54 - x = 5x - 30$

$\Rightarrow 6x = 84$

$\Rightarrow x = 14.$

$\therefore$ Son's age after 6 years = $(x + 6) = 20$ years

9. At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present ?
A.12 years
B.15 years
C.19 and half
D.21 years

Answer & Explanation

Answer: Option **B**

Explanation:

Let the present ages of Arun and Deepak be $4x$ years and $3x$ years respectively. Then,

$4x + 6 = 26 \Leftrightarrow 4x = 20$

$x = 5.$

$\therefore$ Deepak's age = $3x = 15$ years

10. Sachin is younger than Rahul by 7 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?
A.16 years
B.18 years
C.28 years
D.24.5 years
E.None of these

Answer & Explanation

Answer: Option **D**

Explanation:

Let Rahul's age be x years.

Then, Sachin's age = $(x - 7)$ years.

$\therefore \frac{x - 7}{x} = \frac{7}{9}$

$\Rightarrow 9x - 63 = 7x$

$\Rightarrow 2x = 63$

$\Rightarrow x = 31.5$

Hence, Sachin's age $= (x - 7) = 24.5$ years.

11. The present ages of three persons in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).

A.8, 20, 28 B.16, 28, 36
C.20, 35, 45 D.None of these

Answer & Explanation

Answer: Option **B**

Explanation:

Let their present ages be $4x$, $7x$ and $9x$ years respectively.

Then, $(4x - 8) + (7x - 8) + (9x - 8) = 56$

$\Rightarrow 20x = 80$

$\Rightarrow x = 4.$

$\therefore$ Their present ages are $4x = 16$ years, $7x = 28$ years and $9x = 36$ years respectively.

12.Ayesha's father was 38 years of age when she was born while her mother was 36 years old

when her brother four years younger to her was born. What is the difference between the ages of her parents?

A.2 years
B.4 years
C.6 years
D.8 years

Answer & Explanation

Answer: Option C

Explanation:

Mother's age when Ayesha's brother was born = 36 years.

Father's age when Ayesha's brother was born = (38 + 4) years = 42 years.

∴ Required difference = (42 - 36) years = 6 years

13. A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present?

A.32 years
B.36 years
C.40 years
D.48 years

Answer & Explanation

Answer: Option **C**

Explanation:

Let the mother's present age be x years.

Then, the person's present age $=\left(\frac{2}{5}x\right)$ years.

$\therefore \left(\frac{2}{5}x + 8\right) = \frac{1}{2}(x + 8)$

$\Rightarrow 2(2x + 40) = 5(x + 8)$

$\Rightarrow x = 40.$

14. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference between R and Q's age?

A.1 year
B.2 years
C.25 years
D.Data inadequate
E.None of these

Answer & Explanation

Answer: Option **D**

Explanation:

R - Q = R- T $\Rightarrow$ Q = T.

Also, R + T = 50 $\Rightarrow$ R + Q = 50.

So, (R - Q) cannot be determined

15. The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

A.5 : 2 B.7 : 3
C.9 : 2 D.13 : 4

Answer & Explanation

Answer: Option **B**

Explanation:

Let the ages of father and son 10 years ago be 3*x* and *x* years respectively.

Then, (3*x* + 10) + 10 = 2[(*x* + 10) + 10]

$\Rightarrow$3*x* + 20 = 2*x* + 40

$\Rightarrow$*x* = 20.

$\therefore$ Required ratio = (3*x* + 10) : (*x* + 10) = 70 : 30 = 7 : 3.

The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

A.5 : 2 B.7 : 3
C.9 : 2 D.13 : 4

Answer & Explanation

Answer: Option B

Explanation:

Let the ages of father and son 10 years ago be 3x and x years respectively.

Then, (3x + 10) + 10 = 2[(x + 10) + 10]

$\Rightarrow$3x + 20 = 2x + 40

$\Rightarrow$x = 20.

$\therefore$ Required ratio = (3x + 10) : (x + 10) = 70 : 30 = 7 : 3.

Data sufficiency1

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

1. What is Sonia's present age?
   I. Sonia's present age is five times Deepak's present age.
   II. Five years ago her age was twenty-five times Deepak's age at that time.
   A.I alone sufficient while II alone not sufficient to answer
   B.II alone sufficient while I alone not sufficient to answer
   C.Either I or II alone sufficient to answer
   D.Both I and II are not sufficient to answer
   E. Both I and II are necessary to answer

   Answer & Explanation

   Answer: Option **E**

   Explanation:

   I. $S = 5D \quad \Rightarrow D = \frac{S}{5}$....(i)

   II. $S - 5 = 25 (D - 5) \quad \Leftrightarrow S = 25D - 120$ ....(ii)

   Using (i) in (ii), we get $S = \left(25 \times \frac{S}{5}\right) - 120$

   $\Rightarrow 4S = 120.$

   $\Rightarrow S = 30.$

   Thus, I and II both together give the answer. So, correct answer is (E).

2. Average age of employees working in a department is 30 years. In the next year, ten workers will retire. What will be the average age in the next year?

I. Retirement age is 60 years.

II. There are 50 employees in the department.

A.I alone sufficient while II alone not sufficient to answer
B.II alone sufficient while I alone not sufficient to answer
C.Either I or II alone sufficient to answer
D.Both I and II are not sufficient to answer
E.Both I and II are necessary to answer

Answer & Explanation

Answer: Option **E**

Explanation:

I. Retirement age is 60 years.

II. There are 50 employees in the department.

Average age of 50 employees = 30 years.

Total age of 50 employees = (50 x 30) years = 1500 years.

Number of employees next year = 40.

Total age of 40 employees next year (1500 + 40 - 60 x 10) = 940.

Average age next year $=\frac{940}{40}$ years $= 23\frac{1}{2}$ years.

Thus, I and II together give the answer. So, correct answer is (E).

. Divya is twice as old as Shruti. What is the difference in their ages?

I. Five years hence, the ratio of their ages would be 9 : 5.

II. Ten years back, the ratio of their ages was 3 : 1.

A.I alone sufficient while II alone not sufficient to answer
B.II alone sufficient while I alone not sufficient to answer
C.Either I or II alone sufficient to answer
D.Both I and II are not sufficient to answer
E.Both I and II are necessary to answer

Answer & Explanation

Answer: Option **C**

Explanation:

Let Divya's present age be D years and Shruti's present age b S years

Then, D = 2 x S $\Leftrightarrow$ D - 2S = 0 ....(i)

I. $\frac{D + 5}{S + 5} = \frac{9}{5}$....(ii)

II. $\frac{D - 10}{S - 10} = \frac{3}{1}$....(iii)

From (ii), we get : 5D + 25 = 9S + 45 $\Leftrightarrow$ 5D - 9S = 20 ....(iv)

From (iii), we get : D - 10 = 3S - 30 $\Leftrightarrow$ D - 3S = -20 ....(v)

Thus, from (i) and (ii), we get the answer.

Also, from (i) and (iii), we get the answer.

$\therefore$ I alone as well as II alone give the answer. Hence, the correct answer is (C).

Data sufficiency2

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

1. What is Arun's present age?
   I. Five years ago, Arun's age was double that of his son's age at that time.
   II. Present ages of Arun and his son are in the ratio of 11 : 6 respectively.
   III. Five years hence, the respective ratio of Arun's age and his son's age will become 12 : 7.

A. Only I and II
B. Only II and III
C. Only I and III
D. Any two of the three
E. None of these

Answer & Explanation

Answer: Option **D**

Explanation:

II. Let the present ages of Arun and his son be $11x$ and $6x$ years respectively.

I. 5 years ago, Arun's age = 2 x His son's age.

III. 5 years hence, $\frac{\text{Arun's Age}}{\text{Son's age}} = \frac{12}{7}$

Clearly, any two of the above will give Arun's present age.

∴ Correct answer is (D).

2. What is Ravi's present age?
   I. The present age of Ravi is half of that of his father.
   II. After 5 years, the ratio of Ravi's age to that of his father's age will be 6 : 11.
   III. Ravi is 5 years younger than his brother.

A.I and II only
B.II and III only
C.I and III only
D.All I, II and III
E. Even with all the three statements answer cannot be determined.

Answer & Explanation

Answer: Option **A**

Explanation:

I. Let Ravi's present age be x years. Then, his father's present age = $2x$ years.

II. After 5 years, $\frac{\text{Ravi's age}}{\text{Father's age}} = \frac{6}{11}$

III. Ravi is younger than his brother.

From I and II, we get $\frac{x + 5}{2x + 5} = \frac{6}{11}$. This gives x, the answer.

Thus, I and II together give the answer. Clearly, III is redundant.

∴ Correct answer is (A).

3. What is the present age of Tanya?
   I. The ratio between the present ages of Tanya and her brother Rahul is 3 : 4 respectively.
   II. After 5 years the ratio between the ages of Tanya and Rahul will be 4 : 5.
   III. Rahul is 5 years older than Tanya.

A.I and II only

B. II and III only
C. I and III only
D. All I, II and III
E. Any two of the three

Answer & Explanation

Answer: Option **E**

Explanation:

I. Let the present ages of Tanya and Rahul be $3x$ years and $4x$ years.

II. After 5 years, (Tanya's age) : (Rahul's age) = 4 : 5.

III. (Rahul's age) = (Tanya's age) + 5.

From I and II, we get $\frac{3x + 5}{4x + 5} = \frac{4}{5}$. This gives x.

∴ Tanya's age = $3x$ can be found. Thus, I and II give the answer.

From I and III, we get $4x = 3x + 5$. This gives x.

∴ Tanya's age = $3x$ can be found. Thus, I and III give the answer.

From III : Let Tanya's present age be t years.

Then Rahul's present age = $(t + 5)$ years.

Thus, from II and III, we get : $\frac{t}{t + 5} = \frac{4}{5}$. This gives t.

Thus, II and III give the answer.

∴ Correct answer is (E).

Data sufficiency3

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

1. What will be the ratio between ages of Sam and Albert after 5 years?
   I. Sam's present age is more than Albert's present age by 4 years.
   II. Albert's present age is 20 years.
   III. The ratio of Albert's present age to Sam's present age is 5 : 6.
   A. Any two of I, II and III
   B. II only
   C. III only
   D. I or III only
   E. II or III only

   Answer & Explanation

   Answer: Option **A**

   Explanation:

   Clearly, any two of the given statements will give the answer and in each case, the third is redundant.

   ∴ Correct answer is (A).
2. What is the difference between the present ages of Ayush and Deepak?
   I. The ratio between Ayush's present age and his age after 8 years 4 : 5.
   II. The ratio between the present ages of Ayush and Deepak is 4 : 3.
   III. The ratio between Deepak's present age and his age four years ago is 6 : 5.
   A. Any two of I, II and III
   B. I or III only
   C. Any one of the three
   D. All I, II and III are required
   E. Even with all I, II and III, the answer cannot be obtained.

   Answer & Explanation

   Answer: Option **A**

   Explanation:

   Clearly, any two of the given statements will give the answer and in each case, the third is redundant.

Exercise

1.Three times Nancy's age is 5 more than twice Rogers age. The sum of their age is 32. find their ages.

n = Nancy's age
r = Roger's age
.
We are told:
n = 2r + 5
n + r = 32
.
Viewing as a simultaneous equations:
n -2r = 5
n + r = 32
Subtracting the second equation from the first:
-3r = -27
Dividing by -3
r = 9
Roger's age is 9.
.
substituting back into the sum:
n + r = 32
n + 9 = 32
n = 32 - 9
n = 23
Nancy's age is 23.
.
So the sum of their ages is 32.
.
But is Nancy's age 5 more than twice Roger's?
.
2(9) + 5 = 23
That checks, so all we have to do is state our answer:
Nancy is 23 years old.
Roger is 9 years old.

2. Rogers age is 1 1/3 times Stevens age. Eight years ago, Rogers age was twice Stevens age. Find Rogers age.

Ages NOW:
Let Steven's age be "x".
Roger is now (4/3)x yrs old.

Eight years AGO:
Steven was "x-8" years old.
Roger was (4/3)x-8 years old.

EQUATION:
(4/3)x-8=2(x-8)
(4/3)x-8=2x-16
(4/3)x-(6/3)x=8-16
(-2/3) x =-8
x=12
Roger's age NOW is (4/3)(12)=16 years
Cheers,
Stan H.

3. Roger is 6 years older than Zoe. Three years ago, Zoe's age was two-thirds of Roger's age. Find their present ages. *Let Roger's age be x and Zoe's age be y

Zoe's age be x
Roger will be x+6
..
3 years ago
Zoe was x-3
Roger was x+6-3=x+3 years
x-3 = 2/3 * x+3
3(x-3)=2(x+3)
3x-9=2x+6
x=15 that is Zoes's age
Roger is 15+6 = 21 years

4. Fidel is half the age of his brother. Five years ago, Fidel was one-third the age of his brother. Find the present ages of each.

brother =x
Fidel = (1/2) x
...
5 years ago
brother = x-5
Fidel = (1/2)x -5
...
(1/2)x -5 = 1/3*(x-5)
3((1/2)x-5)= x-5
3x/2-15= x-5
(3x/2)-x=15-5
x/2=10
x=20 brother's age
Fidels age = 10

5. John is twice as old as his brother. Four years ago, he was four times as old as his brother. find their present ages.

Let x= brother's age now
2x = John's age now
x-4 = brother's age 4 years ago
2x-4 = John's age 4 years ago

The EQUATION:
John's age 4 years ago was four times the brother's age 4 years ago.
2x-4=4(x-4)
2x-4=4x-16

Subtract 2x from each side:
2x-2x-4=4x-2x-16
-4= 2x-16

Add + 16 to each side:
16-4=2x-16+16
12=2x
x=6

Check:
Brother = 6 now
John = 12 now

Four years ago, John was 8 and Brother was 2, which is 4 times as old.

Dr. Robert J. Rapalje, Retired

6. A boy is twice as old as his brother - 4 years ago he was 3 times as old as his brother. What are their present ages?

If boy X is twice as old as his brother Y right now, then X = 2Y. Four years ago he was three times as old as his brother, so X - 4=3(Y - 4).
X-4 = 3(Y-4)
X-4 = 3Y-12
If X=2Y, then
2Y-4=3Y-12
2Y+8=3Y
8=Y
The brother is now 8 years old, and the boy is 2(8) or 16 years old.

7. John is twice as old as his brother. Four years ago, he was four times as old as his brother. Find their present ages.

Let j = John's present age
Let b = brother's age now
:
John is twice as old as his brother.
j = 2b
;
Four years ago, he was four times as old as his brother.
j - 4 = 4(b - 4)
j - 4 = 4b - 16
j = 4b - 16 + 4
j = 4b - 12
:
Find their present ages.
Replace j with 2b in the above equation
2b = 4b - 12
12 = 4b - 2b
12 = 2b
b = 6 yrs is bro
:
obviously, John is 12,
;
;
Prove this in the statement:
"Four years ago, he was four times as old as his brother. "
12 - 4 = 4(6 - 4)
8 = 4(2)
1

PROBLEMS ON AGES

1. Present ages of Sameer and Anand are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Anand’s present age in years?

a. 24 b. 27 c. 40 d. None of these

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

If the present age of A is ‘x’ years, the age of A, n years ago was (x-n) years, and the age of a after n years will be (x+n) years.

Answer with Explanation:

Given : The ratio of the present ages of Sameer and Anand is 5:4
Let the present ages of Sameer be 5x years
Let the present ages of Anand be 4x years
Given: 3years hence (after), the ratio is 11 : 9

5x + 3	:	4x + 3
11	:	9
$\frac{5x+3}{4x+3}$	=	11/9
(5x+3) 9	=	11 (4x + 3)
45x +27	=	44x +33
45x -44x	=	33-27
X	=	6

To find: Present age of Anand
∴ The present age of Anand is 4(6) years = 24 years

2. The ratio of the present ages of two brothers is 1 : 2 and 5 years back, the ratio was 1 : 3. What will be the ratio of their ages after 5 years?

a. 1 : 4 b. 2 : 3 **c. 3 : 5**

d. 5 : 6

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the two brothers be X and Y
Given: The ratio of the present ages of X and Y is 1:2
Let the present age of X be x years
Let the present age of Y be 2x years
$\therefore$ X : Y
$\Rightarrow$ x : 2x

Given : 5 years back (before), the ratio was 1:3

x-5 = 1 : 2x-5 = 3

$\frac{x-5}{2x-5}$ = 1/3

3 (x-5) = 2x-5

3x-15 = 2x-5 $\Rightarrow$ 3x-2x= -5 +15 $\Rightarrow$ x = 10

To find : The ratio of their ages after 5 years

X+5 = ? : 2x + 5 = ?

10 + 5 = 15 : 2(10)+5 = 25

$\Rightarrow$ 15 : 25 $\Rightarrow$ **3 : 5**

3. The present ages of three persons are in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).

a. 8, 20, 28 **b. 16, 28, 36** c. 20, 35, 45 d. None of these

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the 3 persons be A, B and C
Given : The ratio of the present ages of 3 persons is 4:7:9
Let the present age of A be 4x years
Let the present age of B be 7x years
Let the present age of C be 9x years
A : B : C $\Rightarrow$ 4x : 7x : 9x
Given : 8 years ago, the sum of their ages was 56.
8 years ago, the ratio of the ages is
A : B : C $\Rightarrow$ 4x – 8 : 7x – 8 : 9x – 8
Given : The sum of the above ages was 56

$4x - 8 + 7x - 8 + 9x - 8 = 56$

$20x - 24 = 56 \Rightarrow 20x = 56 + 24 \Rightarrow 20x = 80$

$x = 4$

To find : A, B and C's present age.
A : B : C
4x : 7x : 9x $\Rightarrow$ 4 (4) : 7 (4) : 9 (4)

$\therefore$ A's Age = 16 ; B's Age = 28 ; C's Age = 36

4. The ratio between the present ages of A and B is 5 : 3 respectively. The ratio between A's age 4 years ago and B's age 4 years hence is 1 : 1. What is the ratio between A's age 4 years hence and B's age 4 years ago?

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

d. 4 : 1

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio between the present ages of A and B is 5 : 3

Let the present age of A is 5x years

Let the present age of B is 3x years

Given : The ratio between A's age 4 years ago and B's age 4 years hence is 1:1

A's age 4 years ago = 5x - 4

B's age 4 years hence = 3x + 4

5x-4 = 1 ; 3x +4 = 1

$\frac{5x-4}{3x+4}$ = 1/1

5x-4 = 3x +4 $\Rightarrow$ 5x – 3x = 4 + 4 $\Rightarrow$ 2x =8 $\Rightarrow$ x = 4

To find :

5x+4 = ? : 3x - 4 = ?

20 + 4 = 24 : 12 – 4

24 : 8 $\Rightarrow$ **3 : 1**

5. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, the how old is B?

a. 7 b. 8 c. 9 **d. 10**

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the age of C be x years
Given : B age is twice as old as C $\Rightarrow$ B = 2x years
Given : A age is two years older than B $\Rightarrow$ A = 2x + 2
Given : The total age of A, B and C be 27

$2x + 2 + 2x + x = 27$
$5x + 2 = 27$
$5x = 27 - 5 \Rightarrow 5x = 25 \Rightarrow x = 5$

To find
B = ?
B = 2x years $\Rightarrow$ 2 (5) years = 10 years.

6. A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present?

a. 32 years b. 36 years **c. 40 years** d. 48 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

The present ages of A and B are x years and y years respectively. If the age of A is 3 times the age of B, than the equation will be,

$X = 3y \Rightarrow x - 3y = 0$

Answer with Explanation:

Let the present age of Mother be x years
Let the present age of Son be y years
Given : Son's present age is two fifth of the age of his mother

$Y = \frac{2}{5}(x) \Rightarrow$ $5y = 2x \Rightarrow$ $2x - 5y = 0$ ----------(1)

Given : After 8 years, son will be one-half of his mother

$Y+8 = \frac{1}{2}(x+8) \Rightarrow 2(y+8) = x + 8 \Rightarrow x-2y = 16-8$

$x-2y = 8$ ---------- (2)

Multiplying (2) by 2 and Subtracting form (1)

$2x - 5y = 0$ (-)

$2x - 4y = 16 \Rightarrow y = 16$

To find : Present age of mother x = 40 years.

7. **The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:**

a. 5 : 2 **b. 7 : 3** c. 9 : 2

d. 13 : 4

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of father b 'x' years and son be 'y' years
10 years ago, father age = x-10; son's age = y – 10
Given : The age of father 10 years ago was thrice the age of son

X – 10 = 3 (y-10)
X – 10 = 3y – 30 $\Rightarrow$ x – 3y = - 20 ---------- (1)

Given : Then 10 years after, father age is twice of his son

X + 10 = 2 (y+10)
X + 10 = 2y + 20 $\Rightarrow$ x – 2y = 10 ----------(2)

(1) - (2) we get y = 30 and x = 70

To find : x : y
70 : 30 $\Rightarrow$ 7 : 3

8. **The total age of A and B is 12 years more than the total age of B and C. C is how many years younger than A?**

a. 12 b. 24 c. C is elder than A d. None of these

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the age of A be x years
Let the age of B be y years
Let the age of C be z years
Given : The total age of A and B is 12 years more than the total age of B and C
$x + y = (y + z) + 12$
$x + y - y - z = 12$
$x - z = 12 \Rightarrow$ the difference between A's age and C's age is 12
$\Rightarrow$ C is 12 years younger than A.

9. The sum of the ages of a father and his son is 45 years. Five years ago, the product of their ages was 34. The ages of the son and the father are respectively:

a. 6 & 39 b. 7 & 38 c. 9 & 36 d. 11 & 34

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the father age be x years and son age be y years
Given : The sum of the ages of father and his son is 45 years

$X + y = 45$ ----------(1)

Given : 5 years ago, the product of their ages was 34 years

$(x-5)(y-5) = 34$ ---------(2)

From (1), $y = 45 - y$; (2) becomes $(x-5)(40-x) = 34$

$40x - x^2 - 200 + 5x = 34$

$- x^2 + 45x - 200 - 34 = 0$

$x^2 - 45x + 234 = 0$ $(234 = 39 \times 6)$

$x-39; x-6$

Put $x = 39$ in (1)

$Y = 6$

Therefore father's age is 39 years and Son's age is 6 years

10. Rajan got married 8 years ago. His present age is 6/5 times his age at the time of his marriage. Rajan's sister was 10 years younger to him at the time of his marriage. The age of Rajan's sister is:

a. 32 years b. 36 years **c. 38 years** d. 40 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Rajan be x years

Let the present age of Sister be y years

Given :

$X = (x-8)\ (6/5)$

$5x = (x-8)\ 6$

$48 = 6x - 5x \Rightarrow x = 48$

Given :

Rajan's sister was 10 years younger to him at the time of his marriage

$Y = x - 10$

$Y = 48 - 10$

$Y = 38$ years.

11. Father is aged three times more than his son Ronit. After 8 years, he would be two and a half times of Ronit's age. After further 8 years, how many times would he be of Ronit's age?

a. 2 times b. $2\frac{1}{2}$ times c. $2\frac{3}{4}$ times d. 3 times

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the age of father be 'x' years and son be 'y' years
Given : Father age is 3 times more than his son Ronit.

X = 3y

x- 3y = 0 ----------(1)

Given : after 8 years, father would be 2 (1/2) of Ronit age

X + 8 = 5/2 (y +8) $\Rightarrow$ 2x +16 = 5y +40 $\Rightarrow$ 2x – 5y = 24 ----------(2)

To find:

After further 8 years, how many times would be of Ronit age

If (x + 16) = z (y +16) ; z = ?

Multiply (1) by 2 and subtract with (2)

2x- 6y = 0 (-)

2x – 5y = 24

From this solving of above equations we get y = 24 and x = 72

Therefore (x + 16) = z (y +16)

(72 +16) = z (24 +16)

88 = z (40)

88/40 = z $\Rightarrow$ 2.2 ; **z = 2**

12. A father said to his, " I was as old as you are at present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

a. 14 years b. 19 years c. 33 years d. 38 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : (i) Father's present age is 38 years
(ii) Fathers age at the time of son's birth = son's present age

Let the son's present age be x years
∴ Fathers present age be 2x
Given : $2x = 38$
$X = 19$
∴ son's present age is 19 years.
To find : son's age 5 years back
$19 – 5 = 14$ years

13. Ayesha's father was 38 years of age when she was born while her mother was 36 years old when her brother four years younger to her was born. What is the difference between the ages of her parents?

a. 2 years b. 4 years **c. 6 years** d. 8 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The father age was 38 years when

(i). Ayesha born

(ii) Mother age was 36 years when Ayesha's brother was born

(iii) Difference between Ayesha and her brother is 4 years

$\therefore$ mother age before 4 years = 32

To find : Difference between father and mother

38 – 32 = **6 years**

14. **A person was asked state his age in years. His reply was, "Take my age three years hence, multiply it by 3 and then subtract three times my age three years ago and you will know how old I am". What was the age of the person?**

a. 18 years b. 20 years c. 224 years d. 32 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of the person be 'x' years

As per the given statement,

$X = 3 (x+3) – 3 (x-3)$

$X = 3x +9 – 3x + 9$

$X = 18$ years

15. **The ratio of the ages of Meena and Meera is 4:3, The sum of their ages is 28 years. The ratio of their ages after 8 years will be :**

Answer : 6:5

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Meena be 4x years
Let the present age of Meera be 3x years
Given : The ratio of the ages of Meena & Meera is 4 : 3
4x : 3x
Given : The sum of their ages is 28 years
4x +3x = 28
7x = 28 $\Rightarrow$ 4
To find : The ratio of their ages after 8 years
4x +8 : 5x + 8
4 (4) +8 : 5 (4) + 8 $\Rightarrow$ 24 : 20
6 : 5

16. **The ages of ram and Mukta are in the ratio of 3:5, after 9 years, the ratio of their ages will becomes 3:4, the present age of Mukta (in years) is :**
Answer :15

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : Ram : Mukta $\Rightarrow$ 3 : 5
Let the present age of Ram be 3 x years
Let the present age of Mukta be 5x years
Given : after 9 years the ratio of their ages will be 3 : 4

$3x + 9 = 3 \quad : 5x + 9 = 4$

$$\frac{3x+9}{5x+9} = \frac{3}{4}$$

$4\,(3x + 9) = (5x + 9)\,3 \Rightarrow 12x + 36 = 15x + 27$

$9 = 3x \Rightarrow x = 3$

To find : present age of Mukta

$5\,(3) =$ **15 years**

17. **The ratio of the ages of Swati and Varun is 2:5, after 8 years, their ages will be in the ratio of 1:2, the difference in their present ages (in years) is :**

Answer : 24

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio of the ages of Swati and Varun is 2 : 5

Let the present age of Swati be 2x

Let the present age of Varun be 5x

Given : After 8 years, their ages will be in the ratio 1:2

$2x + 8 = 1 : 5x + 8 = 2$

$\frac{2x+8}{5x+8} = ½$

$4x + 16 = 5x+8 \Rightarrow -x = -8 \Rightarrow x = 8$

To find : Difference in their present ages

$5x – 2x = ?$

$5 (8) – 2 (8) \Rightarrow 40 – 16 =$ **24 years.**

18. **A father is twice as old as his son. 20 years ago, the age of the father was 12 times the age of the son. The present age of the father (in years) is :**
Answer :44

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of father be x years
Let the present age of son be y years
Given : a father is twice as old as his son
X = 2y
X – 2y = 0 ----------(1)
Given : 20 years ago, father age is 12 times the son age
X – 20 = 12 (y-20)
x-12y = -220 ----------(2)
(1) – (2) we get
Y = 22; put y value in equation 1
X – 2(22) = 0 $\Rightarrow$ x = 44
To find : present age of father
Present age of father is x
So the answer is 44 years.

19. **Five years ago, the total of the ages of a father and his son was 40 years, the ratio of their present ages is 4:1. What is the present age of the father?**

Answer : 40

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio of the present age of father and son is 4 : 1
Let the present age of father be 4x
Let the present age of son be x
Given : 5 years ago, the total ages of father and son is 40 years
$(4x – 5) + (x - 5) = 40$
$5x – 10 = 40$
$X = 10$
To find : Present age of father
$4x = ?$
$4 (10) = 40$ years
Present age of father = $4x = 4 (10)$ **= 40 years**

20. **Ten years age A was half of B in age. If the ratio of their present ages is 3:4, what will be the total of their present ages?**

Answer : 35

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio of their present ages is 3 : 4
Let the present age of A be 3x
Let the present age of B be 4x
Given : 10 years ago, A was half of B
$(3x – 10) = ½ (4x – 10)$
$3x – 10 = 2x – 5$
$X = 5$
To find : The total age of their present ages
$3x + 4x = ?$
$3 (5) + 4 (5) =$ **35 years**

21. **Sachin was twice as old as Ajay 10 years back. How old is Ajay today if Sachin will be 40 years old 10 years hence?**
Answer : 20

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Sachin be x years
Let the present age of Ajay be y years
Before 10 years, Sachin age = x -10
Ajay age = y – 10
Given : Sachin was twice as old as Ajay 10 years back
(x – 10) = 2 (y – 10)
X – 2y = -20 + 10
X – 2y = - 10 ---------- (1)
Given :
Sachin will be 40 years old 10 years after
X + 10 = 40
X = 40 – 10
X = 30 ---------- (2)
To find : Present age of Ajay
Y = ?
Put x = 30 in (1) ; 30– 2y = - 10 $\Rightarrow$ **y = 20**

22. **One year ago, Pramila was four times as old as her daughter. Six years hence, Pramila's age will exceed her daughter's age by 9 years. The ratio of the present ages of Pramila and her daughter is :**

Answer :13:4

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Pramila b 'x' years
Let the present age of daughter be 'y' years

Given : one year ago, Pramila was four times as daughter

x-1 = 4 (y-1)

x-1 = 4y – 4 $\Rightarrow$ x – 4y = -3 ---------- (1)

Given : Six years after, Pramila age will exceed her daughter by 9 years

X+6 = y+6 + 9

X – y = 9 ---------- (2)

(1) – (2) we get

Y = 4 and then substitute y value in (1) then we get x = 13

To find : Present of mother and daughter

X : y $\Rightarrow$ **13 : 4**

23. Sachin is younger than Rahul by 4 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?

a. 16 years b. 18 years c. 28 years **d. None of these**

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio of Sachin and Rahul ages = 7 : 9

Let the present age of Sachin be 7x

Let the present age of Rahul be 9x

Given : Sachin is younger than Rahul by 4 years

$9x - 7x = 4$

$2x = 4 \Rightarrow x = 2$

To find : Sachin age

$7x = ?$

$7(2)$ **= 14 years**

None of the above

24. **The ratio between the present ages of P and Q is 6 : 7. If Q is 4 years old than P, what will be the ratio of the ages of P and Q after 4 years?**

a. 3 : 4 b. 3 : 5 c. 4 : 3 **d. None of these**

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio between the present ages of P and Q = 6 : 7

Let the present age of P be 6x

Let the present age of Q be 7x

Given : Q is 4 years old than P

$7x - 6x = 4$

$X = 4$

To find : Ratio of P and Q after 4 years

$6x + 4 : 7x + 4$

$6 (4) + 4 : 7 (4) + 4$

$28 : 32$

$7 : 8$

So, **None of the above**

25. At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present?

a. 12 years **b. 15 years** c. 19 years d. 49 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The ratio between the ages of Arun and Deepak = 4 : 3

Let the present age of Arun be 4x

Let the present age of Deepak be 3x

Given : After 6 years, Arun's age is 26 years

$4x + 6 = 26$

$4x = 20 \Rightarrow x = 5$

To find : Deepak's present age

$3x = ? \Rightarrow 3\ (5) =$ **15 years**

26. Present ages of Sameer and Anand are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 respectively. What is Anand's present age in years?

a. 24 b. 27 c. 40 d. None of these

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : The present ages fo Sameer and Anand are in the ratio = 5 : 4

Let the present age of Sameer be 5x

Let the present age of Anand be 4x

Given : 3 years after, the ratio of ages = 11 : 9

$5x + 3 = 11 : 4x + 3 = 9$

$\frac{5x+3}{4x+3} =$ 11/9

$9 (5x + 3) = 11 (4x + 3)$

$45x + 27 = 44x + 33$

$45x - 44x = 33 - 27$

$X = 6$

To find : Anand's Present age ($4x = ?$)

4 (6) **= 24 years**

27. **The ratio of the present ages of two brothers is 1 : 2 and 5 years back, the ratio was 1 : 3. What will be the ratio of their ages after 5 years?**

a. 1 : 4 b. 2 : 3 **c. 3 : 5** d. 5 : 6

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the two brothers be A and B

Given : The ratio of the present ages of 2 brothers = 1 : 2

Let the present age of A be x

Let the present age of B be 2x

Given : 5 years back, the ratio was 1 : 3

x-5 = 1 ; 2x – 5 = 3

$\frac{x-5}{2x-5} =$ 1/3

3 (x-5) = 1 (2x-5)

3x - 15 = 2x - 5

3x – 2x = -5 +15

X = 10

To find : Ratio of their ages after 5 years

X + 5 = ? : 2x + 5 = ?

15 : 25

3 : 5

28. **The present ages of three persons are in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).**

a. 8, 20, 28 **b. 16, 28, 36** c. 20, 35, 45 d. None of these

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the 3 persons be A, B and C of ratio = 4 : 7 : 9
Let the present age of a be 4x
Let the present age of B be 7x
Let the present age of C be 9x
Given : Eight years ago, the sum of their ages was 56

$4x–8 + 7x–8 + 9x-8 = 56$

$20x – 24 = 56$

$X = 4$

To find : Present age of A, B and C (4x , 7x, 9x)

A's Age is 16 years ; B's age is 28 years ; C's age is 36 years

29. **The ratio between the present ages of A and B is 5 : 3 respectively. The ratio between A's age 4 years ago and B's age 4 years hence is 1 : 1. What is the ratio between A's age 4 years hence and B's age 4 years ago?**

a. 1 : 3 b. 2 : 1 **c. 3 : 1** d. 4 : 1

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the two brothers be A and B

Given : The ratio of the present ages of 2 brothers = 5 : 3

Let the present age of A be 5x

Let the present age of B be 3x

Given : Ratio between A's age 4 years ago and B's age 4 years after = 1:1

5x-4 = 1 ; 3x +4 = 1

$\frac{5x-4}{3x+4} =$ 1/1

1 (5x-4) = 1 (3x +4)

5x – 3x = 4 + 4

X = 4

To find : Ratio of A's age 4 years hence and B's age 4 years ago

5x+4; 3x - 4

24 : 8

3 : 1

30. **A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present?**

a. 32 years b. 36 years **c. 40 years** d. 48 years

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Mother be X years
Let the present age of son be Y years
Given: Persons present age is two fifth of mother

$Y = 2/5 (X)$
$5Y = 2X$
$2x – 55 = 0$ ----------(1)

Given : After 8 years, son will be ½ of mother

$Y + 8 = ½ (X + 8)$
$2Y + 16 = x + 8$
$X – 2Y = 8$ ----------(2)

To find : Present age of Mother (x = ?)

Multiply (1) by 2 and (2) by 5 then subtract
We will get x = 40

Present age of mother is 40 years

31. The age of father 10 years ago was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

a. 5 : 2 **b. 7 : 3** c. 9 : 2 d. 13 : 4

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the father age be x years

Let the son's age be y years

Given : 10 years ago, father age was thrice son age

X – 10 = 3 (y – 10)

x- 3y = -30 +10

x-3y = - 20 ---------- (1)

Given : 10 years after, father age was twice son age

X + 10 = 2 (y + 10)

X – 2y = 10 ----------(2)

To find : Ratio of present age (x : y = ?)

To get y value subtract (2) from (1)

Y = 30 ; substitute this value in (1) we will get x value

X = 70

70 : 30

7 : 3

32. The average age of 36 students in a group is 14 years. When teacher's age is included to it, the average increases by one. What is the teacher's age in years?

a. 31 b. 36 **c. 51** d. None of these

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given the average age of 36 students is = 14
The average age including the teacher i.e., a total of 37members = 15
To find :
Teacher's age:

(37 – 36) 15+ (15-14) (36)
15 + 36
51 years

33. **If 6 years are subtracted from the present age of Gulzar and the remainder is divided by 18, then the present age of his grandson Anup is obtained. If Anup is 2 years younger to Mahesh whose age is 5 years, then what is the present age of Gulzar?**

Answer : 60

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Gulzar be x years
Let the present age of Anup be y years
Let the present age of Mahesh be z years

Given: $\frac{x-6}{18} = y$

$X - 6 = 18y$

$X - 18y = 6$

Given : Anup is 2 years younger to Mahesh

$Y = z - 2$

Given : Mahesh age is 5 years

$Z = 5$

$\therefore\ y = 5 - 2\ ;\ y = 3$

$\therefore\ x - 18\ (3) = 6\ ;\ X - 54 = 6\ ;\ X = 6 + 54$

$X = 60$

To find : Present age of gulzar

X = 60 years

34. **The average age of five members of a family is 21 years. If the age of the grandfather be included, the average is increased by 9 years. The age of the grandfather is :**

Answer : 75

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given :

Number of members	Average
5	21
5 +1	21 + 9

$5 \rightarrow 21$

$6 \rightarrow 30$

To find : Grand father's age

Grand father age = (6-5) (30) + (30-21) (5)

= 30 + 45

= **75**

35. **The average age of a n adult class is 40 years. Twelve new students with an average age of 32 years join the class, thereby decreasing the average of the class by 4 years. The originals strength of the class was:**

Answer : 12

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Mean = $\frac{\sum x}{N}$

Answer with Explanation:

Let $\sum x$ be the sum of the ages of n adults

Let $\sum y$ be the sum of the ages of 12 students

Given : $\bar{x} = \frac{\sum x}{N}$

$40 = \frac{\sum x}{N}$

$40\ n = \sum x$ ----------(1)

$\bar{y} = \frac{\sum y}{N}$

$32 = \frac{\sum y}{12}$

$32 \times 12 = \sum y \Rightarrow 384 = \sum y$ ----------(2)

(1) + (2) $\Rightarrow \sum x + \sum y = 40N + 384$ ----------(3)

From the given statement,

(3) = decreasing the age of the class by 4 years

$40\ n + 384 = (n + 2)\ 36 \Rightarrow 40n - 36n = 432 - 384$

N = 12

36. **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. The ratio of their present ages is :**

Answer : 11:3

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Given : Let the present age of father be x years

Let the present age of son be y years

$\therefore$ $x - 1 = 4 (y - 1)$

$X - 1 = 4y - 4$

$X - 4y = -3$ ----------(1)

Given : In 6 years time, father age exceeds twice son by 9 years

$X + 6 = 2 (y + 6) + 9)$

$X - 2y = 21 - 6$

X – 2y = 15 ----------(2)

(1) – (2) $\rightarrow$ -2y = -15

Y = 9

$\therefore$ put y = a in (1) we get x value as 33

To find: Ratio of present age of father and son

X : y = ?

$\Rightarrow$ 33 : 9 ; **The ratio of present age of father and son = 11:3**

37. Ramlal is four times as old as his son. Four years hence, the sum of their ages will be 43 years. The present age of the son is :

Answer : 7

Difficulty Level : Easy ☐ **Moderately easy** ☐ **Difficult** ☐

Basic Formula:

Answer with Explanation:

Let the present age of Ramlal be x years

Let the present age of son be y years

Given : $x = 4y \Rightarrow x - 4y = 0$ ----------(1)

Given : $x + 4 + y + 4 = 43$

$X + y = 35$ ---------- (2)

To find : Present age of son (ie) y = ?

(1) – (2)

$- \quad 5y = -35$

$Y = 7$

Answer : Present age of son is 7 years