(xv) Assertion (A): The mean of first 9 natural numbers is 4.5.

Reason (R): Mean = $\frac{\text{Sum of all the observations}}{\text{Total number of observations}}$

- (a) (A) is true, (R) is false
- (b) (A) is false, (R) is true
- (c) Both (A) and (R) are true, and (R) is the correct reason for (A)
- (d) Both (A) and (R) are true, and (R) is the incorrect reason for (A)

Answer:

Let's analyze both the Assertion (A) and the Reason (R):

Assertion (A):

The mean of the first 9 natural numbers is 4.5.

The first 9 natural numbers are:

Their sum is:

$$1+2+\ldots+9=rac{9(9+1)}{2}=rac{9\cdot 10}{2}=45$$

Mean:

$$\frac{45}{9} = 5$$

Assertion (A) is false — the mean is 5, not 4.5.

Reason (R):

Mean = (Sum of all the observations) / (Total number of observations)

This is the correct formula for mean.

Correct Option:

(b) (A) is false, (R) is true

- (ii) The first term of an Arithmetic Progression (A.P.) is 5, the last term is 50 and their sum is 440. Find: [3]
 - (a) the number of terms
 - (b) common difference

Answer:

We are given:

- First term a=5
- Last term l=50
- Sum of the A.P. $S_n=440$

We are to find:

- 1. (a) The number of terms n
- **2.** (b) The common difference d

(a) Find the number of terms n

We use the formula for the sum of an arithmetic progression:

$$S_n = \frac{n}{2}(a+l)$$

Substitute known values:

$$440 = \frac{n}{2}(5+50) = \frac{n}{2} \cdot 55$$
 $440 = \frac{55n}{2} \Rightarrow 880 = 55n \Rightarrow n = \frac{880}{55} = 16$

✓ Number of terms = 16



(b) Find the common difference \boldsymbol{d}

We use the formula for the last term:

$$l = a + (n-1)d$$

Substitute values:

$$50 = 5 + (16 - 1)d \Rightarrow 50 = 5 + 15d \Rightarrow 45 = 15d \Rightarrow d = \frac{45}{15} = 3$$

✓ Common difference = 3

Final Answers:

- (a) Number of terms = 16
- (b) Common difference = 3



10. (i) If 1701 is the n^{th} term of the Geometric Progression (G.P.) 7, 21, 63 ..., find:

[3]

- (a) The value of 'n'
- (b) Hence find the sum of the 'n' terms of the G.P.

Answer:

We are given a Geometric Progression (G.P.):

$$7, 21, 63, \ldots$$

This gives us:

- First term a = 7
- Common ratio $r=rac{21}{7}=3$

We are told:

The
$$n^{\text{th}}$$
 term = 1701

(a) Find the value of \boldsymbol{n}

The $n^{
m th}$ term of a G.P. is given by:

$$T_n = ar^{n-1}$$

Substitute values:

$$1701 = 7 \cdot 3^{n-1} \Rightarrow 3^{n-1} = \frac{1701}{7} = 243$$

Now, express 243 as a power of 3:

$$243 = 3^5 \Rightarrow n - 1 = 5 \Rightarrow n = 6$$



(b) Find the sum of the first n terms

The sum of the first n terms of a G.P.:

$$S_n = a \cdot rac{r^n - 1}{r - 1}$$

Substitute:

$$S_6 = 7 \cdot \frac{3^6 - 1}{3 - 1} = 7 \cdot \frac{729 - 1}{2} = 7 \cdot \frac{728}{2} = 7 \cdot 364 = 2548$$

✓ Sum of the first 6 terms = 2548

✓ Final Answers:

- (a) n = 6
- (b) Sum of n terms = 2548



(viii) The 7th term of the given Arithmetic Progression (A.P.):

$$\frac{1}{a}$$
, $\left(\frac{1}{a}+1\right)$, $\left(\frac{1}{a}+2\right)$... is:

- (a) $\left(\frac{1}{a} + 6\right)$
- (b) $\left(\frac{1}{a} + 7\right)$
- (c) $\left(\frac{1}{a} + 8\right)$
- (d) $\left(\frac{1}{a} + 7^7\right)$

Answer:

We are given the Arithmetic Progression (A.P.):

$$rac{1}{a},\; \left(rac{1}{a}+1
ight),\; \left(rac{1}{a}+2
ight),\; \ldots$$

This is clearly an A.P. where:

- First term $a_1 = \frac{1}{a}$
- ullet Common difference d=1

Formula for the $n^{ m th}$ term of an A.P.:

$$T_n = a_1 + (n-1)d$$

Substitute:

- $a_1 = \frac{1}{a}$
- d = 1
- n = 7

$$T_7 = \frac{1}{a} + (7-1) \cdot 1 = \frac{1}{a} + 6$$

✓ Final Answer:

(a)
$$(\frac{1}{a} + 6)$$

(iii) 15, 30, 60, 120... are in **G.P.** (Geometric Progression).

[4]

- (a) Find the \mathbf{n}^{th} term of this **G.P.** in terms of n.
- (b) How many terms of the above **G.P.** will give the sum **945**?

Answer:

We are given the geometric progression (G.P.):

15, 30, 60, 120, ...

(a) Find the $n^{
m th}$ term of this G.P. in terms of n:

For a G.P., the $n^{
m th}$ term is given by:

$$T_n = a \cdot r^{n-1}$$

Where:

- a=15 (first term)
- $ullet r=rac{30}{15}=2$ (common ratio)

So,

$$T_n = 15 \cdot 2^{n-1}$$

 $lap{ }$ Answer (a): $T_n=15\cdot 2^{n-1}$



(b) How many terms of the above G.P. will give the sum 945?

Sum of first n terms of a G.P.:

$$S_n = a \cdot rac{r^n - 1}{r - 1}$$

Substitute values:

•
$$a = 15$$
, $r = 2$, $S_n = 945$

$$945 = 15 \cdot \frac{2^n - 1}{2 - 1} \Rightarrow 945 = 15(2^n - 1)$$

Divide both sides by 15:

$$63 = 2^n - 1 \Rightarrow 2^n = 64 \Rightarrow n = 6$$

Answer (b): 6 terms



(iii) If
$$\frac{(a+b)^3}{(a-b)^3} = \frac{64}{27}$$

[4]

(a) Find
$$\frac{a+b}{a-b}$$

(b) Hence using properties of proportion, find a : b.

Answer:

We are given:

$$\frac{(a+b)^3}{(a-b)^3} = \frac{64}{27}$$

(a) Find $\frac{a+b}{a-b}$:

Take cube root of both sides:

$$\frac{a+b}{a-b} = \sqrt[3]{\frac{64}{27}} = \frac{\sqrt[3]{64}}{\sqrt[3]{27}} = \frac{4}{3}$$

$$ightharpoonup$$
 Answer (a): $rac{a+b}{a-b}=rac{4}{3}$

(b) Using properties of proportion, find a:b:

We have:

$$\frac{a+b}{a-b} = \frac{4}{3}$$

Use componendo and dividendo:

$$\frac{a+b}{a-b} = \frac{4}{3} \Rightarrow \frac{(a+b)+(a-b)}{(a+b)-(a-b)} = \frac{4+3}{4-3} = \frac{7}{1}$$

Simplifying LHS:

$$\frac{2a}{2b}=\frac{a}{b}=\frac{7}{1}$$



Answer (b): a:b=7:1

Final Answers:

- (a) $\frac{a+b}{a-b} = \frac{4}{3}$
- (b) a:b=7:1
- (ii) The n^{th} term of an Arithmetic Progression (A.P.) is given by the relation $T_n = 6(7 n)$. [3] Find:
 - (a) its first term and common difference
 - (b) sum of its first 25 terms

Answer:

We are given the formula for the nth term of an Arithmetic Progression (A.P.):

$$T_n = 6(7-n)$$

(a) Find the first term and common difference

The general formula of the nth term of an A.P. is:

$$T_n = a + (n-1)d$$

We're given:

$$T_n = 6(7-n) = 42-6n$$

So the first term $a=T_1$:

$$T_1 = 6(7-1) = 6 \times 6 = 36$$

Second term
$$T_2=6(7-2)=6 imes5=30$$

Thus, the common difference is:

$$d = T_2 - T_1 = 30 - 36 = -6$$

First term = 36, Common difference = -6



(b) Find the sum of the first 25 terms

Formula for sum of first n terms of an A.P.:

$$S_n=rac{n}{2}\left[2a+(n-1)d
ight]$$

Here, a=36, d=-6, n=25

$$S_{25} = \frac{25}{2} \left[2(36) + (25-1)(-6) \right] = \frac{25}{2} \left[72 + (-144) \right] = \frac{25}{2} (-72) = -900$$

✓ Sum of first 25 terms = -900

Final Answers:

- (a) First term = 36, Common difference = -6
- (b) Sum of first 25 terms = -900

- (x) The n^{th} term of an Arithmetic Progression (A.P.) is 2n + 5. The 10^{th} term is:
 - (a) 7
 - (b) 15
 - (c) 25
 - (d) 45

Answer:

We are given the formula for the $n^{
m th}$ term of an Arithmetic Progression:

$$T_n = 2n + 5$$

To find the 10th term, substitute n=10:

$$T_{10} = 2(10) + 5 = 20 + 5 = 25$$

Correct answer: (c) 25



- (xi) The mean proportional between 4 and 9 is:
 - (a) 4
 - (b) 6
 - (c) 9
 - (d) 36

Answer:

To find the $mean\ proportional\ between\ two\ numbers\ a$ and b, we use the formula:

Mean Proportional =
$$\sqrt{a \cdot b}$$

Given:

$$a = 4, b = 9$$

Mean Proportional =
$$\sqrt{4 \cdot 9} = \sqrt{36} = 6$$

Correct answer: (b) 6



- (ii) The 5th term and the 9th term of an Arithmetic Progression are 4 and -12 respectively. [3] Find:
 - (a) the first term
 - (b) common difference
 - (c) sum of 16 terms of the AP.

Answer:

We are given:

- 5th term $(T_5) = 4$
- 9th term $(T_9) = -12$

In an Arithmetic Progression (A.P.), the n^{th} term is given by:

$$T_n = a + (n-1)d$$

(a) Find the first term a and

(b) Common difference d

From the formula:

$$T_5 = a + 4d = 4 \tag{1}$$

$$T_9 = a + 8d = -12 \tag{2}$$

Subtract (1) from (2):

$$(a+8d)-(a+4d)=-12-4 \Rightarrow 4d=-16 \Rightarrow d=-4$$

Substitute d=-4 into equation (1):

$$a + 4(-4) = 4 \Rightarrow a - 16 = 4 \Rightarrow a = 20$$



- \checkmark First term a=20
- $lue{}$ Common difference d=-4

(c) Sum of first 16 terms

The sum of the first n terms of an A.P. is:

$$S_n=rac{n}{2}\left[2a+(n-1)d
ight]$$

For n = 16, a = 20, d = -4:

$$S_{16} = \frac{16}{2} \left[2(20) + (16-1)(-4) \right] = 8 \left[40 + 15(-4) \right] = 8 \left[40 - 60 \right] = 8(-20) = -160$$

✓ Sum of first 16 terms = -160

Final Answers:

- (a) First term a=20
- (b) Common difference d=-4
- (c) Sum of 16 terms = -160

[3]

ICSE Standard X Mathematics Algebra AP GP Previous Years Questions and Answers

Question 9

$$\frac{\sqrt{2x+2} + \sqrt{2x-1}}{\sqrt{2x+2} - \sqrt{2x-1}} = 3$$

Answer:

(i) Solve for x using Componendo and Dividendo:

Given:

$$\frac{\sqrt{2x+2} + \sqrt{2x-1}}{\sqrt{2x+2} - \sqrt{2x-1}} = 3$$

Using Componendo and Dividendo:

$$\frac{A+B}{A-B} = k \implies \frac{A+B+A-B}{A+B-(A-B)} = \frac{k+1}{k-1}$$

Apply it here:

$$\frac{(\sqrt{2x+2}+\sqrt{2x-1})+(\sqrt{2x+2}-\sqrt{2x-1})}{(\sqrt{2x+2}+\sqrt{2x-1})-(\sqrt{2x+2}-\sqrt{2x-1})}=\frac{3+1}{3-1}=\frac{4}{2}=2$$

Simplify numerator and denominator:

$$\frac{2\sqrt{2x+2}}{2\sqrt{2x-1}} = 2$$

Cancel the 2's:

$$\frac{\sqrt{2x+2}}{\sqrt{2x-1}} = 2$$

Square both sides:

$$\frac{2x+2}{2x-1}=4$$



Cross-multiplied:

$$2x + 2 = 4(2x - 1) = 8x - 4$$

Bring all terms to one side:

$$2x + 2 - 8x + 4 = 0 \implies -6x + 6 = 0$$
$$-6x = -6 \implies x = 1$$

(ii) Which term of the A.P. 15, 30, 45, 60, ... is 300?

Given A.P.:

- First term a=15
- Common difference d=15

The $n^{
m th}$ term formula:

$$T_n = a + (n-1)d$$

Given $T_n = 300$:

$$300 = 15 + (n-1) \times 15$$

 $300 - 15 = 15(n-1)$
 $285 = 15(n-1)$



$$n - 1 = \frac{285}{15} = 19$$
$$n = 20$$

Sum of all terms up to the 20th term:

Sum of first n terms of an A.P.:

$$S_n = \frac{n}{2}[2a + (n-1)d]$$

Substitute n = 20, a = 15, d = 15:

$$S_{20} = rac{20}{2}[2(15) + (20 - 1)(15)] = 10[30 + 19 imes 15] = 10[30 + 285] = 10 imes 315 = 3150$$

Final answers:

- (i) x = 1
- (ii) 300 is the 20th term of the A.P.
- Sum of first 20 terms = 3150



- In an Arithmetic Progression (A.P.) if first term is 5, common difference is 3 and the nth term is 7, then n is equal to [1]
 - (a) 5

(b) 17

(c) -13

(d) 7

Answer:

Is it possible the problem statement has an error or requires the absolute value?

Alternatively, maybe the term is -7 instead of 7.

Try
$$T_n=-7$$
:

$$-7 = 5 + (n-1)(-3)$$
$$-7 - 5 = -3(n-1)$$
$$-12 = -3(n-1)$$
$$4 = n-1$$

$$n = 5$$

Option (a) 5.



- The first four terms of an Arithmetic Progression 15. (A. P.), whose first term is 4 and common difference is -6, are [1]
 - (a) 4, -10, -16, -22
- **(b)** 4, 10, 16, 22
- (c) 4, -2, -8, -14 (d) 4, 2, 8, 14

Answer:

We are given:

- First term a=4
- Common difference d=-6

To find the first four terms of the Arithmetic Progression (A.P.), use the formula:

$$T_n = a + (n-1)d$$

So:

- $T_1 = 4$
- $T_2 = 4 + (-6) = -2$
- $T_3 = -2 + (-6) = -8$
- $T_4 = -8 + (-6) = -14$

So the first four terms are:

$$4, -2, -8, -14$$

Correct option: (c)



- 18. The sum of the first 20 terms of the Arithmetic Progression 2, 4, 6, 8, is [2]
 - (a) 400

(b) 840

(c) 420

(d) 800

Answer:

We are given an Arithmetic Progression (A.P.):

2, 4, 6, 8, ...

- First term a=2
- Common difference d=2
- ullet Number of terms n=20

Sum of first n terms of an A.P. is:

$$S_n=rac{n}{2}\left[2a+(n-1)d
ight]$$

Substitute the values:

$$S_{20} = rac{20}{2}[2(2) + (20-1)(2)] = 10[4+38] = 10 imes 42 = \boxed{420}$$

Correct option: (c) 420



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(c) The 4th, 6th and the last term of a geometric progression are 10, 40 and 640 [4] respectively. If the common ratio is positive, find the first term, common ratio and the number of terms of the series.

Answer:

We are given:

- 4th term = 10
- 6th term = 40
- Last term = 640
- · Common ratio is positive

Let the first term be a and common ratio be r.

Step 1: Use formula for the nth term of G.P.

$$T_n = ar^{n-1}$$

From the 4th term:

$$ar^3 = 10 (1)$$

From the 6th term:

$$ar^5 = 40 (2)$$



Step 2: Divide (2) by (1):

$$rac{ar^5}{ar^3}=rac{40}{10}\Rightarrow r^2=4\Rightarrow r=2$$
 (positive)

Step 3: Substitute r=2 into equation (1):

$$a(2)^3 = 10 \Rightarrow 8a = 10 \Rightarrow a = \frac{10}{8} = \frac{5}{4}$$

Step 4: Use the formula again for last term = 640:

Let number of terms = n

$$ar^{n-1} = 640$$

Substitute $a=rac{5}{4}$, r=2:

$$\frac{5}{4} \cdot 2^{n-1} = 640 \Rightarrow 2^{n-1} = \frac{640 \cdot 4}{5} = \frac{2560}{5} = 512 \Rightarrow 2^{n-1} = 2^9 \Rightarrow n-1 = 9 \Rightarrow n = 10$$

Final Answers:

- First term = $\frac{5}{4}$
- Common ratio = 2
- Number of terms = 10



Question 10

- (a) If the 6th term of an A.P. is equal to four times its first term and the sum of first six
 [3] terms is 75, find the first term and the common difference.
- (b) The difference of two natural numbers is 7 and their product is 450. [3]
 Find the numbers.

Answer:

Given:

- 6th term of A.P. = 4 × first term
- Sum of first 6 terms = 75

Let:

- First term = a
- Common difference = d

Step 1: Use 6th term formula

$$T_6 = a + 5d = 4a \Rightarrow a + 5d = 4a \Rightarrow 5d = 3a$$
 (1)

Step 2: Use sum of first 6 terms

$$S_6 = \frac{6}{2}(2a+5d) = 75 \Rightarrow 3(2a+5d) = 75 \Rightarrow 2a+5d = 25$$
 (2)

Step 3: Solve equations (1) and (2)

From (1):

$$d = \frac{3a}{5}$$



Substitute into (2):

$$2a+5\left(rac{3a}{5}
ight)=25\Rightarrow 2a+3a=25\Rightarrow 5a=25\Rightarrow a=5$$

Then from (1):

$$5d = 3(5) = 15 \Rightarrow d = 3$$

Answer:

- First term a = 5
- Common difference d=3

Question 10 (b)

Given:

- Difference of two numbers = 7
- Product = 450

Let the numbers be x and x+7

$$x(x+7) = 450 \Rightarrow x^2 + 7x - 450 = 0$$

Solve using factorization:

$$x^2+25x-18x-450=0 \Rightarrow (x+25)(x-18)=0 \Rightarrow x=18$$
 (since natural number) $\Rightarrow x+7=25$

Answer:

The two numbers are 18 and 25.

- (c) In an Arithmetic Progression (A.P.) the fourth and sixth terms are 8 and 14 [4] respectively. Find the:
 - (i) first term
 - (ii) common difference
 - (iii) sum of the first 20 terms.

Answer:

Let's solve the given A.P. (Arithmetic Progression) problem step by step.

Given:

- 4th term $T_4 = 8$
- 6th term $T_6=14$

Let:

- First term = a
- Common difference = d

(i) & (ii) Find the first term and common difference

We use the formula for the nth term of an A.P.:

$$T_n = a + (n-1)d$$

So,

•
$$T_4 = a + 3d = 8 \rightarrow (1)$$

•
$$T_6 = a + 5d = 14 \rightarrow (2)$$

Subtract (1) from (2):



$$(a+5d) - (a+3d) = 14 - 8 \Rightarrow 2d = 6 \Rightarrow d = 3$$

Substitute d=3 into (1):

$$a + 3(3) = 8 \Rightarrow a = 8 - 9 = -1$$

- ightharpoonup First term a=-1
- $lap{loop}$ Common difference d=3

(iii) Sum of the first 20 terms

Use the sum formula:

$$S_n = \frac{n}{2}[2a + (n-1)d]$$

Here, n = 20, a = -1, d = 3:

$$S_{20} = rac{20}{2}[2(-1) + 19(3)] = 10[-2 + 57] = 10 imes 55 = 550$$

Sum of first 20 terms = 550

- (b) The first and last term of a Geometrical Progression (G.P.) are 3 and 96 [3] respectively. If the common ratio is 2, find:
 - (i) 'n' the number of terms of the G.P.
 - (ii) Sum of the n terms.

Answer:

Given:

- First term a=3
- Last term = 96
- Common ratio r=2

(i) Find n, the number of terms

The $n{\rm th}$ term of a G.P. is given by:

$$T_n = a \cdot r^{n-1}$$

Substitute:

$$96 = 3 \cdot 2^{n-1}$$

Divide both sides by 3:

$$32 = 2^{n-1}$$

Since $2^5=32$, we get:

$$n-1=5 \Rightarrow n=6$$

ightharpoonup Number of terms n=6



(ii) Find the sum of the n terms

Formula for sum of first n terms of a G.P.:

$$S_n = a \cdot rac{r^n - 1}{r - 1}$$

Substitute values:

$$S_6 = 3 \cdot \frac{2^6 - 1}{2 - 1} = 3 \cdot \frac{64 - 1}{1} = 3 \cdot 63 = 189$$

✓ Sum of the 6 terms = 189

Final Answers:

- (i) Number of terms n=6
- (ii) Sum of n terms = 189



Question 8

- (a) The sum of the first three terms of an Arithmetic Progression (A.P.) is 42 and the product of the first and third term is 52. Find the first term and the common difference.
- (b) The product of two consecutive natural numbers which are multiples of 3 is equal to 810. Find the two numbers.

Answer:

We are given:

The product of two consecutive natural numbers (which are multiples of 3) is equal to 810.

Let the two consecutive natural numbers be:

$$x$$
 and $x+3$

(Since both are multiples of 3, they differ by 3, not 1.)

Step 1: Set up the equation

$$x(x+3) = 810$$

 $x^2 + 3x = 810$
 $x^2 + 3x - 810 = 0$

Step 2: Solve the quadratic equation

Using the quadratic formula:

$$x = \frac{-3 \pm \sqrt{3^2 + 4 \cdot 810}}{2} = \frac{-3 \pm \sqrt{9 + 3240}}{2} = \frac{-3 \pm \sqrt{3249}}{2}$$
$$\sqrt{3249} = 57 \Rightarrow x = \frac{-3 \pm 57}{2}$$

Take the positive root:

$$x=\frac{54}{2}=27$$

Then the two numbers are:

Answer: The two numbers are 27 and 30.



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(b) If (k-3), (2k+1) and (4k+3) are three consecutive terms of an A.P., find the value [3] of k.

Answer:

We are given that:

ullet (k-3), (2k+1), and (4k+3) are three consecutive terms of an A.P.

In an A.P., the middle term is the average of the other two.

Step 1: Use the property of A.P.

$$2(2k+1) = (k-3) + (4k+3)$$

Step 2: Simplify both sides

Left-hand side:

$$2(2k+1) = 4k+2$$

Right-hand side:

$$(k-3) + (4k+3) = 5k$$

So:

$$4k + 2 = 5k \Rightarrow 2 = 5k - 4k = k$$

Final Answer:

$$k = 2$$

Question 5

(a) The 4th term of a G.P. is 16 and the 7th term is 128. Find the first term and common [3] ratio of the series.

We are given:

- 4^{th} term of a G.P. = 16
- $7^{
 m th}$ term of a G.P. = 128 We need to find the **first term** a and **common ratio** r.

Step 1: Use the general formula of the nth term of a G.P.

$$T_n = ar^{n-1}$$

So:

- $ext{ } ext{ } T_4 = ar^3 = 16 ext{ ...(1)}$
- $T_7 = ar^6 = 128$...(2)

Step 2: Divide Equation (2) by Equation (1)

$$rac{ar^6}{ar^3}=rac{128}{16}\Rightarrow r^3=8\Rightarrow r=\sqrt[3]{8}=2$$

Step 3: Substitute r=2 into Equation (1)

$$ar^3=16\Rightarrow a\cdot 2^3=16\Rightarrow a\cdot 8=16\Rightarrow a=rac{16}{8}=2$$

Final Answers:

- First term $a = \boxed{2}$
- ullet Common ratio $r=oxed{2}$

Question 10

(a) The sum of the ages of Vivek and his younger brother Amit is 47 years. The product of their ages in years is 550. Find their ages.

Answer:

We are given:

- The sum of Vivek and Amit's ages = 47 years
- The product of their ages = 550

Let:

- Amit's age = x
- Vivek's age = 47 x

Step 1: Write the equation for the product

$$x(47-x) = 550 \Rightarrow 47x - x^2 = 550 \Rightarrow x^2 - 47x + 550 = 0$$

Step 2: Solve the quadratic equation

$$x^2 - 47x + 550 = 0$$

Use the quadratic formula:

$$x = \frac{-(-47) \pm \sqrt{(-47)^2 - 4(1)(550)}}{2(1)} = \frac{47 \pm \sqrt{2209 - 2200}}{2} = \frac{47 \pm \sqrt{9}}{2} = \frac{47 \pm 3}{2}$$





So,

- $x = \frac{47+3}{2} = 25$
- $x = \frac{47-3}{2} = 22$

Step 3: Find their ages

If Amit is 22, then Vivek is 25, or vice versa.

Final Answer:

- Amit's age = 22 years
- Vivek's age = 25 years