



MATHS

BOOKS - KALYANI MATHS (ASSAMESE ENGLISH)

ALGEBRIC METHOD OF SOLVING A PAIR OF LINEAR EQUATIONS

Example

1. Solve the pair of equations.

$$7x - 5y - 11 = 0, 3x + 2y - 13 = 0$$



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2. A and B has a number of mangoes. A says to B "If you give me 30 of your mangoes, my number will be twice of yours". B replies "If you give me 10, my number will be thrice of yours".
How many mangoes each has?



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3. Solve the equation

$$2x + 3y = 32, 11y - 9x = 3.$$



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4. If 2 is subtracted from the denominator of a fraction, then it becomes $\frac{1}{2}$. If 3 is added to the numerator, then it becomes $\frac{2}{3}$. Find the fraction.



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Exercise

1. Solve by the method of elimination:

$$5x - 3y = 1, 2x + 5y = 19$$



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2. Solve by the method of elimination:

$$3x + 4y = 7, 5x - 8y = 8$$



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3. Solve by the method of elimination:

$$5x - 3y = 16, 3x - y = 12$$



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4. Solve by the method of substitution:

$$2x + 3y = 31, 17x - 11y = 8$$



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5. Solve by the method of substitution:

$$ax + by = 1, bx + ay = \frac{(a + b)^2}{a^2 + b^2} - 1$$



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6. Solve by the method of substitution:

$$x + y = a + b, ax - by = a^2 - b^2$$



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7. Solve by the method of cross multiplication:

$$8x + 3y = 1, 7x + 4y = -6$$



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8. Solve by the method of cross multiplication:

$$2x + y = 35, 3x + 4y = 65$$



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9. Solve by the method of cross multiplication:

$$ax + by = a - b, bx - ay = a + b$$



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10. Solve by any method:

$$\frac{xy}{x+y} = \frac{6}{5}, \frac{xy}{y-x} = 6$$



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11. Solve by any method:

$$\frac{x+y}{xy} = 1, \frac{x-y}{xy} = 65$$



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12. Solve by any method:

$$x + 2y = 1.3, \frac{3}{2x + 5y} = 1$$



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13. Solve by any method:

$$31x + 43y = 117, 43x + 31y = 105$$



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14. Solve by any method:

$$148x + 231y = 527, 231x + 148y = 610$$



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15. Solve by any method:

$$ax + by = c, bx + ay = 1 + c$$



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16. Solve by any method:

$$x + 5y = 36, \frac{x + y}{x - y} = \frac{5}{3}$$



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17. Solve by any method:

$$x - y = 0.9, \frac{11}{2(x + y)} = 1$$



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18. Solve by any method:

$$\frac{x}{a} + \frac{y}{b} = a + b, \quad \frac{x}{a^2} + \frac{y}{b^2} = 2$$



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19. Solve by any method:

$$\frac{x}{a} + \frac{y}{b} = 2, \quad ax - by = a^2 - b^2$$



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20. Word Problem of Numbers

A number between 10 and 100 is equal to eight times the sum of its digits. If 45 is subtracted from the number then the position of the digits interchange their place. Find the sum of the digits.



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21. Word Problem on Numbers

There are two examination halls A and B. If 10

examinees are sent from A to B, the number of examinees in each hall are same. While 20 are sent from B to A, the number in A is double of B. Find the number of examinees in each hall.



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22. Word Problem on Numbers

The middle digit of a three digit number is 0.

The sum of the extreme two digit is 7. The

number obtained by interchanging the

extreme digit keeping, the middle digit same is

less than the original number by 99. Find the original number.



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23. Word Problem on Numbers

The middle digit of a three digit number is 3.

The digit in the hundredth place is double the

digit in the unit place . The number obtained

by interchanging the extreme digits keeping

middle digit same is less than the original

number by 198 .Find the original number.



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24. Word Problem on Numbers

The ratio of income of two persons is 9:7 and the ratio of their expenditure is 4:3. If each of them save rupees 200 per month, find their monthly income.



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25. Word Problem on Fraction

A fraction will become $\frac{1}{2}$, if 2 is added to both

its numerator and denominator, it will become

$\frac{3}{4}$ if 12 is added to both its numerator and

denominator. Find the fraction.



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26. Word Problem on Fraction

A fraction becomes $\frac{1}{4}$ when 1 is subtracted

from its numerator and 1 is added to its

denominator. If however 1 is added to the

numerator and 1 is subtracted from its

denominator it becomes $\frac{1}{3}$. Find the fraction.



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27. Word Problem on Fraction

The sum of the numerator and denominator of a fraction is 4 more than twice the numerator and if the numerator and denominator are increased by 3 they are in the ratio 2: 3. Find the fraction.



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28. Word Problem on Fraction

The sum of the numerator and denominator of a fraction is 3 less than twice the denominator. If the numerator and denominator are decreased by 1, the numerator becomes half of the denominator. Determine the fraction.



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29. Word Problem on Fraction

A fraction becomes $\frac{4}{5}$ if 1 is added to both numerator and denominator. If however 5 is subtracted from both numerator and denominator, the fraction becomes $\frac{1}{2}$. Find the fraction.



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30. Word Problem on Age

8 years ago father's age was thrice that of his

son's age. 2 years hence father's age will be twice that of his son's age. Find the ratio of the ages of father and son after 10 years.



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31. Word Problem on Age

A boy is now one third as old as his father. After 12 he will be half as old as his father. Find the present ages of both father and son.



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32. Word Problem on Age

The sum of the present ages of father and son is 46 years. When the age of the son will be the same as present age of the father, the sum of the ages of the two will be 102 years. Find the present ages of each of them.



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33. Word Problem on Age

The sum of the present ages of husband and wife is 92 years. When the age of the wife will

be the same as present age of the husband,
the sum the ages of the two will be 100 years.
Find the present ages of each of them.



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34. Form the equation from the following:

The sum of the father's age and two times the son's age is 70 years. Also the sum of the son's age and two times father's age is 95 years.
Find the age of father and son.



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35. Work Problem on Geometry

In a triangle ABC,

$\angle A = x^\circ$, $\angle B = (3x - 2)^\circ$, $\angle C = y^\circ$. Also

$\angle C - \angle B = 9^\circ$. Find the three angles.



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36. Work Problem on Geometry

In a rectangle the length is increased and

breadth is reduced by $2m$, the area reduced by

28 sq.m. Find the dimension of the rectangle.



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37. Work Problem on Geometry

The side of square exceeds the side of another square by 4cm and the sum of the areas of the two square is 400sq.cm. Find the dimension of the square.



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38. Work Problem on Geometry

The perimeter of a rectangular field is 80m. If the length of the field is decreased by $2m$ and breadth is increased by $3m$, then the area of the field is increased by 64sq.m . Find the dimension of the field.



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39. Work Problem on Geometry

The area of a rectangle remains the same if

the length is increased by $7m$ and breadth decreased by $5m$. Determine the dimension of the rectangle.



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