



MATHS

BOOKS - ICSE

LINEAR EQUATIONS IN ONE VARIABLE

Example

1. Solve : $21 - 3(a - 7) = a + 20$

A. $5\frac{3}{13}$

B. $5\frac{3}{7}$

C. $5\frac{1}{7}$

D. $5\frac{1}{2}$

Answer: D



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2. Solve: $\frac{y + 2}{4} - \frac{y - 3}{3} = \frac{1}{2}$



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3. Solve : $\frac{5}{x} = \frac{7}{x - 4}$



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4. Solve : $\frac{a - 2}{a + 4} = \frac{a - 3}{a + 1}$



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5. Solve : $\frac{2x + 1}{10} - \frac{3 - 2x}{15} = \frac{x - 2}{6}$. Hence,
find the value of y , if $\frac{1}{x} + \frac{1}{y} = 3$.



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6. Find a number such that one - fifth of it is less than its one - fourth by 3.



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7. The difference of the squares of two consecutive even natural numbers is 92. Taking x as the smaller of the two numbers, form an equation in x and hence find the larger of the two.



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8. A rectangle is 8cm long and 5cm wide. Its perimeter is doubled when each of its sides is increased by x . Form an equation in x and find the new length of the rectangle.

A. 13.5cm

B. 14.5cm

C. 14.15cm

D. 12.5cm

Answer: B



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9. A man is 24 years older than his son. In 2 years, his age will be twice the age of his son. Find their present ages.



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10. One day a boy walked from his house to his school at the speed of 4 km/hr and he reached ten minutes late to the school. Next day, he ran at the speed of 8 km/hr and was 5 minutes early

to the school. Find the distance between his house and school.



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11. The consecutive even numbers are such that half of the larger exceeds one - fourth of the smaller by 5. Find the numbers.



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12. A person is paid Rs 150 for each day he works and is find Rs 30 for each day he remains absent.

If in 40 days, he earned Rs 3,300, find for how many days did he work?



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Exercise 14 A

1. Solve the following equations :

$$20 = 6 + 2x$$



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2. Solve the following equations :

$$15 + x = 5x + 3$$



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3. Solve the following equations :

$$\frac{3x + 2}{x - 6} = -7$$



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4. Solve the following equations :

$$3a - 4 = 2(4 - a)$$



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5. Solve the following equations :

$$3(b - 4) = 2(4 - b)$$

A. 5

B. 6

C. 4

D. 3

Answer: C



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6. Solve the following equations :

$$\frac{x + 2}{9} = \frac{x + 4}{11}$$



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7. Solve the following equations :

$$\frac{x - 8}{5} = \frac{x - 12}{9}$$

A. 3

B. 7

C. 8

D. 9

Answer: A



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8. Solve the following equations :

$$5(8x + 3) = 9(4x + 7)$$



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9. Solve the following equations :

$$3(x + 1) = 12 + 4(x - 1)$$



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10. Solve the following equations :

$$\frac{3x}{4} - \frac{1}{4}(x - 20) = \frac{x}{4} + 32$$



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11. Solve the following equations :

$$3a - \frac{1}{5} = \frac{a}{5} + 5\frac{2}{5}$$



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12. Solve the following equations :

$$\frac{x}{3} - 2\frac{1}{2} = \frac{4x}{9} - \frac{2x}{3}$$



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13. Solve the following equations :

$$\frac{4(y + 2)}{5} = 7 + \frac{5y}{13}$$



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14. Solve the following equations :

$$\frac{a + 5}{6} - \frac{a + 1}{9} = \frac{a + 3}{4}$$





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15. Solve the following equations :

$$\frac{2x - 13}{5} - \frac{x - 3}{11} = \frac{x - 9}{5} + 1$$



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16. Solve the following equations :

$$6(6x - 5) - 5(7x - 8) = 12(4 - x) + 1$$



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17. Solve the following equations :

$$(x - 5)(x + 3) = (x - 7)(x + 4)$$



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18. Solve the following equations :

$$(x - 5)^2 - (x + 2)^2 = -2$$



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19. Solve the following equations :

$$(x - 1)(x + 6) - (x - 2)(x - 3) = 3$$

A. $1\frac{1}{11}$

B. $1\frac{1}{9}$

C. $1\frac{1}{7}$

D. $1\frac{1}{2}$

Answer: D



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20. Solve the following equations :

$$\frac{3x}{x+6} - \frac{x}{x+5} = 2$$



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21. Solve the following equations :

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



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22. Solve the following equations :

$$\frac{x-1}{7x-14} = \frac{x-3}{7x-26}$$



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23. Solve the following equations :

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

A. $-1\frac{1}{6}$

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

C. $-1\frac{1}{3}$

D. $-1\frac{7}{19}$

Answer: B



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24. Solve : $\frac{2x}{3} - \frac{x-1}{6} + \frac{7x-1}{4} = 2\frac{1}{6}$.

Hence, find the value of 'a', if $\frac{1}{a} + 5x = 8$.



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25. Solve : $\frac{4-3x}{5} + \frac{7-x}{3} + 4\frac{1}{3} = 0$.

Hence, find the value of 'p', if $3p - 2x + 1 = 0$.



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26. Solve : $0.25 + \frac{1.95}{x} = 0.9$



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27. Solve : $5x - \left(4x + \frac{5x - 4}{7}\right) = \frac{4x - 14}{3}$.



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Exercise 14 B

1. Fifteen less than 4 times as a number is 9. Find the number.



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2. If Megh'a age is increased by three times her age, the result is 60 years. Find her age.

A. 15 years

B. 16 years

C. 25 years

D. 13 years

Answer: A



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3. 28 is 12 less than 4 times a number. Find the number.



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4. Five less than 3 times a number is -20 . Find the number.



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5. Fifteen more than 3 times Neetu's age is the same as 4 times her age. How old is she?



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6. A number decreased by 30 is the same as 14 decreased by 3 times the number. Find the number.

A. 11

B. 18

C. 21

D. 9

Answer: A



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7. A's salary is same as 4 times B's salary. If together they earn Rs. 3,750 a month, find the salary of each.



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8. Separate 178 into two parts so that the first part is 8 less than twice the second part.



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9. Six more than one - fourth of a number is two - fifth of the number. Find the number.



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10. The length of a rectangle is twice its width. If its perimeter is 54 cm, find its length.



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11. A rectangle's length is 5 cm less than twice its width. If the length is decreased by 5 cm and

width is increased by 2 cm, the perimeter of the resulting rectangular will be 74 cm. Find the length and the width of the original rectangle.



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12. The sum of three consecutive odd numbers is 57. Find the numbers.



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13. A man's age is three times that of his son and in twelve years he will be twice as old as his son

would be. What are their present ages?



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14. A man is 42 years old and his son is 12 years old. In how many years will the age of the son be half the age of the man at that time?



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15. A man completed a trip of 136 km in 8 hours. Some parts of the trip were covered at 15 km/hr

and the remaining at 18km/hr. Find the part of the trip covered at 18 km/hr.



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16. The difference of two numbers is 3 and the difference of their square is 69. Find the numbers.



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17. Two consecutive natural numbers are such that one - fourth of the smaller exceeds one -

fifth of the greater by 1. Find the numbers.



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18. Three consecutive whole numbers are such that if they be divided by 5, 3 and 4 respectively, the sum of the quotients is 40. Find the numbers.

A. 53, 54 and 55

B. 37, 38 and 39

C. 50, 51 and 52

D. 55, 56 and 57

Answer: C



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19. If the same number be added to the numbers 5, 11, 15 and 31, the resulting numbers are in proportion. Find the number

a, b, c and d are in proportion $\Rightarrow = \frac{a}{b} = \frac{c}{d}$.



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20. The present age of a man is twice that of his son. Eight years hence, their ages will be in the ratio 7: 4. Find their present ages.

A. 56 years and 58 years

B. 55 years and 24 years

C. 48 years and 34 years

D. 48 years and 24 years

Answer: D



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Exercise 14 C

1. Solve :

$$\frac{1}{3}x - 6 = \frac{5}{2}$$



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2. Solve :

$$\frac{2x}{3} - \frac{3x}{8} = \frac{7}{12}$$



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3. Solve :

$$(x + 2)(x + 3) + (x - 3)(x - 2) - 2x(x + 1) = 0$$



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4. Solve :

$$\frac{1}{10} - \frac{7}{x} = 35$$

A. $-\frac{70}{349}$

B. $-\frac{69}{329}$

C. $-\frac{70}{369}$

D. $-\frac{70}{299}$

Answer: A



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5. Solve :

$$13(x - 4) - 3(x - 9) - 5(x + 4) = 0$$



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6. Solve :

$$x + 7 - \frac{8x}{3} = \frac{17x}{6} - \frac{5x}{8}$$



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7. Solve :

$$\frac{3x - 2}{4} - \frac{2x + 3}{3} = \frac{2}{3} - x$$



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8. Solve :

$$\frac{x + 2}{6} - \left(\frac{11 - x}{3} - \frac{1}{4} \right) = \frac{3x - 4}{12}$$

A. 19

B. 11

C. 17

D. 10

Answer: B



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9. Solve: $\frac{2}{5x} - \frac{5}{3x} - \frac{1}{15}$



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10. Solve: $\frac{x + 2}{3} - \frac{x + 1}{5} = \frac{x - 3}{4} - 1$



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11. Solve :

$$\frac{3x - 2}{3} + \frac{2x + 3}{2} = x + \frac{7}{6}$$



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12. Solve :

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



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13. Solve :

$$\frac{9x + 7}{2} - \left(x - \frac{x - 2}{7} \right) = 36$$



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14. Solve :

$$\frac{6x + 1}{2} + 1 = \frac{7x - 3}{3}$$



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15. After 12 years, I shall be 3 times as old as I was 4 years age. Find my present age.



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16. A man sold an article for Rs. 396 and gained 10 % on it. Find cost price of the article.

A. Rs 380

B. Rs 340

C. Rs 370

D. Rs 360

Answer: D



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17. The sum of two numbers is 4500. If 10% of one number is 12.5% of the other, find the numbers.



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18. The sum of two numbers is 405 and their ratio is 8:7. Find the numbers.



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19. The ages of A and B are in the ratio 7:5. Ten years hence, the ratio of their ages will be 9:7. Find their present ages.

A. 35 years and 29 years

B. 35 years and 25 years

C. 39 years and 15 years

D. 45 years and 25 years

Answer: B



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20. Find a number whose double is 45 greater than its half.



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21. The difference between the squares of two consecutive numbers is 31. Find the numbers.



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22. Find a number such that when 5 is subtracted from 5 times the number, the result is 4 more

than twice the number.



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23. The numerator of a fraction is 5 less than its denominator. If 3 is added to the numerator and denominator both, the fraction becomes $\frac{4}{5}$. Find the original fraction.



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