

10.5 Solving Equations

1. Solve the following equations.

(a) $2x - 7 = 3$

(b) $3x - 4 = 8$

(c) $5x + 2 = 7$

(d) $3x + 9 = 0$

(e) $15 - 2x = 9$

(f) $17 + 3x = -3$

(g) $5x = -15 + x$

(h) $-2x - 7 = -4$

(i) $5x - 4 = 3x - 1$

(j) $7x - 14 = 18 - 4x$

(k) $8x - 7 = 5 + 4x$

(l) $9x + 4 = 3x - 9$

2. Solve the following equations.

(a) $\frac{3}{4}x = 15$

(b) $\frac{2}{5}x - 1 = 4$

(c) $5 - \frac{x}{4} = 3$

(d) $\frac{x}{3} + 5 = 15$

(e) $2 + \frac{5}{7}x = 1\frac{1}{4}$

(f) $\frac{2x + 4}{7} = 3$

(g) $\frac{3x - 4}{5} - 7 = 0$

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

(i) $\frac{2x - 1}{3} = 1 - x$

(j) $7 + \frac{x - 1}{2} = x$

3. Solve the following equations.

(a) $3(x - 4) = 7$

(b) $9(x - 4) = 3$

(c) $5(2x + 3) = 35$

(d) $8(2 + 3x) = 4$

(e) $7(x + 4) = 2(x - 4)$

(f) $5(3x + 5) = 2(7x - 4)$

(g) $2(5 - 2x) = 4(2 - 3x)$

(h) $2(x + 1) = 3(x - 5) + 9$

(i) $\frac{1}{4}(5x + 4) = \frac{1}{3}(2x - 1)$

(j) $2[2(x - 4) + 3] = 5$

(k) $2x - [3 + (x - 5)] = 6$

(l) $17(x - 3) = 3(7x - 15)$

4. When a number x is multiplied by 5, it gives the same result as when 48 is added to twice the number. Write down an equation for x , and find its solution.
5. Ahmad is twice as old as Bobby. John is 7 years younger than Ahmad. If the sum of their ages is 38, how old are the three boys?
6. Janet is three times as old as her daughter, Mary. Five years ago Janet was four times as old as Mary. How old is Janet now? How old will Mary be in 7 years' time?
7. Two boys, A and B, are 600 m apart. They walk towards each other at speeds of 35 m per minute and 25 m per minute respectively. After how many minutes will they meet each other?

8. Two men, P and Q, start at the same point and travel in opposite directions by motorcycle. The speed at which P's motorcycle travels is 4 km/h faster than Q's. After 5 hours, they are 580 km apart. Find the speed at which P travels.

9. Solve the equations.

(a) $4x + 2 = 26$

(b) $19 + 4y = 9 - y$

10. Mrs. Root gave her maths class this problem:

"When 8 is added to a certain number, the result is 3 times as large as when 2 is subtracted from the number."

She asked the class to find the original number.

Paul solved the problem using the equation

$$x + 8 = 3(x - 2)$$

Solve this equation.

11. Brenda went out walking and running. She travelled 7 km. She walked part of the way at 6 km/hour, and ran the rest of the way at 12 km/hour.

The distance she ran was x km.

(a) Write down an expression for the time taken running.

(b) The time taken walking was $\frac{(7 - x)}{6}$ hours.

The total time spent walking and running was one hour.

(i) Write down an equation in terms of x .

(ii) Find the value of x .

12. Solve the equations.

(a) $5x = 35$

(b) $4y - 5 = 11$

(c) $7z - 3 = 6 + z$

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13. Solve the equations

(a) $\frac{17 - x}{3} = 4.5$

(b) $2(y - 3) = 5 - 3y$

(c) $3(2z - 1) + 4(z + 3) = 5(2z - 1) + 4(3z - 1)$

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