

Foundation GCSE: Solving Equations

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Solve $x + 5 = 12$.
2. Solve $x - 3 = 9$.
3. Solve $2x = 18$.
4. Solve $\frac{x}{4} = 5$.
5. Solve $3x + 1 = 16$.
6. Solve $5x - 4 = 11$.
7. Solve $4x + 3 = 2x + 11$.
8. Solve $7x - 5 = 3x + 11$.
9. Solve $2(x + 3) = 14$.
10. Solve $3(x - 2) = 15$.
11. Solve $5(2x + 1) = 35$.
12. Solve $4(3x - 2) = 28$.
13. Solve $6x - 7 = 2x + 9$.
14. Solve $5x + 8 = 2x + 23$.
15. Solve $3(2x - 1) = 2(x + 5)$.
16. Solve $4(x + 2) = 3(x + 5)$.
17. Solve $\frac{x + 3}{2} = 7$.
18. Solve $\frac{2x - 1}{3} = 5$.
19. Solve $\frac{x}{2} + \frac{x}{3} = 10$.
20. Solve $\frac{3x}{4} - 2 = 7$.

Answers & Worked Solutions

1. $x = 7$
Subtract 5 from both sides.
2. $x = 12$
Add 3 to both sides.
3. $x = 9$
Divide both sides by 2.
4. $x = 20$
Multiply both sides by 4.
5. $x = 5$
Subtract 1, then divide by 3.
6. $x = 3$
Add 4, then divide by 5.
7. $x = 4$
Subtract $2x$ and 3 from both sides: $2x = 8$, so $x = 4$.
8. $x = 4$
Subtract $3x$, add 5: $4x = 16$, so $x = 4$.
9. $x = 4$
Expand brackets: $2x + 6 = 14$, so $2x = 8$, $x = 4$.
10. $x = 7$
Expand brackets: $3x - 6 = 15$, so $3x = 21$, $x = 7$.
11. $x = 3$
Expand brackets: $10x + 5 = 35$, so $10x = 30$, $x = 3$.
12. $x = 3$
Expand brackets: $12x - 8 = 28$, so $12x = 36$, $x = 3$.
13. $x = 4$
Subtract $2x$, add 7: $4x = 16$, $x = 4$.
14. $x = 5$
Subtract $2x$, subtract 8: $3x = 15$, $x = 5$.
15. $x = \frac{13}{4}$ (or 3.25)
Expand both sides: $6x - 3 = 2x + 10 \implies 4x = 13 \implies x = 3.25$.
16. $x = 7$
Expand both sides: $4x + 8 = 3x + 15 \implies x = 7$.
17. $x = 11$
Multiply by 2: $x + 3 = 14$, so $x = 11$.
18. $x = 8$
Multiply by 3: $2x - 1 = 15 \implies 2x = 16 \implies x = 8$.
19. $x = 12$
Find common denominator: $\frac{3x + 2x}{6} = 10 \implies \frac{5x}{6} = 10 \implies 5x = 60 \implies x = 12$.
20. $x = 12$
Add 2: $\frac{3x}{4} = 9 \implies 3x = 36 \implies x = 12$.