

## Solving Linear Equations Review

### Strategy:

- 1) Simplify both sides of the equation
  - a) Use the distributive property
  - b) Combine like terms
- 2) Eliminate fractions by multiplying both sides by the least common denominator
- 3) Move all variable terms to one side through addition or subtraction
- 4) Move all other terms to the other side through addition or subtraction
- 5) If necessary, write variable term(s) as (coefficient) · (variable)  
i.e.,  $2x + 4x = (2 + 4)x = 6x$  or  $\pi x + ax = (\pi + a)x$
- 6) Divide both sides by the coefficient to isolate the variable
- 7) Check your answer

Solve each equation for  $x$ . Where reasonable, check your answers.

<b>1)</b> $2x + 3 = 4x + 9$	<b>2)</b> $2(1 - x) - x = 5$
<b>3)</b> $6 - (x + 2) = -3$	<b>4)</b> $-2x - 1 = -(2x + 3)$
<b>5)</b> $6 - 2(x - 3) + 5 = 15$	<b>6)</b> $3(2x - 3) + 9 = 0$
<b>7)</b> $2(3 - x) + 4 = 8 - 3(2x - 5)$	<b>8)</b> $4x - 3(7 - 3x) = 2x + 4(5 - 2x)$
<b>9)</b> $6 - 2(3x - 3) + 6x = 15x - 5(3x + 2)$	<b>10)</b> $17x - 2(2 - 5x) = 9(3x + 4) - 40$
<b>11)</b> $4(x - 5) + \frac{x}{2} - 3 = 3x - 9$	<b>12)</b> $-2(3x - 1) + 72 = \frac{3x - 27}{3}$
<b>13)</b> $2(x - 3) - (2x + 4) = -6x$	<b>14)</b> $3\frac{2}{3} \cdot x + 2\frac{5}{8} = 4\frac{1}{2} \cdot x - 6\frac{3}{4}$ <b>Hint:</b> Convert to improper fractions
<b>15)</b> $(x + 1) - \frac{3}{2} = \frac{2x + 3}{2}$	<b>16)</b> $\frac{3x - 7}{5} + 2 =  9 - 13 $
<b>17)</b> $\frac{3 - x}{2} + \frac{2}{3} = 1 - \frac{3(2x - 5)}{2}$	<b>18)</b> $\frac{4x}{3} - 3\left(\frac{7 - 3x}{2}\right) = \frac{2x}{3} + 4(5 - 2x)$
<b>19)</b> $2ax + 3 = 5(ax - 3b)$	<b>20)</b> $2x - 5y + 3xz = 20(x + y - z)$

Solutions are on the other side!

<b>1)</b> $x = -3$	<b>2)</b> $x = -1$	<b>3)</b> $x = 7$	<b>4)</b> No solution
<b>5)</b> $x = 1$	<b>6)</b> $x = 0$	<b>7)</b> $x = \frac{13}{4} = 3.25$	<b>8)</b> $x = \frac{41}{19} \approx 2.16$
<b>9)</b> No solution	<b>10)</b> All real numbers	<b>11)</b> $x = \frac{28}{3} \approx 9.33$	<b>12)</b> $x = \frac{83}{7} \approx 11.86$
<b>13)</b> $x = \frac{5}{3} \approx 1.67$	<b>14)</b> $x = \frac{45}{4} = 11.25$	<b>15)</b> No solution	<b>16)</b> $x = \frac{17}{3} \approx 5.67$
<b>17)</b> $x = \frac{38}{15} \approx 2.53$	<b>18)</b> $x = \frac{183}{79} \approx 2.32$	<b>19)</b> $x = \frac{5b + 1}{a}$	<b>20)</b> $x = \frac{-25y + 20z}{18 - 3z}$