

BC Math 9 Multi-Step Equations (with answers)

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1. $15 = 3x$
 $x = \frac{15}{3} = 5$

2. $20w = -100$
 $w = -\frac{100}{20} = -5$

3. $7 = -\frac{a}{2}$
Multiply by -2
 $-14 = a$

4. $\frac{4}{9} = \frac{2}{x}$
Cross multiply
 $4x = 18$
 $x = \frac{18}{4} = \frac{9}{2}$

5. $-3 = \frac{5}{a}$
 $a = -\frac{5}{3}$

6. $\frac{2x-3}{5} = \frac{3}{-2}$
Cross multiply
 $-2(2x - 3) = 15$
 $-4x + 6 = 15$
 $-9 = 4x$
 $-\frac{9}{4} = x$

7. $-4 = \frac{2}{5-5x}$
 $5 - 5x = \frac{2}{-4}$
 $5 + \frac{1}{2} = 5x$
 $\frac{11}{2} = 5x$
 $\frac{11}{10} = x$

8. $-2(2x - 3) = 4 + x$
 $-4x + 6 = 4 + x$
 $2 = 5x$
 $x = \frac{2}{5}$

$$9. \frac{w}{3} - w + 2 = \frac{3}{2}$$

Multiply by 6

$$2w - 6w + 12 = 9$$

$$3 = 4w$$

$$\frac{3}{4} = w$$

$$10. 3x - 2 = \frac{2}{5} \left(\frac{3x}{2} - 1 \right)$$

$$3x - 2 = \frac{6x}{10} - \frac{2}{5}$$

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

Multiply by 5

$$15x - 10 = 3x - 2$$

$$12x = 8$$

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

11. Challenge:

$$\left(\frac{3}{2}\right)^2 - \left(-\frac{x}{4}\right) \div \frac{3x}{2} - \frac{(-1)^0}{\sqrt{\frac{9}{25}}} = \frac{1}{\frac{1}{x}} - \frac{0}{1}$$

$$\frac{9}{4} + \frac{x}{4} \times \frac{2}{3x} - \frac{1}{\frac{3}{5}} = x - 0$$

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

$$x = \frac{27}{12} + \frac{2}{12} - \frac{20}{12} = \frac{9}{12} = 3/4$$