

Section 3.6 Solving Decimal Equations

Solving equations with decimals is just like solving them with integers but you have to account for rounding off. It is important to recognize when the round off errors occur. You should not round off until you get to your final answer. The examples in the book demonstrate this well.

One trick to working with decimals is to multiply both sides of the equation by 10, 100, 1000 etc. to get rid of all the decimals. This makes it easier to keep track of all the numbers and delays the need to do decimal multiplication and division until the end.

Example: $3.2x + 7.25 = 7.3x - 1.83$

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$$320x + 725 = 730x - 183$$

Multiply both sides by 100 to get rid of the decimals.

$$\begin{array}{r} 320x + 725 = 730x - 183 \\ -320x \quad \quad -320x \\ \hline 725 = 410x - 183 \end{array}$$

Collect the variables by subtracting 320x from each side.

$$\begin{array}{r} 725 = 410x - 183 \\ +183 \quad \quad \quad +183 \\ \hline 908 = 410x \end{array}$$

Add 183 to both sides

$$\begin{array}{r} \frac{908}{410} = \frac{410x}{410} \\ 2.21463415 = x \end{array}$$

Divide both sides by 410

$$x = 2.2$$

Round to 1 decimal place since you round to the least significant digit.