



## **Solving for the Unknown Value Take Home Problems**

*The Division of Water Quality  
makes no claim as the accuracy of  
any answers provided herein.*

## 2 Solving for the Unknown Value

### SKILLS CHECK

Complete and score the following skills test. Each section should be scored separately in the box provided to the right. For Section 2.1, a score of 8 or above indicates you are sufficiently strong in that concept. A score of 7 or below indicates a review of that section is advisable. For Sections 2.2-2.4, a score of 4 or above indicates you are sufficiently strong in that concept. A score of 3 or below indicates a review of that section is advisable.

#### 2.1 Solving for $x$ —The Basics

Solve for  $x$  in each problem given below.

1.  $8.1 = (3)(x)(1.5)$

$x = \underline{\hspace{2cm}}$

2.  $(0.785)(0.33)(0.33)(x) = 0.49$

$x = \underline{\hspace{2cm}}$

3.  $\frac{233}{x} = 44$

$x = \underline{\hspace{2cm}}$

4.  $940 = \frac{x}{(0.785)(90)(90)}$

$x = \underline{\hspace{2cm}}$

5.  $x = \frac{(165)(3)(8.34)}{0.5}$

$x = \underline{\hspace{2cm}}$

6.  $56.5 = \frac{3800}{(x)(8.34)}$

$x = \underline{\hspace{2cm}}$

7.  $114 = \frac{(230)(1.15)(8.34)}{(0.785)(70)(70)(x)}$

$x = \underline{\hspace{2cm}}$

8.  $2 = \frac{x}{180}$

$x = \underline{\hspace{2cm}}$

9.  $46 = \frac{(105)(x)(8.34)}{(0.785)(100)(100)(4)}$

$x = \underline{\hspace{2cm}}$

10.  $2.4 = \frac{(0.785)(5)(5)(4)(7.48)}{x}$

$x = \underline{\hspace{2cm}}$

Number  
Correct

2.2 Solving for  $x^2$ 
  
 Number  
 Correct

 Solve for  $x$  in the following problems.

1.  $942 = (0.785)(x^2)(12)$

$x = \underline{\hspace{2cm}}$

4.  $920 = \frac{3,312,000}{x^2}$

$x = \underline{\hspace{2cm}}$

2.  $6358.5 = (0.785)(x^2)$

$x = \underline{\hspace{2cm}}$

5.  $23.9 = \frac{(3650)(3.95)(8.34)}{(0.785)(x^2)}$

$x = \underline{\hspace{2cm}}$

3.  $835 = \frac{4,200,000}{(0.785)(x^2)}$

$x = \underline{\hspace{2cm}}$

2.3 Solving for  $x$ —Addition and Subtraction Problems
  
 Number  
 Correct

 Complete the following problems, solving for  $x$  as indicated.

1.  $7 + 10 + x + 7 + 9 = 41$

$x = \underline{\hspace{2cm}}$

4.  $10.1 = 9.5 + x$

$x = \underline{\hspace{2cm}}$

2.  $9.5 - x = 8.7$

$x = \underline{\hspace{2cm}}$

5.  $x + 15 = 19 + 22$

$x = \underline{\hspace{2cm}}$

3.  $x + 93 = 165$

$x = \underline{\hspace{2cm}}$

2.4 Solving for  $x$ —Advanced ProblemsNumber  
Correct

□ Solve for the unknown value in the following problems.

1.  $2x + 65 = 215$

$x = \underline{\hspace{2cm}}$

4. 
$$\frac{(6800)(8.34)(x) + (4500)(8.34)(0.07)}{56,712 + 37,530} = 0.051$$

$x = \underline{\hspace{2cm}}$

2. 
$$\frac{(4+x)(2)(143)}{2} = 1320$$

5. 
$$7 = \frac{(2810)(0.435)(8.34)}{(6200)(x)(8.34) + (15)(1.8)(8.34)}$$

$x = \underline{\hspace{2cm}}$

3. 
$$0.042 = \frac{2085 + 876}{x + 29,190}$$

$x = \underline{\hspace{2cm}}$

$x = \underline{\hspace{2cm}}$