

# Evaluating One Variable

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 18

## Quick Review and Helpful Hints

To evaluate an expression, *substitute* the given number in place of the variable, then follow the order of operations (PEMDAS): parentheses, exponents, multiply and divide left to right, then add and subtract left to right. Put the substituted value in parentheses – this matters most when the value is negative.

▷ **Example:** Evaluate  $3x + 5$  when  $x = 4$ . **Work:** Substitute 4 for  $x$ :  $3(4) + 5$ . Following order of operations, multiply first:  $12 + 5$ . Then add. ★ **Answer:** 17

## ◆ Practice Problems

Evaluate each expression for the given value of the variable.

1.  $x + 7$ , when  $x = 5$

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2.  $2x$ , when  $x = 9$

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3.  $3x - 4$ , when  $x = 6$

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4.  $x^2$ , when  $x = 5$

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5.  $5x + 1$ , when  $x = 3$

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6.  $\frac{x}{2} + 6$ , when  $x = 10$

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7.  $4x - 7$ , when  $x = 2$

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8.  $x^2 + 2x$ , when  $x = 4$

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9.  $10 - 2x$ , when  $x = 3$

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10.  $2x + 8$ , when  $x = -3$

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11.  $-x + 5$ , when  $x = 7$

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12.  $x^2 - 1$ , when  $x = -4$

\_\_\_\_\_

13.  $6x$ , when  $x = 0.5$

\_\_\_\_\_

14.  $3(x + 2)$ , when  $x = 5$

\_\_\_\_\_

## ◆ Word Problems

15. A taxi charges \$3 plus \$2 per mile, modeled by  $2m + 3$ . Find the cost for a  $m = 8$  mile trip.

\_\_\_\_\_

16. The area of a square is  $s^2$ . Find the area when the side  $s = 9$  cm.

\_\_\_\_\_

17. A phone plan costs  $25 + 0.10t$  dollars for  $t$  texts. Find the cost when  $t = 40$ .

\_\_\_\_\_

18. The expression  $60 - 5h$  gives the liters of water left in a tank after  $h$  hours. How much is left after  $h = 7$  hours?

\_\_\_\_\_



## Answer Keys

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### Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $5 + 7 = 12$ . So the final answer is 12.

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $2(9) = 18$ . So the final answer is 18.

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $3(6) - 4 = 18 - 4 = 14$ . So the final answer is 14.

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $5^2 = 25$ . So the final answer is 25.

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $5(3) + 1 = 15 + 1 = 16$ . So the final answer is 16.

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $\frac{10}{2} + 6 = 5 + 6 = 11$ . So the final answer is 11.

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $4(2) - 7 = 8 - 7 = 1$ . So the final answer is 1.

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $4^2 + 2(4) = 16 + 8 = 24$ . So the final answer is 24.

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $10 - 2(3) = 10 - 6 = 4$ . So the final answer is 4.

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $2(-3) + 8 = -6 + 8 = 2$ . So the final answer is 2.

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $-(7) + 5 = -2$ . So the final answer is  $-2$ .

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $(-4)^2 - 1 = 16 - 1 = 15$ . So the final answer is 15.

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6(0.5) = 3$ . So the final answer is 3.

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $3(5 + 2) = 3(7) = 21$ . So the final answer is 21.

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $2(8) + 3 = 16 + 3 = \$19$ . So the final answer is \$19.

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $s^2 = 9^2 = 81$  square cm. So the final answer is 81 cm<sup>2</sup>.

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $25 + 0.10(40) = 25 + 4 = \$29$ . So the final answer is \$29.

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $60 - 5(7) = 60 - 35 = 25$  liters. So the final answer is 25 liters.



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