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 $x = 5$ _____

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

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

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

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

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

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

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

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

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

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

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? _____

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Answer Keys

1. 12	**7.** 1	**13.** 3
2. 18	**8.** 24	**14.** 21
3. 14	**9.** 4	**15.** $\$19$
4. 25	**10.** 2	**16.** $81\ \text{cm}^2$
5. 16	**11.** -2	**17.** $\$29$
6. 11	**12.** 15	**18.** 25 liters

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 $81\ \text{cm}^2$.

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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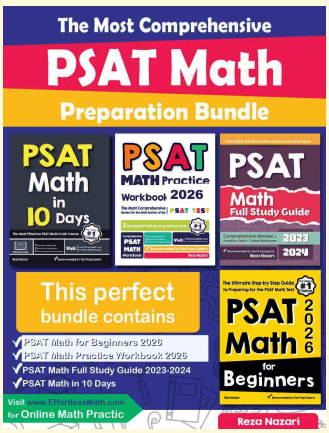

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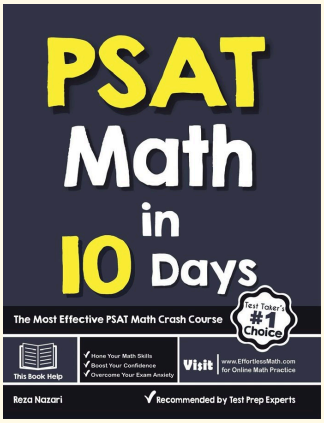

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