

Reading Function Values

Name: _____

Date: _____

Score: _____ / 24

Q Quick Review

Function notation $f(x)$ is just a name tag for the output. When you see $f(3)$, it means “the output of the function f when the input is 3.” To find it, **substitute** the number wherever x appears, then simplify. For example, if $f(x) = 2x + 1$, then $f(3) = 2(3) + 1 = 7$. The letter doesn't matter — $g(t)$ or $h(n)$ work the same way. Be careful with negatives: always put the input inside parentheses before you simplify, so signs don't get lost.

◇ **Example:** If $f(x) = 3x - 4$, find $f(5)$ and $f(-2)$.

⇒ For $f(5)$, replace every x with 5: $f(5) = 3(5) - 4 = 15 - 4 = 11$. For $f(-2)$, replace x with -2 — and notice the parentheses keep the sign safe: $f(-2) = 3(-2) - 4 = -6 - 4 = -10$. Substitute first, then do the arithmetic. That's the whole trick!

Answer: $f(5) = 11$, $f(-2) = -10$

PRACTICE

Evaluate each function at the given input.

- | | | | |
|------------------------------|-------|--|-------|
| 1. $f(x) = x + 6$; $f(2)$ | _____ | 11. $h(n) = -2n + 8$; $h(3)$ | _____ |
| 2. $f(x) = x - 9$; $f(15)$ | _____ | 12. $h(n) = -n - 1$; $h(-5)$ | _____ |
| 3. $f(x) = 4x$; $f(3)$ | _____ | 13. $f(x) = x^2$; $f(4)$ | _____ |
| 4. $f(x) = 2x + 1$; $f(6)$ | _____ | 14. $f(x) = x^2 + 1$; $f(-3)$ | _____ |
| 5. $f(x) = 5x - 3$; $f(4)$ | _____ | 15. $f(x) = \frac{x}{2} + 4$; $f(8)$ | _____ |
| 6. $f(x) = 3x + 7$; $f(0)$ | _____ | 16. $f(x) = \frac{1}{3}x - 2$; $f(9)$ | _____ |
| 7. $f(x) = x + 6$; $f(-4)$ | _____ | 17. $f(x) = 7x$; $f(-2)$ | _____ |
| 8. $f(x) = 2x - 5$; $f(-3)$ | _____ | 18. $g(x) = 3x - 10$; $g(10)$ | _____ |
| 9. $g(t) = 6t + 2$; $g(5)$ | _____ | 19. $f(x) = 2x^2 - 3$; $f(2)$ | _____ |
| 10. $g(t) = 10 - t$; $g(7)$ | _____ | 20. $f(x) = -4x + 1$; $f(-1)$ | _____ |

◆ Word Problems

21. A phone plan costs $C(m) = 0.10m + 20$ dollars, where m is the number of minutes used. Find $C(150)$ and explain what it means. _____

22. A diver's depth in feet is $d(t) = -6t$, where t is the number of seconds since the dive started. Find $d(8)$ and say what it tells you. _____

23. A bakery's profit is $P(x) = 4x - 50$ dollars when it sells x cakes. Find $P(20)$ and explain whether the bakery made or lost money. _____

24. The height of a ball in feet is $h(t) = 40 - 5t^2$, where t is the time in seconds. Find $h(2)$ and explain what it represents. _____



Answer Keys

- | | |
|-------------------------------------|--|
| 1. <input type="text" value="8"/> | 13. <input type="text" value="16"/> |
| 2. <input type="text" value="6"/> | 14. <input type="text" value="10"/> |
| 3. <input type="text" value="12"/> | 15. <input type="text" value="8"/> |
| 4. <input type="text" value="13"/> | 16. <input type="text" value="1"/> |
| 5. <input type="text" value="17"/> | 17. <input type="text" value="-14"/> |
| 6. <input type="text" value="7"/> | 18. <input type="text" value="20"/> |
| 7. <input type="text" value="2"/> | 19. <input type="text" value="5"/> |
| 8. <input type="text" value="-11"/> | 20. <input type="text" value="5"/> |
| 9. <input type="text" value="32"/> | 21. <input type="text" value="C(150) = 35; the plan costs \$35 for 150 minutes"/> |
| 10. <input type="text" value="3"/> | 22. <input type="text" value="d(8) = -48; the diver is 48 feet below the surface"/> |
| 11. <input type="text" value="2"/> | 23. <input type="text" value="P(20) = 30; the bakery made \$30 profit"/> |
| 12. <input type="text" value="4"/> | 24. <input type="text" value="h(2) = 20; the ball is 20 feet high after 2 seconds"/> |

Step-by-Step Explanations

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| <p>1. Substitute $x = 2$: $f(2) = 2 + 6 = 8$.</p> <p>2. Substitute $x = 15$: $f(15) = 15 - 9 = 6$.</p> <p>3. Substitute $x = 3$: $f(3) = 4(3) = 12$.</p> <p>4. Substitute $x = 6$: $f(6) = 2(6) + 1 = 12 + 1 = 13$.</p> <p>5. Substitute $x = 4$: $f(4) = 5(4) - 3 = 20 - 3 = 17$.</p> <p>6. Substitute $x = 0$: $f(0) = 3(0) + 7 = 0 + 7 = 7$.</p> <p>7. Substitute $x = -4$: $f(-4) = -4 + 6 = 2$.</p> <p>8. Substitute $x = -3$: $f(-3) = 2(-3) - 5 = -6 - 5 = -11$.</p> <p>9. Substitute $t = 5$: $g(5) = 6(5) + 2 = 30 + 2 = 32$.</p> <p>10. Substitute $t = 7$: $g(7) = 10 - 7 = 3$.</p> <p>11. Substitute $n = 3$: $h(3) = -2(3) + 8 = -6 + 8 = 2$.</p> <p>12. Substitute $n = -5$: $h(-5) = -(-5) - 1 = 5 - 1 = 4$.</p> <p>13. Substitute $x = 4$: $f(4) = 4^2 = 16$.</p> <p>14. Substitute $x = -3$: $f(-3) = (-3)^2 + 1 = 9 + 1 = 10$.</p> | <p>15. Substitute $x = 8$: $f(8) = \frac{8}{2} + 4 = 4 + 4 = 8$.</p> <p>16. Substitute $x = 9$: $f(9) = \frac{1}{3}(9) - 2 = 3 - 2 = 1$.</p> <p>17. Substitute $x = -2$: $f(-2) = 7(-2) = -14$.</p> <p>18. Substitute $x = 10$: $g(10) = 3(10) - 10 = 30 - 10 = 20$.</p> <p>19. Substitute $x = 2$: $f(2) = 2(2)^2 - 3 = 2(4) - 3 = 8 - 3 = 5$.</p> <p>20. Substitute $x = -1$: $f(-1) = -4(-1) + 1 = 4 + 1 = 5$.</p> <p>21. Substitute $m = 150$: $C(150) = 0.10(150) + 20 = 15 + 20 = 35$. So using 150 minutes makes the bill \$35.</p> <p>22. Substitute $t = 8$: $d(8) = -6(8) = -48$. The negative sign means 48 feet <i>below</i> the surface after 8 seconds.</p> <p>23. Substitute $x = 20$: $P(20) = 4(20) - 50 = 80 - 50 = 30$. Since 30 is positive, the bakery earned a \$30 profit.</p> <p>24. Substitute $t = 2$: $h(2) = 40 - 5(2)^2 = 40 - 5(4) = 40 - 20 = 20$. After 2 seconds the ball is 20 feet above the ground.</p> |
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