Name Pd Date

Inverse Functions Practice

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- 1. A pre-paid cellular phone charges \$25 for activation and \$0.05 per minute. The relation of cost to minutes can be defined by the function c(x) = 0.05x + 25. What is the inverse of the function?
 - a. $f^{-1}(x) = -20x + 500$ c. $f^{-1}(x) = -0.05x - 25$ b. $f^{-1}(x) = \frac{20}{x} + \frac{1}{25}$ d. $f^{-1}(x) = 20x - 500$
- 2. Which of the following is the inverse relation to the set of ordered pairs $\{(-10, 5), (-7, 9), (0, 6), (8, -12)\}$? a. $\{(5, -10), (9, -7), (6, 0), (-12, 8)\}$ c. $\{(10, -5), (7, -9), (0, -6), (-8, 12)\}$
 - b. $\{(-10, -5), (-7, -9), (0, -6), (8, 12)\}$
- d. $\{(-5, 10), (-9, 7), (-6, 0), (12, -8)\}$

<u>8</u> 5

8

- 3. Which of the following is the inverse to the function "Multiply by 8, then subtract 10"?
 - c. Divide by 8, then add 10
 - a. Add 10, then divide by 8 b. Subtract 10, then multiply by 8 d. Multiply by 10, then subtract 8
- 4. Which of the following is the inverse to the function f(x) = -8 5x?

a.
$$f^{-1}(x) = -\frac{1}{5x} - \frac{1}{8}$$

b. $f^{-1}(x) = \frac{x}{5} + \frac{8}{5}$
c. $f^{-1}(x) = -\frac{x}{5}$
d. $f^{-1}(x) = 5x + \frac{1}{5}$

5. A graph of a function is shown.



Which of the following is the graph of the inverse?



The Drama Club is holding a car wash to raise money. The club spent \$90 on materials and supplies. The club 6. earns \$11.25 for each car they wash. Which of the following is the inverse to the function of how much the club earns per cars washed? -1 . .

a.
$$f^{-1}(x) = -\frac{x}{11.25} + 8$$

b. $f^{-1}(x) = \frac{x}{11.25} + 8$
c. $f^{-1}(x) = -11.25x + 90$
d. $f^{-1}(x) = \frac{1}{11.25x} - \frac{1}{90}$

- 7. Which of the following is the inverse relation to the set of ordered pairs $\{(-7, 15), (0, -16), (5, 9), (17, -8)\}$? a. $\{(7, -15), (0, 16), (-5, -9), (-17, 8)\}$ c. $\{(-15, 7), (16, 0), (-9, -5), (8, -17)\}$ b. $\{(-7, -15), (0, 16), (5, -9), (17, 8)\}$ d. $\{(15, -7), (-16, 0), (9, 5), (-8, 17)\}$
 - 8. Which of the following is the inverse to the function "Divide by 2, then add 21"? a. Add 21, then divide by 2

 - b. Subtract 21, then multiply by 2
- c. Divide by 21, then add 2

90

d. Multiply by 2, then subtract 21

Short Answer

- 9. What is the inverse of the linear function $f(x) = -10 + 8x_{?}$
- 10. For h(t) = -6t + 7, determine $h^{-1}(4)$.

11. Use the graph of the function to draw the graph of the inverse.



Is the inverse a function?

- 12. A DVD rental company charges \$7 per month plus \$2.50 for each rental. The relation can be defined by c(x) = 2.5x + 7. Determine the inverse of the function and what it represents.
- 13. What is the inverse of the linear function $f(x) = \frac{2}{3}x 6$?
- 14. For g(x) = 4 9x, determine $g^{-1}(-3)$.
- 15. Use the graph of the function to draw the graph of the inverse.



Is the inverse a function?

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16. Ms. Wright wrote the function p(x) = 82x - 2700 to represent her profits from purses sold. Determine the inverse of the function and what it represents.

$$h(x) = \frac{x+7}{4}$$

17. What is the inverse of the linear function

18. For
$$k(x) = \frac{4}{5}x - 6$$
, determine $k^{-1}(8)$.

Problem

- 19. The formula for converting a temperature in degrees Fahrenheit into degrees Celsius is $C = \frac{5}{9} (F 32)$. a) Write the formula in function notation.
 - b) Write f^{-1} as a rule. What does the rule represent?

c) Use the inverse function to convert 9 °C into degrees Fahrenheit. Worksheet: Introduction to Inverse Functions Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 **REF:** Application OBJ: 1.5 - The Inverse Function and Its Properties 2. ANS: A PTS: 1 **REF:** Knowledge and Understanding OBJ: 1.5 - The Inverse Function and Its Properties PTS: 1 **REF:** Application 3. ANS: A OBJ: 1.5 - The Inverse Function and Its Properties 4. ANS: C PTS: 1 REF: Knowledge and Understanding OBJ: 1.5 - The Inverse Function and Its Properties PTS: 1 **REF:** Application 5. ANS: B OBJ: 1.5 - The Inverse Function and Its Properties PTS: 1 **REF:** Application 6. ANS: B OBJ: 1.5 - The Inverse Function and Its Properties PTS: 1 REF: Knowledge and Understanding 7. ANS: D OBJ: 1.5 - The Inverse Function and Its Properties PTS: 1 **REF:** Application 8. ANS: B OBJ: 1.5 - The Inverse Function and Its Properties

SHORT ANSWER

9. ANS:

$$f(x) = \frac{x}{8} + \frac{5}{4}$$

PTS: 1 REF: Knowledge and Understanding

- OBJ: 1.5 The Inverse Function and Its Properties
- 10. ANS:

$$h^{-1}(4) = \frac{1}{2}$$

	PTS: 1	REF: Application	OBJ:	1.5 - The Inverse Function and Its Properties
11.	ANS:			



Yes, the inverse is a function.

PTS: 1 REF: Thinking OBJ: 1.5 - The Inverse Function and Its Properties 12. ANS: $c^{-1}(x) = \frac{x}{2.5} - \frac{7}{2.5}$ or $c^{-1}(x) = 0.4x - 2.8$; the inverse represents the rentals as a function of cost PTS: 1 REF: Thinking OBJ: 1.5 - The Inverse Function and Its Properties 13. ANS: $f^{-1}(x) = \frac{3}{2}x + 9$

PTS: 1 REF: Knowledge and Understanding OBJ: 1.5 - The Inverse Function and Its Properties

14. ANS:

$$g^{-1}(-3) = \frac{7}{9}$$

PTS: 1 REF: Application OBJ: 1.5 - The Inverse Function and Its Properties 15. ANS:



No, the graph of the inverse is not a function.

PTS: 1 REF: Thinking OBJ: 1.5 - The Inverse Function and Its Properties 16. ANS: $p^{-1}(x) = \frac{x}{82} + \frac{1350}{41}$; the inverse represents the purses sold as a function of profits PTS: 1 OBJ: 1.5 - The Inverse Function and Its Properties REF: Thinking 17. ANS: h(x) = 4x - 7REF: Knowledge and Understanding PTS: 1 OBJ: 1.5 - The Inverse Function and Its Properties 18. ANS: $k^{-1}(8) = 17\frac{1}{2}$ PTS: 1 REF: Application OBJ: 1.5 - The Inverse Function and Its Properties

PROBLEM

19. ANS:

a) $f(x) = \frac{5}{9}(x - 32)$ b) $f^{-1}(x) = \frac{9}{5}x + 32$ c) $48.2 \,^{\circ}\text{F}$; the inverse represents the formula to convert degrees Celsius to degrees Fahrenheit

PTS: 1 REF: Communication OBJ: 1.5 - The Inverse Function and Its Properties