ALBERT

Name _____ Date _____

Independent and Dependent Variables Worksheet

Grade 6 · Common Core 6.EE.C.9

> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

Practice

Builds the skill step by step.

1. A car travels at 50 miles per hour. Write an equation for the distance d after t hours.

2. In d = 50t, which is the independent variable?

   A. d, the distance

   B. t, the time

   C. 50, the speed

   D. There is none

3. Each ticket costs $6. Write an equation for the total cost c of n tickets.

4. Use the table to write an equation for y in terms of x.

x	1	2	3	4
y	3	6	9	12

5. A plant grows 2 cm per week. Which quantity is the dependent variable?

   A. The plant's height

   B. The number of weeks

   C. 2 cm

   D. The kind of plant

6. Use the table to write an equation for y in terms of x.

x	0	1	2	3
y	5	6	7	8

7. A worker earns $15 per hour. Write an equation for earnings e after h hours, then find e when h = 8.

8. Which equation matches the table? x: 2, 4, 6; y: 1, 2, 3

   A. $y = \frac{x}{2}$

   B. $y = 2x$

   C. $y = x - 1$

   D. $y = x + 1$

9. A pool has 100 gallons and fills at 20 gallons per minute. Write an equation for the gallons g after m minutes.

10. In y = 4x, find y when x = 7.

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On Level

Grade-level practice.

1. A gym charges a $25 fee plus $10 per class. Write an equation for the total cost C of k classes.

2. Use the equation from problem 1 to complete the table for k = 1, 2 and 3.

Classes (k)	1	2	3
Cost (C)	?	?	?

3. The points (1, 4), (2, 8) and (3, 12) are on a graph. Which equation fits them?

   A. y = x + 3

   B. y = 4x

   C. y = 4x + 1

   D. y = 12x

4. A candle is 18 cm tall and burns 1.5 cm each hour. Write an equation for its height h after t hours.

5. Use the equation from problem 4 to find the candle's height after 6 hours.

6. Use the table to write an equation for the cost c of p pounds of apples.

Pounds (p)	2	4	6
Cost (c)	5	10	15

7. Mia's savings s grow by $12 each week w, starting from $30. Which statement is true?

   A. w is the dependent variable.

   B. s = 30w + 12.

   C. s does not change.

   D. s is the dependent variable and s = 12w + 30.

8. A recipe uses 3 eggs for every batch b. Write an equation for the number of eggs e, then find e for 7 batches.

9. In the equation $y = 6x - 2$, what is y when x = 5?

10. A taxi charges $4 plus $2 per mile. Write an equation for the fare f for m miles.

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Challenge

Multi-step and word problems that stretch it.

1. Use the table to write an equation for y in terms of x.

x	0	1	2	3
y	1	3	5	7

2. A phone plan costs $20 per month plus $0.10 per text t. Write an equation for the monthly bill B, and find the bill for 150 texts.

3. A graph of y = 5x passes through which point?

   A. (5, 1)

   B. (3, 15)

   C. (15, 3)

   D. (3, 8)

4. A tank has 240 liters and drains 8 liters per minute. After how many minutes will it be empty?

5. Two jobs: Job A pays $12 per hour. Job B pays $40 plus $8 per hour. Write equations for each, and find the number of hours h when they pay the same.

6. In $y = 3x + 4$, how much does y change when x increases by 1?

7. Sam says that in "the number of pizzas p depends on the number of guests g," p is the independent variable. Is he right?

8. Use the table to write an equation for d in terms of t, then find d when $t = 9$.

t	2	5	8
d	14	35	56

9. A store sells T-shirts for $9 each with a $5 shipping fee per order. How many T-shirts are in an order that costs $77?

10. A hiker starts at an elevation of 1,200 feet and climbs 350 feet per hour. Write an equation for her elevation E after h hours, and find E after 4 hours.