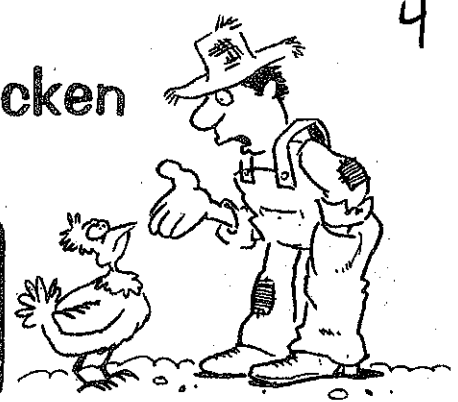


What Did Farmer John Show His Chicken When She Wouldn't Lay Any Eggs?



Determine whether each relation is a function. Indicate whether it "is a function" or is "not a function" by circling the appropriate letter in the chart. The answer to the title question is found by reading the circled letters in the top row, then the circled letters in the bottom row.

- 1 $\{(-1, 8), (0, 15), (1, -4), (2, 0)\}$ **Y** 3 $\{(-5, 2), (5, 2), (0, -3), (3, -8), (-7, 4), (-1, -1)\}$ **Y**
 2 $\{(-2, 7), (6, 2), (-2, -3), (0, 9)\}$ **N** 4 $\{(-7, 2), (4, -6), (2, -2), (-3, 9), (0, -11), (4, 0)\}$ **N**

5

| x | y |
|----|----|
| -6 | 4 |
| -4 | 0 |
| -2 | -5 |
| 0 | -5 |
| 2 | 0 |
| 4 | 4 |

Y

6

| x | y |
|----|----|
| 8 | 7 |
| -3 | 16 |
| -9 | 0 |
| 15 | 33 |
| -1 | -1 |
| -9 | -6 |

N

7

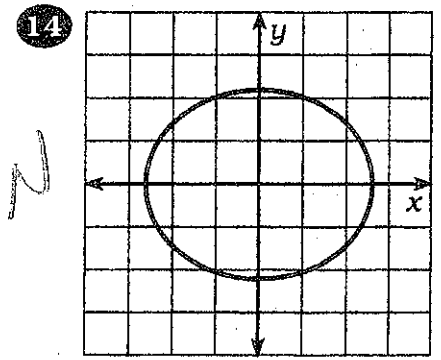
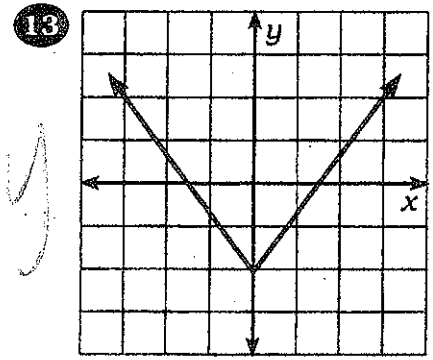
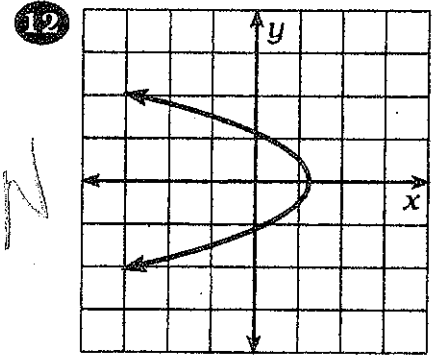
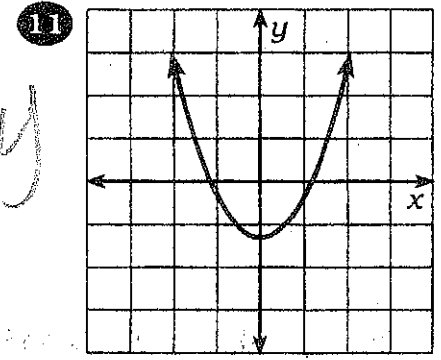
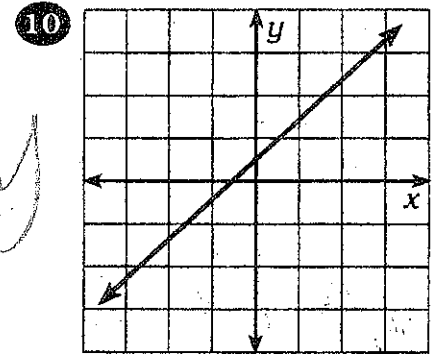
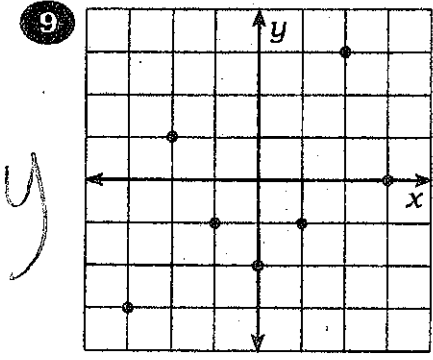
| x | y |
|-----|----|
| 5 | 18 |
| -2 | -2 |
| 0 | 12 |
| 12 | 0 |
| -40 | 17 |
| -5 | 18 |

Y

8

| x | y |
|----|----|
| -1 | 75 |
| 0 | 80 |
| 1 | 85 |
| 0 | 90 |
| 1 | 95 |

N



| | | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| IS A FUNCTION > | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| NOT A FUNCTION > | A | R | G | E | O | L | O | F | D | E | G | O | G | G |
| | I | S | T | A | T | M | E | P | O | L | A | L | L | E |

Why Did the Greenhouse Call a Doctor?

Answer each question, then find your answer and cross out the letters above it.
When you finish, write the remaining letters in the spaces at the bottom of the page.

In Exercises 1-3, find the domain and range of the relation.

1.

| Age (years) | Height (inches) |
|-------------|-----------------|
| 4 | 41 |
| 8 | 49 |
| 12 | 58 |
| 16 | 67 |

2.

| x | y |
|----|---|
| -2 | 7 |
| -1 | 4 |
| 0 | 2 |
| 1 | 4 |
| 2 | 7 |

3.

| x | y |
|----|----|
| -3 | 4 |
| 8 | -9 |
| 0 | -6 |
| -3 | 7 |
| -5 | 12 |

domain: $\{4, 8, 12, 16\}$ domain: $\{-2, -1, 0, 1, 2\}$ domain: $\{-5, -3, 0, 8\}$
range: $\{41, 49, 58, 67\}$ range: $\{2, 4, 7\}$ range: $\{-9, -6, 4, 7, 12\}$

In Exercises 4-7, find the indicated values for the function.

4. $f(x) = 4x - 7$

a. $f(3) = 5$ b. $f(-5) = -27$

5. $f(x) = -3x + 10$

a. $f(4) = -2$ b. $f(-9) = 37$

6. $g(x) = x^2 + 5x - 1$

a. $g(6) = 45$ b. $g(-4) = -5$

7. $h(x) = -2x^2 - 3x + 8$

a. $h(5) = -57$ b. $h(0) = 8$

In Exercises 8-13, find the range of the function for the given domain.

8. $f(x) = 2x + 7$ $\{5, 18, -5\}$

9. $g(x) = 9 - 4x$ $\{-2, 10, -1\}$

10. $F(x) = 3x^2 - 1$ $\{2, 4, -3\}$

11. $h(x) = x^2 + 8x - 3$ $\{1, 5, -2\}$

12. $f(t) = \frac{t^2 + 2t}{t - 5}$ $\{4, 7, -2\}$

13. $G(n) = -n^2 + 3n + 2$ $\{5, -3, 0\}$

| | | | | | | |
|--------------------------|-----------|---------------------|-----------|--------------------|----------|--------------------------|
| TH {-2, -1, 0, 1, 2} | HE 8 | IT {11, 62, 0} | AT -5 | IS {17, 43, -3} | HA -6 | RD {-3, 8, 0, -5} |
| SO {4, -9, -6, 7, 12} | DW 19 | HE {-8, -16, 2} | ME 5 | LP {11, 47, 26} | TH -2 | IN {4, -9, -6, 0, -5} |
| TO {4, 8, 12, 16} | DO -18 | SA {7, 4, 2} | VE -57 | WP {6, 47, 2} | UN 65 | IT {-24, 31.5, 0} |
| AI {-3, 8, 7, 12} | RS -27 | SI {17, -31, 13} | DE 37 | CK {6, 62, -15} | NS 74 | UP {41, 49, 58, 67} |

Function Notation + D/R

5

$$D: \{4, 8, 12, 16\}$$
$$R: \{4, 19, 58, 107\}$$

$$\textcircled{2} D: \{-2, -1, 0, 1, 2\}$$
$$R: \{2, 4, 7\}$$

$$\textcircled{3} D: \{-5, -3, 0, 8\}$$
$$R: \{9, -6, 4, 7, 12\}$$

$$\textcircled{4} f(x) = 4x - 7$$

$$a) f(3) = 4(3) - 7$$
$$= 12 - 7$$
$$= 5$$

$$f(3) = 5$$

$$b) f(-5) = 4(-5) - 7$$
$$= -20 - 7$$
$$= -27$$

$$f(-5) = -27$$

$$\textcircled{5} f(x) = -3x + 10$$

$$a) f(4) = -3(4) + 10$$
$$= -12 + 10$$
$$= -2$$

$$f(4) = -2$$

$$b) f(-9) = -3(-9) + 10$$
$$= 27 + 10$$
$$= 37$$

$$f(-9) = 37$$

$$\textcircled{6} g(x) = x^2 + 5x - 1$$

$$a) g(6) = 6^2 + 5(6) - 1$$
$$= 36 + 30 - 1$$
$$= 66 - 1$$
$$= 65$$

$$g(6) = 65$$

$$b) g(-4) = (-4)^2 + 5(-4) - 1$$
$$= 16 - 20 - 1$$
$$= -4 - 1$$
$$= -5$$

$$g(-4) = -5$$

$$\textcircled{7} h(x) = -2x^2 - 3x + 8$$

$$a) h(5) = -2(5)^2 - 3(5) + 8$$
$$= -2(25) - 3(5) + 8$$
$$= -50 - 15 + 8$$
$$= -65 + 8$$
$$= -57$$

$$h(5) = -57$$

$$b) h(0) = -2(0)^2 - 3(0) + 8$$
$$= -2(0) - 3(0) + 8$$
$$= 0 - 0 + 8$$
$$= 8$$

$$h(0) = 8$$

$$\textcircled{8} f(x) = 2x + 7 \quad \{5, 18, \dots\}$$

$$2(5) + 7 = 10 + 7 = 17$$

$$2(18) + 7 = 36 + 7 = 43$$

$$2(\dots) + 7 = \dots + 7 = \dots$$

$$R: \{17, 43, \dots\}$$

$$\textcircled{9} g(x) = 9 - 4x \quad \{ -2, 10, -1 \}$$

$$9 - 4(-2) = 9 + 8 = 17$$

$$9 - 4(10) = 9 - 40 = -31$$

$$9 - 4(-1) = 9 + 4 = 13$$

$$R: \{ -31, 13, 17 \}$$

$$\textcircled{10} F(x) = 3x^2 - 1 \quad \{ 2, 4, -3 \}$$

$$3(2)^2 - 1 = 3(4) - 1 = 11$$

$$3(4)^2 - 1 = 3(16) - 1 = 47$$

$$3(-3)^2 - 1 = 3(9) - 1 = 26$$

$$R: \{ 11, 26, 47 \}$$

$$\textcircled{11} h(x) = x^2 + 8x - 3 \quad \{ 1, 5, -2 \}$$

$$(1)^2 + 8(1) - 3 = 1 + 8 - 3 = 6$$

$$(5)^2 + 8(5) - 3 = 25 + 40 - 3 = 62$$

$$(-2)^2 + 8(-2) - 3 = 4 - 16 - 3 = -15$$

$$R: \{ -15, 6, 62 \}$$

$$\textcircled{12} f(t) = \frac{t^2 + 2t}{t - 5} \quad \{ 4, 7, -2 \}$$

$$\frac{(4)^2 + 2(4)}{4 - 5} = \frac{16 + 8}{-1} = -24$$

$$\frac{(7)^2 + 2(7)}{7 - 5} = \frac{49 + 14}{2} = 31.5$$

$$\frac{(-2)^2 + 2(-2)}{-2 - 5} = \frac{4 - 4}{-7} = 0$$

$$R: \{ -24, 0, 31.5 \}$$

$$\textcircled{13} G(n) = -n^2 + 3n + 2 \quad \{ 5, -3, 0 \}$$

$$-(5)^2 + 3(5) + 2 = -25 + 15 + 2 = -8$$

$$-(-3)^2 + 3(-3) + 2 = -9 - 9 + 2 = -16$$

$$-(0)^2 + 3(0) + 2 = 0 + 0 + 2 = 2$$

$$R: \{ -16, -8, 2 \}$$

Functions Combo

- 1 Function
- 2 Function
- 3 Not a Function
- 4 Function
- 5 Not a Function
- 6 Not a Function
- 7 Function
- 8 Not a Function
- 9 Function
- 10 Function
- 11 Function
- 12 Not a Function
- 13 Not a Function

14 $f(4) = 3(4) + 2$
 $f(4) = 14$

15 $f(8) = 3(8) + 2$
 $f(8) = 26$

16 $f(-2) = 3(-2) + 2$
 $f(-2) = -4$

~~17 $g(2) = 3(2) + 2$
 $g(2) = 8$~~

17 $g(2) = 3(2) - 2$
 $g(2) = 2$

18 $g(-3) = (-3)^2 - (-3)$
 $g(-3) = 9 + 3$
 $g(-3) = 12$

19 $g(-10) = (-10)^2 - (-10)$
 $g(-10) = 30 + 10$
 $g(-10) = 40$

20 $f(2) + 1 = 3(2) + 2 + 1$
 $f(2) + 1 = 9$

21 $f(1) - 1 = 3(1) + 2 - 1$
 $f(1) - 1 = 4$

22 $g(2) - 2 = 2^2 - 2 - 2$
 $g(2) - 2 = 0$

23 $g(-1) + 4 = (-1)^2 - (-1) + 4$
 $g(-1) + 4 = 6$

24 $f(x+1) = 3(x+1) + 2$
 $f(x+1) = 3x + 3 + 2$
 $f(x+1) = 3x + 5$

25 $g(3b) = (3b)^2 - (3b)$
 $g(3b) = 9b^2 - 3b$

Function

A
C
E
G
I
K
M
O
Q
R
S
T
U
V
W
X

Not a Function

B
D
F
H
J
L
N
P