**Name:** **School:** **Grade:** **Class:**

# 1-6 Algebra: Functions - Practice and Problem Solving

**Copy and complete each function table.**

**7.**

| Input ($x$) | Output ($x \div 3$) |
|---|---|
| 0 | ■ |
| 3 | ■ |
| 9 | ■ |

For $x \div 3$, divide each input by 3..

| Input | | Output |
|---|---|---|
| 0 | $\div 3 \rightarrow$ | 0 |
| 3 | $\div 3 \rightarrow$ | 1 |
| 9 | $\div 3 \rightarrow$ | 3 |

| Input ($x$) | Output ($x \div 3$) |
|---|---|
| 0 | 0 |
| 3 | 1 |
| 9 | 3 |

**Find the rule for each function table.**

**9.**

| $x$ | ■ |
|---|---|
| 7 | 2 |
| 9 | 4 |
| 15 | 10 |

Study the relationship between each input and output.

| Input | | Output |
|---|---|---|
| 7 | $-5 \rightarrow$ | 2 |
| 9 | $-5 \rightarrow$ | 4 |
| 15 | $-5 \rightarrow$ | 10 |

The output is 5 less than the input. So, the function rule is $x - 5$.

**11.**

| $x$ | ■ |
|---|---|
| 0 | 0 |
| 4 | 20 |
| 7 | 35 |

Study the relationship between each input and output.

| Input | | Output |
|---|---|---|
| 0 | $\times 5 \rightarrow$ | 0 |
| 4 | $\times 5 \rightarrow$ | 20 |
| 7 | $\times 5 \rightarrow$ | 35 |

The output is 5 times the input. So, the function rule is $5x$.

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**13.**

| $x$ | ■ |
|---|---|
| 6 | 3 |
| 22 | 11 |
| 34 | 17 |

Study the relationship between each input and output.

| Input | | Output |
|---|---|---|
| 6 | ÷ 2 → | 3 |
| 22 | ÷ 2 → | 11 |
| 34 | ÷ 2 → | 17 |

The output is 2 divided by the input. So, the function rule is $x \div 2$.

**15.** **FOOD** Whitney has a total of 30 cupcakes for her guests. Define a variable. Write a function rule that relates the number of cupcakes per guest to the number of guests.

Let $g$ represent the number of guests; $30 \div g$.

**Find the rule for each function table.**

**17.**

| $x$ | ■ |
|---|---|
| 0 | 1 |
| 1 | 7 |
| 2 | 13 |
| 3 | 19 |

Study the relationship between each input and output.

| Input | | Output |
|---|---|---|
| 0 | 6(0) + 1 → | 1 |
| 1 | 6(1) + 1 → | 7 |
| 2 | 6(2) + 1 → | 13 |
| 3 | 6(3) + 1 → | 19 |

The output is 1 more than 6 times the input. So, the function rule is $6x + 1$.

**Define a variable and write a function rule. Then solve each problem.**

**19.** **ANIMALS** Moose can swim up to 6 miles per hour. At this rate, find the total number of miles a moose can swim in two hours.

Let $h$ represent the number of hours; $6h$;
$6h = 6 \times 2 = 12$

**21.** **MUSIC** An Internet company charges \$10 a year to be a member of their music program. They also charge \$1 for each song you download. How much will it cost if you download 46 songs in a year?

Let $s$ represents the number of songs; $1s + 10$;

$$1s + 10 = 1 \times 46 + 10$$
$$= 46 + 10$$
$$= \$56$$

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**23.** **TICKETS** The science club is going on a field trip to the zoo. Student tickets are \$6.00 each and adult tickets are \$9.00 each. Write a function rule to represent the total cost of $s$ student tickets and $a$ adult tickets. Then use the function rule to find the cost for 8 students and 3 adults.


The total for adult and student tickets is $6s + 9a$.

$$6s + 9a = 6 \times 8 + 9 \times 3$$
$$= 48 + 27$$
$$= \$75$$

The total price is \$75.

**25.** **FIND THE ERROR** Nadia and Caitlyn are finding the function rule when each output is 3 less than the input. Who is correct? Explain.

| Nadia |
|---|
| Function rule: $x - 3$ |

| Caitlyn |
|---|
| Function rule: $3 - x$ |

Nadia; 3 less than a number is represented by the expression $x - 3$.

**27.** **SELECT A TOOL** Courtney is evaluating the function rule $43x - 6$ for an input of 4. Which of the following tools might Courtney use to determine the output? Justify your selection(s). Then use the tool(s) to solve the problem.

| real objects | calculator | paper/pencil |
|---|---|---|

Paper/pencil; she can use paper and pencil to find the value of $43 \cdot 4$ and then subtract 6 from the product. The output is 166.

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**29.** Which expression best represents the $y$ values in terms of the $x$ values?

| $x$ | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $y$ | 5 | 7 | 9 | 11 | 13 | 15 |

**A** $2x + 3$
**B** $x + 3$
**C** $3x - 2$
**D** $6 - x$

Study the relationship between the $x$ values and the $y$ values.

| $x$ | | $y$ |
|---|---|---|
| 1 | $2(1) + 3 \rightarrow$ | 5 |
| 2 | $2(2) + 3 \rightarrow$ | 7 |
| 3 | $2(3) + 3 \rightarrow$ | 9 |
| 4 | $2(4) + 3 \rightarrow$ | 11 |
| 5 | $2(5) + 3 \rightarrow$ | 13 |
| 6 | $2(6) + 3 \rightarrow$ | 15 |

The output is 3 more than 2 times the input. So, the function rule is $2x + 3$.
The correct answer is A.

**Evaluate each expression if $a = 3$, $b = 6$, and $c = 10$.**

**31.** $b - a$

$$b - a = 6 - 3$$
$$= 3$$

**33.** $bc + 12$

$$bc + 12 = 6 \times 10 + 12$$
$$= 60 + 12$$
$$= 72$$

**35.** **AREA CODES** California has $5^2$ area codes. What is the value of $5^2$?

$5^2 = 5 \times 5 = 25$