

5.OA.B.3 Linear Functions

5.OA.B.3 Generate two numerical patterns using two given rules

1. Find a rule. Complete the equation

| | | | | | | |
|-----------|---|---|---|---|----|----|
| Input, x | 2 | 3 | 4 | 5 | | 10 |
| Output, y | 4 | 5 | | | 10 | 12 |

$$y = x + \underline{\hspace{1cm}}$$

| | | | | | | |
|-----------|----|----|---|---|----|----|
| Input, x | 3 | 5 | 8 | 9 | | 12 |
| Output, y | 10 | 12 | | | 17 | 19 |

$$y = x + \underline{\hspace{1cm}}$$

| | | | | | | |
|-----------|----|----|---|---|---|---|
| Input, x | -2 | -1 | 0 | 1 | | 6 |
| Output, y | -1 | 0 | | | 6 | 7 |

$$y = x + \underline{\hspace{1cm}}$$

2. Follow the rule: $y = 3x + 2$ to complete the following table.

| | | | | | | | | |
|-----------|----|---|---|---|----|---|----|----|
| Input, x | -1 | 0 | 1 | 2 | | 5 | | |
| Output, y | | | | | 11 | | 20 | 32 |

3. Follow the rule: $y = 2x - 5$ to complete the following table.

| | | | | | | | | |
|-----------|---|---|---|---|---|---|----|----|
| Input, x | 8 | 7 | 5 | 4 | | 2 | | |
| Output, y | | | | | 1 | | -3 | -5 |

4. Solve for y using each value of x given below, where $y = 2x - 6$:

a. $x = 2$ _____ b. $x = 4$ _____ c. $x = 6$ _____ d. $x = 0$ _____

5. Solve for y using each value of x given below, where $y = 5x - 10$:

a. $x = 4$ _____ b. $x = 8$ _____ c. $x = 10$ _____ d. $x = 11$ _____

6. Explain the rule that the equation $y = 3x - 7$ represents.

Solution:

7. Write an equation which represents the rule:
Multiply by 4 and subtract 3.

Solution:

8. Write an equation which represents the rule:
Divide by 5 and add 14.

Solution:

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- Find a rule. Complete the equation

| | | | | | | |
|-----------|---|---|---|---|----|----|
| Input, x | 2 | 3 | 4 | 5 | 8 | 10 |
| Output, y | 4 | 5 | 6 | 7 | 10 | 12 |

$$y = x + \underline{2}$$

| | | | | | | |
|-----------|----|----|----|----|----|----|
| Input, x | 3 | 5 | 8 | 9 | 10 | 12 |
| Output, y | 10 | 12 | 15 | 16 | 17 | 19 |

$$y = x + \underline{7}$$

| | | | | | | |
|-----------|----|----|---|---|---|---|
| Input, x | -2 | -1 | 0 | 1 | 5 | 6 |
| Output, y | -1 | 0 | 1 | 2 | 6 | 7 |

$$y = x + \underline{1}$$

- Follow the rule: $y = 3x + 2$ to complete the following table.

| | | | | | | | | |
|-----------|----|---|---|---|----|----|----|----|
| Input, x | -1 | 0 | 1 | 2 | 3 | 5 | 6 | 10 |
| Output, y | -1 | 2 | 5 | 8 | 11 | 17 | 20 | 32 |

- Follow the rule: $y = 2x - 5$ to complete the following table.

| | | | | | | | | |
|-----------|----|---|---|---|---|----|----|----|
| Input, x | 8 | 7 | 5 | 4 | 3 | 2 | 1 | 0 |
| Output, y | 11 | 9 | 5 | 3 | 1 | -1 | -3 | -5 |

- Solve for y using each value of x given below, where $y = 2x - 6$:

a. $x = 2$ $y = \underline{-2}$ b. $x = 4$ $y = \underline{2}$ c. $x = 6$ $y = \underline{6}$ d. $x = 0$ $y = \underline{-6}$

- Solve for y using each value of x given below, where $y = 5x - 10$:

a. $x = 4$ $y = \underline{10}$ b. $x = 8$ $y = \underline{30}$ c. $x = 10$ $y = \underline{40}$ d. $x = 11$ $y = \underline{45}$

- Explain the rule that the equation $y = 3x - 7$ represents.

Solution: **Multiply by 3 and subtract 7.**

- Write an equation which represents the rule:
Multiply by 4 and subtract 3.

Solution: $y = 4x - 3$

- Write an equation which represents the rule:
Divide by 5 and add 14.

Solution: $y = \frac{x}{5} + 14$