

## Lesson 11: Area and the Multiplication Table

• Let's explore area and the multiplication table.

## Warm-up: How Many Do You See: Arrays that Grow

How many do you see? How do you see them?









## 11.1: Area and the Multiplication Table

What do you notice? What do you wonder?

| × | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 |   |   |   |   |   |
| 2 |   |   |   |   |   |
| 3 | 3 |   |   |   |   |
| 4 |   |   |   |   |   |
| 5 |   |   |   |   |   |

| _ |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
|   | X | 1 | 2 | 3 | 4 | 5 |
|   | 1 |   |   |   |   |   |
|   | 2 |   |   |   |   |   |
|   | 3 |   | 6 |   |   |   |
|   | 4 |   |   |   |   |   |
|   | 5 |   |   |   |   |   |

| × | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 |   |   |   |   |   |
| 2 |   |   |   |   |   |
| 3 |   |   | 9 |   |   |
| 4 |   |   |   |   |   |
| 5 |   |   |   |   |   |

| X | 1 | 2 | 3 | 4  | 5 |
|---|---|---|---|----|---|
| 1 |   |   |   |    |   |
| 2 |   |   |   |    |   |
| 3 |   |   |   | 12 |   |
| 4 |   |   |   |    |   |
| 5 |   |   |   |    |   |

1. Use the blank table to create your own rectangle.

Start from the top left corner. Record the product that the rectangle represents. Be prepared to explain your reasoning.

| × | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 |   |   |   |   |   |
| 2 |   |   |   |   |   |
| 3 |   |   |   |   |   |
| 4 |   |   |   |   |   |
| 5 |   |   |   |   |   |

2. Use the following table to create a rectangle with an area of 24 square units. Start from the top left corner. Record the product that the rectangle represents. Be prepared to explain your reasoning.

| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 |   |   |   |   |   |   |   |   |   |
| 2 |   |   |   |   |   |   |   |   |   |
| 3 |   |   |   |   |   |   |   |   |   |
| 4 |   |   |   |   |   |   |   |   |   |
| 5 |   |   |   |   |   |   |   |   |   |
| 6 |   |   |   |   |   |   |   |   |   |
| 7 |   |   |   |   |   |   |   |   |   |
| 8 |   |   |   |   |   |   |   |   |   |
| 9 |   |   |   |   |   |   |   |   |   |



## 11.2: Products in the Multiplication Table

What do you notice? What do you wonder?

| ×  | 1 | 2  | 3 | 4 | 5  | 6 | 7 | 8 | 9 | 10 |
|----|---|----|---|---|----|---|---|---|---|----|
| 1  |   | 2  |   |   |    |   |   |   |   |    |
| 2  | 2 | 4  | 6 | 8 | 10 |   |   |   |   |    |
| 3  |   | 6  |   |   |    |   |   |   |   |    |
| 4  |   | 8  |   |   |    |   |   |   |   |    |
| 5  |   | 10 |   |   |    |   |   |   |   |    |
| 6  |   |    |   |   |    |   |   |   |   |    |
| 7  |   |    |   |   |    |   |   |   |   |    |
| 8  |   |    |   |   |    |   |   |   |   |    |
| 9  |   |    |   |   |    |   |   |   |   |    |
| 10 |   |    |   |   |    |   |   |   |   |    |

- 1. Find as many other products in the table as you can. You may want to start with rows and columns that show products of 2, 5, and 10.
- 2. What patterns do you see in the row and column that show products of 5?
- 3. Write some equations that show one of the patterns that you see in the multiplication table. Explain or show your reasoning.