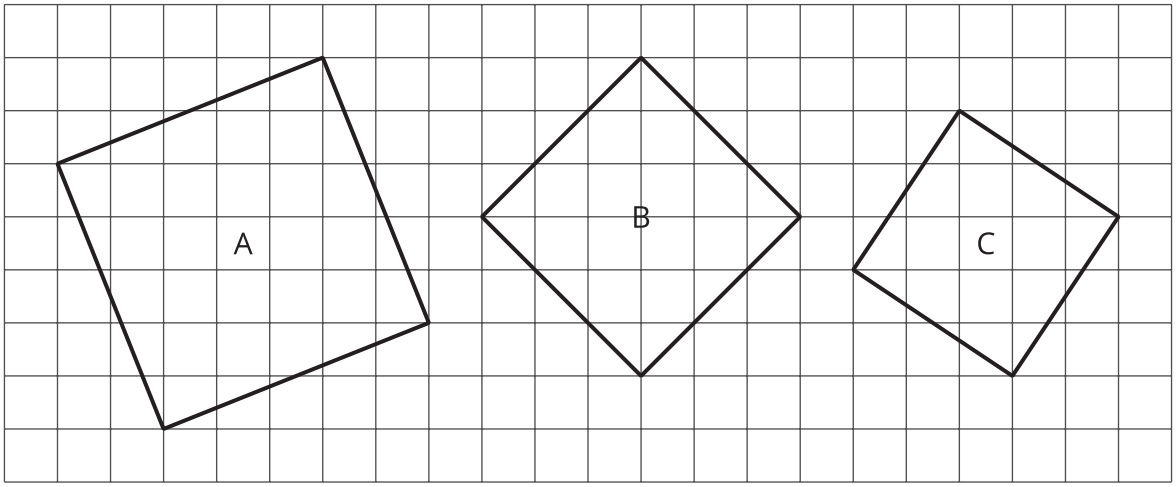
# Square Roots

Let's find some side lengths of squares.

## 3.1 The Sides and Areas of Tilted Squares

Find the area of each square and estimate the side lengths using your geometry toolkit. Then write the exact length for the sides of each square.



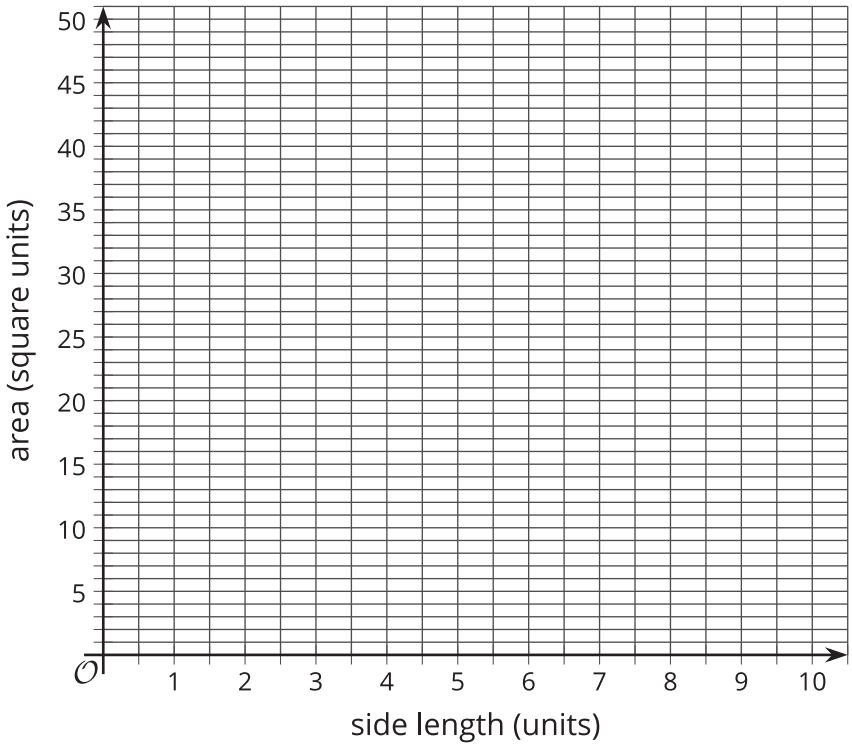
# 3.2 Side Lengths and Areas of Squares

1. Complete the tables with the missing side lengths and areas.

| **side length,** $s$ | 0.5 | | 1.5 | | 2.5 | | 3.5 | |
|---|---|---|---|---|---|---|---|---|
| **area,** $a$ | | 1 | | 4 | | 9 | | 16 |

| **side length,** $s$ | 4.5 | | 5.5 | | 6.5 | | 7.5 | |
|---|---|---|---|---|---|---|---|---|
| **area,** $a$ | | 25 | | 36 | | 49 | | 64 |

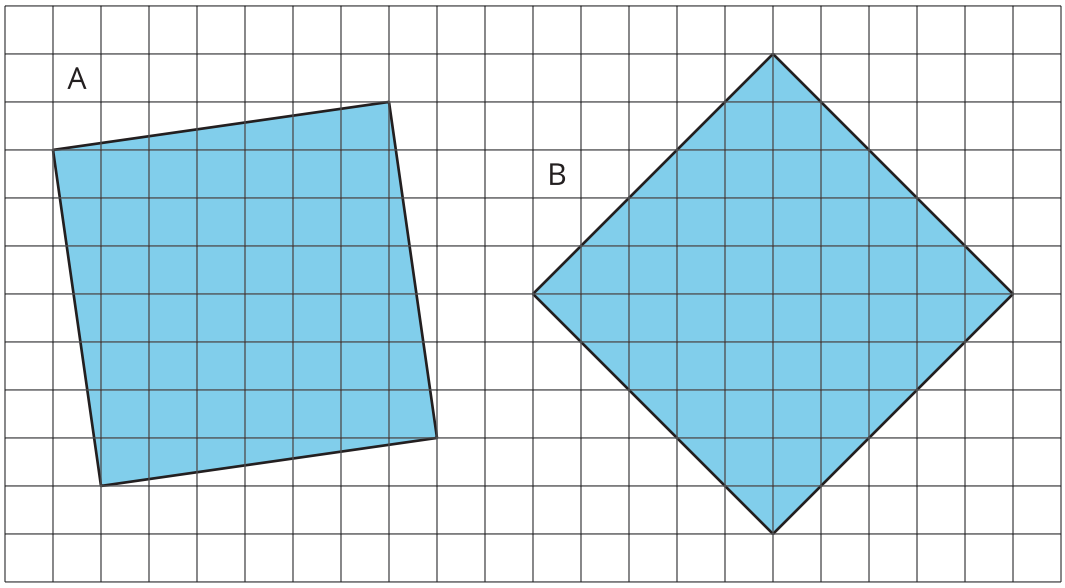
2. Plot the points, $(s, a)$, on the coordinate plane shown here.




3. Use the graph to estimate the side lengths of Squares A, B, and C from the previous activity. How do your estimates from the graph compare to the estimates you made earlier using your geometry toolkit?

4. Use the graph to approximate $\sqrt{45}$.

# 3.3 Comparing Areas of Squares




1. Find the area of each square and estimate their side lengths.

2. Write the exact length for the side of each square.

3. Which square has the larger area? Verify using your geometry toolkit.

## Lesson 3 Summary

We know that:

- $\sqrt{9} = 3$ because $3^2 = 9$.
- $\sqrt{16} = 4$ because $4^2 = 16$.

The value of $\sqrt{10}$ must be between 3 units and 4 units because it is between the values of $\sqrt{9}$ and $\sqrt{16}$.

