

# Amazing Area Game



## Strands:

Number & Quantity	
Algebra	
Functions	
Geometry & Measurement	X
Statistics & Probability	

## Materials Needed:

- 2 Dice
- Square plates, 3 different sizes, 20 of each size
- 50 square inch tiles
- Several objects for which surface measurements are important



## Where:

Outside	
Inside	X
On-line	
On-site	

Race against other teams to find objects closest to a given area measurement. You choose the object and the measuring tool!

### Set-Up:

- Place stacks of three sizes of square plates on the playing surface. Also set out a container of square inch tiles.
- Play this game with a partner.

**Object of the Game:** Use informal measurement to compare areas of different surfaces using a variety of measuring tools.

**Pre-Game Play:** Ask players to show you how to measure the surface of a few objects, such as a tabletop or the cover of a book, using square plates. If players are unfamiliar with finding area, complete the *Amazing Area* activity before playing the *Amazing Area Game*.

### Playing the Game:

1. One player rolls two dice. Each pair of students combine the dice to make a 2-digit target number. For example, if the roll is a 3 and a 5, you can make the numbers 35 or 53.
2. Choose the size square plates you want to use. The plates must all be the same size.
3. Find an object you think can be covered exactly or as close as possible using the target number of square plates from Step 1.
4. Measure the object using the square plates you chose.
5. Show other teams how you measured. Earn 0 points if your measurement is within 1 square unit (1 plate) of the target number. Earn 1 point for each extra square unit you need to cover the surface or for each square unit you did not use.
6. Repeat Steps 1 through 5 twice more. Use a different measuring tool than you did for each previous round.

**To Win:** The pair of players with the lowest score after three rounds wins.

### Think About It:

7. If you run out of square plates as you are measuring your chosen object, what can you do to continue to measure accurately?
8. Two teams used 27 plates to measure different surfaces. Team 1 used small plates. Team 2 used large plates. What do you know about the surfaces?
9. Two teams measured the same object. Team 1 used 35 plates. Team 2 used 140 plates. What do you know about the plates each team used?
10. Which tool allows more accuracy when measuring the surface of an object, a smaller one or a larger one? Why do you think so?
11. Use small plates then square inches to measure a large plate.
  - a. What do you notice?
  - b. If an object measures 13 large plates, how many small plates does it take to measure the object? How do you know?
  - c. If an object measures 13 large plates, how many square inches does it take to measure the object? Why does this make sense?
12. Suppose your measuring tools are hanging over the edge of your object you are measuring. What can you do?
13. What do you notice about each row of plates you are using to measure an object? What do you notice about each column of plates you are using to measure an object?

**Variations:**

**Measuring Small Objects:** Roll 2 dice and either add or multiply the numbers together. Use the sum or product as the target number. Play as above.

**Choose More Objects:** Instead of finding a single object that has the target measurement for your chosen tool, find 3 objects that you think might be close to the target measurement for the tool. Play as before, adding the scores earned from measuring each of the items.

**Use Two Tools:** Find two objects that measure the target number, one for small plates, and one for larger plates. Compare the objects and the measuring tools. Play as above.

**Scavenger Hunt:** Premeasure a variety of objects using each of the different plates. Tell players to find an object that is one of the premeasured sizes. Each object used should be measured using each size of plate.

**Helpful Hints:**

- Line up the measuring tool with the edge(s) of the object you are measuring. Line up the rest of the plates or tiles you are using so there are no gaps in between them and no overlaps.
- Carefully record both the number and the units of the measurement.
- More experienced players (Grade 4 and above):
  - Estimate how much surface area you are over, for the plates that are hanging over the edge of the object, or under, for the surface of the object that is still not covered. Refine your measurements.
  - Try to measure objects to within one half plate of the actual measurement.