

# COVER AND COUNT

NUMBER • LOGIC • GEOMETRY

- Counting
- Addition
- Congruence
- Game strategies

## Getting Ready

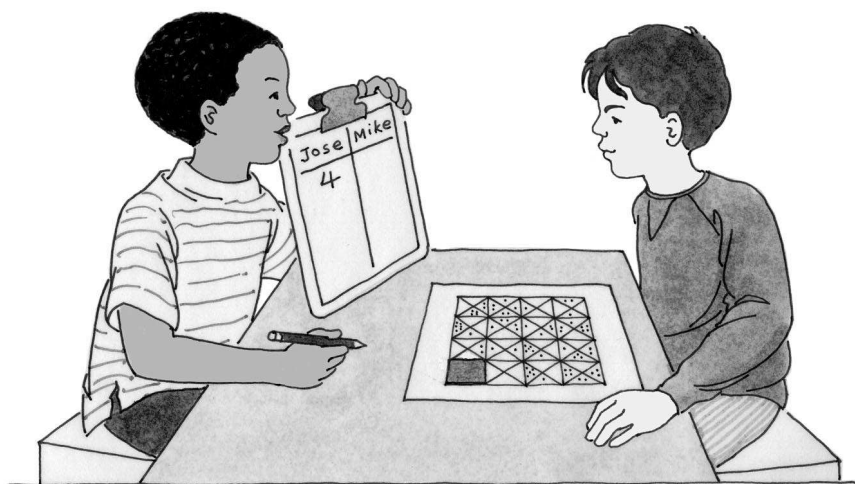
### What You'll Need

Tangrams, 2 sets of 2 different colors per pair  
 Snap™ Cubes (optional)  
*Cover-and-Count* game board, page 90  
 Blank *Cover-and-Count* game board, page 91  
 Die, 1 per pair  
 Overhead Tangram pieces and/or *Cover-and-Count* game board transparency (optional)

## Overview

In this game for two players, children fit Tangram pieces on a dotted grid in an effort to cover as many dots as possible. In this activity, children have the opportunity to:

- ◆ develop an understanding of how Tangram shapes are related
- ◆ count groups of dots, find their sums, and compare the sums

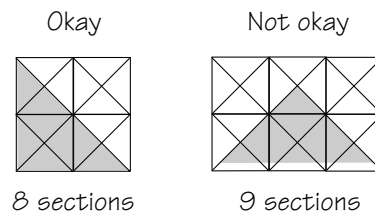


## The Activity

*You may want to encourage some children to match Snap Cubes or other small counters one-to-one to the covered dots in each section. Children can then keep their Snap Cubes in trains of five or ten, later finding the sum of their dots by counting by fives or tens and adding any additional dots to the total.*

## Introducing

- ◆ Display the *Cover-and-Count* game board. Explain that children will use it to play a game in which they use Tangram pieces to cover as many dots as they can.
- ◆ Invite a child to place a large Tangram triangle anywhere on the game board. Tell the child that the piece must fit over the game board sections exactly.
- ◆ Point out that, when the large triangle is fitted properly on the board, it covers eight grid sections, and not nine.
- ◆ Demonstrate how to lift one side of the piece to peek under it to see the dots in each covered section. Then count the dots and write the total number of covered dots on the chalkboard.
- ◆ Explain that in the upcoming game, the player who covers the greater number of dots will be the winner.

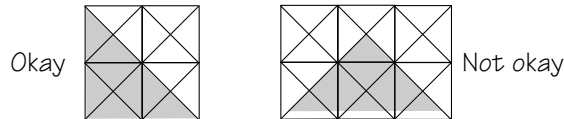
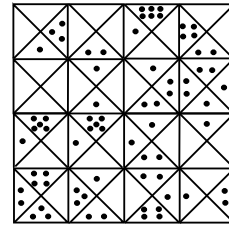


## On Their Own

### Play Cover and Count!

Here are the rules.

1. This is a game for 2 players. Each player needs a different colored Tangram set. The object is to use Tangram pieces to cover as many dots on a grid as possible.
2. Players take turns choosing a Tangram piece and fitting it on a game board that looks like this one. The Tangram piece must fit over the game board sections exactly.



3. Players try to put down pieces to cover as many dots as they can. They write down the number of dots they cover on a turn.
  4. The game ends when players run out of pieces or when there is no room for more pieces on the game board.
  5. Each player finds the total number of dots that he or she covered. The winner is the one who covered the most dots.
- Play 3 games of Cover and Count.
  - Be ready to talk about good moves and bad moves.

## The Bigger Picture

### Thinking and Sharing

Invite children to talk about their games and describe some of the thinking they did.

Use prompts such as these to promote class discussion:

- ◆ What can you do to cover a lot of dots in a game?
- ◆ At the beginning of a game, which Tangram pieces are the easiest to put down?  
Does this change as the game goes on? How?
- ◆ What can you do to keep your partner from covering a lot of dots?
- ◆ How did you keep track of your dots? Was this a good way? Why?
- ◆ Did you ever work with your partner and as a team try to cover up all the dots?  
Were you able to cover them all?

### Extending the Activity

1. Have children play the game again, except this time, make the winner the child who covers the least number of dots.
2. Distribute blank *Cover-and-Count* game boards. Have each child fill in a number of dots (from 1 to 6) in many of the grid sections. Encourage pairs to play the game again on each of these new game boards.

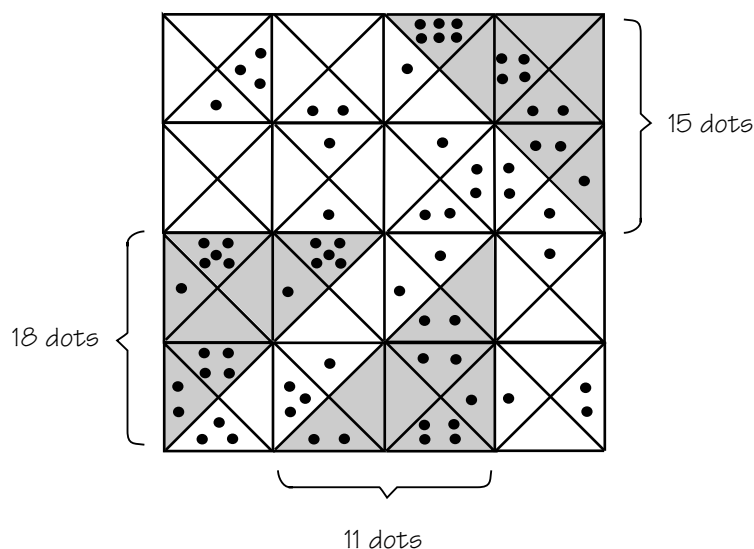
## Teacher Talk

### Where's the Mathematics?

*Cover and Count* calls for the use of numerical, logical, and spatial strategies. In attempting to cover the most dots, children visualize where pieces could fit. Then they use this knowledge to plan future moves and deny their partner high-scoring moves.

In discussing their strategies, children may reveal that they use the largest Tangram pieces at the beginning of the game at which time there is more space available to place them. Toward the end of a game, fitting the remaining pieces into the available space by analyzing size and shape becomes the challenge.

As they play the game, children may discover that larger pieces can usually cover more dots than can the smaller pieces. Using the large triangle, children can cover up to 18 dots in one move.



After children have played several games, they can disclose the strategies they developed for winning and for blocking their partners. Children may volunteer these strategies: placing large pieces early in the game, saving the small triangles until later in the game, and blocking by placing some pieces to limit spaces so that certain dots cannot be covered by either player.

3. To play a challenging variation of the game, have players take turns rolling a die and then choosing a Tangram piece that will cover the same number of dots as the number rolled. For example, the child who rolls a 5 should look for a Tangram piece that will cover a dot combination equal to five. Children may work alone, cooperatively, or against an opponent. If a piece cannot be placed to match a roll of the die, the player rolls again.

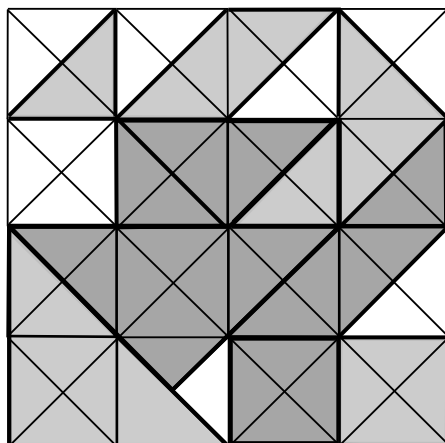
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To determine the winner, children may use different ways of finding their total numbers of dots. Some may add the numbers written in columns; others may make a tally mark for each dot. Still others may decide to use Snap™ Cubes or some type of counter (Color Tiles, Tangrams, or beads) to represent the covered dots.

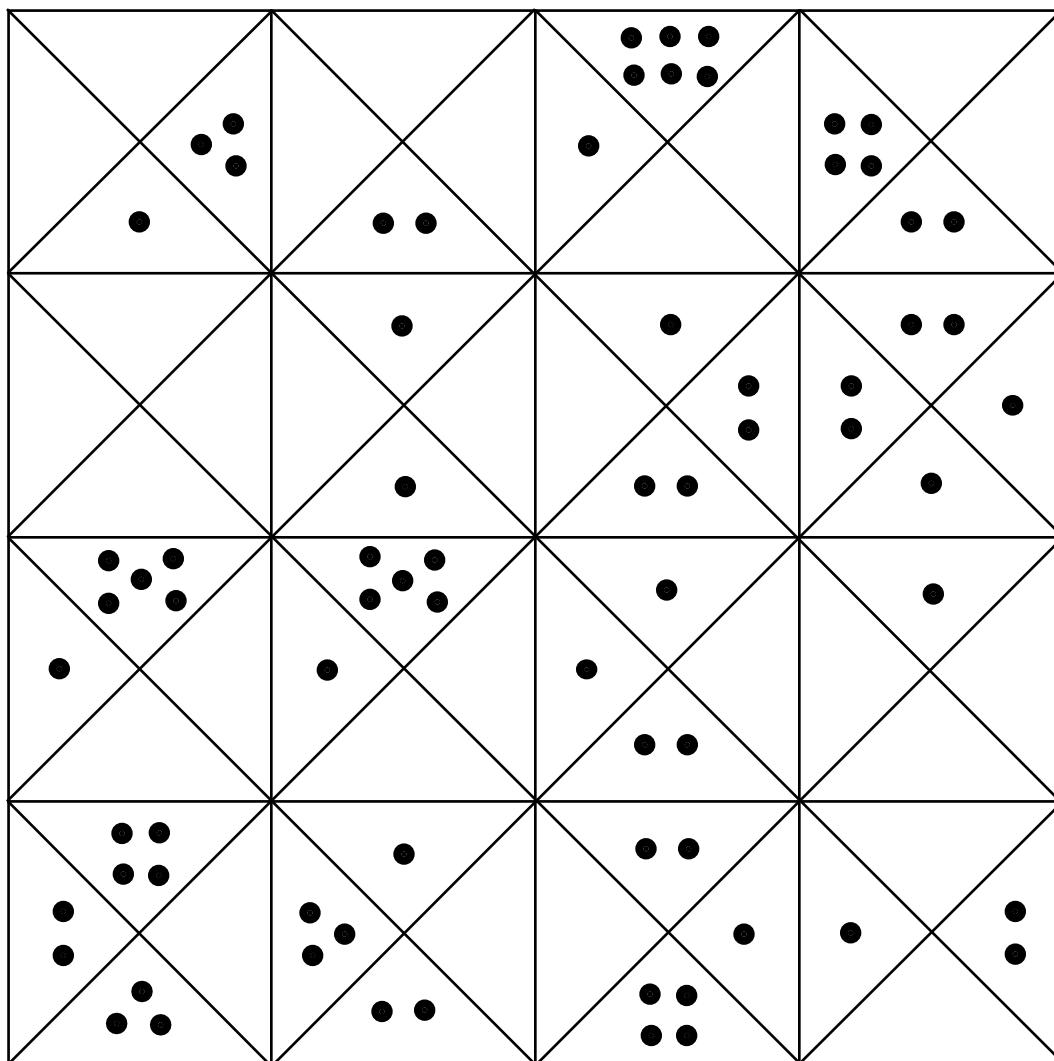
Partners may have different playing styles. Some children will play *Cover and Count* as a game of chance, whereas others will consider their moves more carefully, mentally exploring the consequences of the various placement of pieces.

As children explore different game strategies, they may become convinced that their strategy is best or that it will always work. You may want to have them test their ideas by assigning certain children to use a certain strategy. Discuss whether one strategy always wins. Ask what happens when two opponents use the same strategy.

Children may try to play the game cooperatively in an effort to cover all the dots. This can be done in several different ways. One such way is shown here:



# COVER-AND-COUNT GAME BOARD



**BLANK COVER-AND-COUNT GAME BOARD**

