

# Take Five

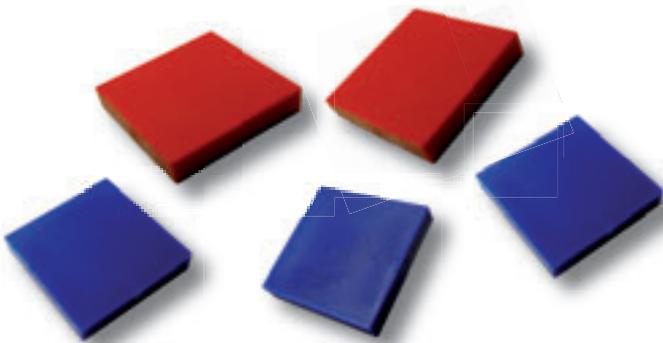
**You need** ★ up to 20 mixed-colour counters, multilink cubes, or similar ★ a paper bag ★ classmates

Malia has asked a classmate to put 10 coloured tiles in a paper bag. She and her friend Natalie are trying to work out how many tiles of each colour are in the bag without actually seeing them all at the same time.

*I'm taking out 5 tiles. Malia will write down the colours and then put the tiles back in the bag. We'll do this 4 times.*



Here are Natalie's 4 selections:



First set of 5 tiles taken out



Second set of 5 tiles taken out



Third set of 5 tiles taken out



Fourth set of 5 tiles taken out

## Activity One

1. After the first selection, Malia thinks:

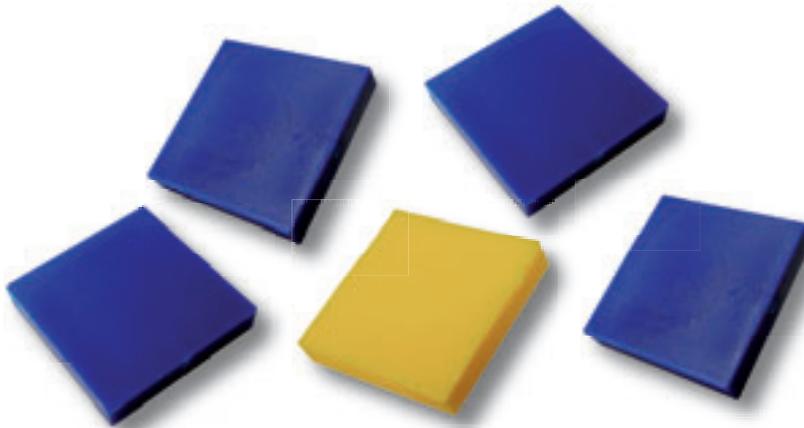
*Maybe the bag only contains blue and red tiles.*

Write down what she and Natalie might think after the second, third, and fourth selections.

2. Why are the selections so different?

3. a. Use Natalie's 4 selections to predict how many tiles of each colour there are in the bag.  
b. How did you arrive at your answer?  
c. Could there be a white tile in the bag?

4. Natalie takes out this fifth selection:



Fifth set of 5 tiles taken out

What difference does this selection make to your prediction?

5. For a bag of 10 tiles, how many selections of 5 do you need to be certain of their colours?

## Activity Two

1. Make up a mystery bag with 10 tiles in it. Ask a classmate to take out 5 tiles and predict what is in the bag. Replace the tiles and repeat up to 6 times.

How close did they get? Swap roles and repeat.

2. Ask a classmate to make up a mystery bag with 20 tiles in it.

- a. By taking 5 selections of 5 tiles, predict what tiles are in the bag.  
b. Ask several classmates to make 5 selections of 5 from this bag and then to make a prediction.  
c. Use the combined results of all the selections to make a final prediction, then check the contents of the bag. How close did you get?  
d. Why is combining results often a good idea?

