



building a train

ARITHMETIC TASK

Suppose you are building a train using 3 different colored snap cubes. In how many ways can you arrange the 3 cars?

Draw a picture of how you were able to arrange the cars.

EXTENSION TO ALGEBRAIC THINKING

In how many ways can you arrange 2 different-colored cars?

In how many ways can you arrange 4 different-colored cars?

Organize your data in a table. Do you see a pattern in the data?

Describe the pattern and use it to predict the number of ways to arrange 5 different-colored cars. Test your prediction.

Generalization: What can you say about the relationship between the number of arrangements for a given number of cars? How do you know this works?

Teacher Challenge: In how many ways can you arrange 'n' cars?



before...

Why is this task algebraic?
How might your students solve this problem?
What would be their challenges?

after...

What strategies did students use?
What generalizations did they make?
How did they justify their thinking?
How did they model the problem?