Practice   Video   Tools   Games

Another Look!

Silvia has 45 cans of paint to put on shelves. Each shelf can hold up to 15 cans of paint. Each row must have the same number of cans on the shelf. How many different ways might Silvia put the cans on the shelves?

Tell how you can generalize to find how many different ways Silvia can put the cans of paint on the shelves.

- I can look for things that repeat in a problem.
- I can look for shortcuts.
- I can generalize from an example.

Find the factors of 45.

$1 \times 45 = 45$ and $45 \times 1 = 45$
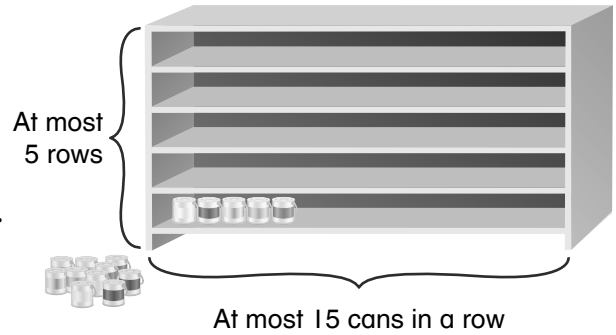$3 \times 15 = 45$ and $15 \times 3 = 45$
$5 \times 9 = 45$ and $9 \times 5 = 45$
2, **4**, **6**, **7**, and **8** are not factors.

The factors of **45** are **1**, **3**, **5**, **9**, **15**, and **45**.

Silvia can put the cans of paint on 5 shelves with 9 cans on each shelf or 3 shelves with 15 cans on each shelf.

At most 5 rows

At most 15 cans in a row

When you generalize, you look for steps that repeat.

Generalize

An auditorium has rows of seats with 8 seats in each row. Kayla knows there are at least 70 seats but fewer than 150 seats in the auditorium. How many rows of seats can there be in the auditorium? Use Exercises 1–3 to answer the question.

1. Explain how you would find the least possible number of rows in the auditorium.

2. How would you find all the possible numbers of rows, without having to check if 8 is a factor of every number between 70 and 150?

3. Name all the possible numbers of rows in the auditorium.

County Fair
At the county fair, animals are judged for the quality of their breeding and health. The animal pens are arranged in an array, with one animal in each pen. A barn can hold at most 10 rows of pens and at most 6 pens in each row, with room for people to walk around them. What different ways can the planners of the county fair arrange the pens for the horses and cows in the same barn?

18 horses

22 cows

57 chickens
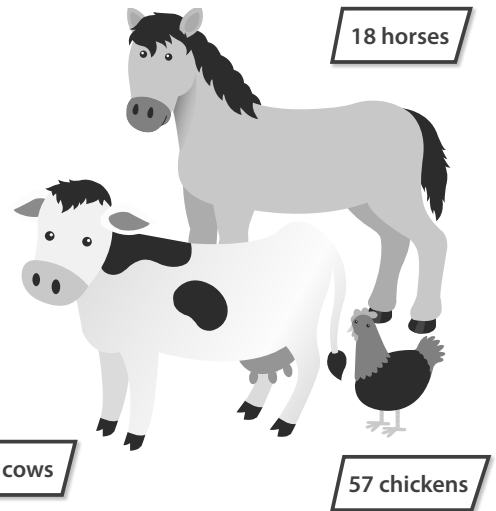
4. Reasoning How do the quantities given in the problem relate to each other? MP.2.1

5. Make Sense and Persevere What steps do you need to do first? Explain. MP.1.1

When you generalize, you find an efficient method for solving a problem, which can be used to solve similar problems.

6. Model with Math What are all the factor pairs for the sum of the horses and cows? Represent the factors with a diagram to show how you found all the factor pairs. 4.OA.2.4.a, MP.4.1

7. Be Precise What are all the different ways the planners can arrange the pens for the horses and cows in the barn? 4.OA.2.4.a, MP.6.1