

## Cluster 3.4: Number and Operations

### 3.4D: Groups & Arrays: Planting a Vegetable Garden

<p><b>Focusing TEKS</b></p> <p>3.4D Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations in order to solve problems with efficiency and accuracy. The student is expected to determine the total number of objects when equally-sized groups of objects are combined or arranged in arrays. <b>Supporting Standard</b></p> <p><b>Additional TEKS:</b></p> <p>3.4E Represent multiplication facts by using a variety of approaches such as repeated addition, equal sized groups, arrays, area models, equal jumps on a number line, and skip counting. <b>Supporting Standard</b></p> <p>3.4F Recall facts up to 10 by 10 with automaticity and recall the corresponding division facts. <b>Supporting Standard</b></p> <p>3.4K Solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts. <b>Readiness Standard</b></p>	<p><b>Focusing Mathematical Processes</b></p> <p>3.1A Apply mathematics to problems arising in everyday life, society, and the workplace.</p> <p>3.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.</p> <p>3.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.</p> <p>3.1E Create and use representations to organize, record, and communicate mathematical ideas.</p>
<p><b>▲ Performance Task</b></p> <p>Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. In each row, she wants 5 pepper plants and 3 bean plants. What is the total number vegetable plants Sherry will plant in her vegetable garden? Draw a picture to represent your answer. Justify your reasoning.</p> <p><b>Answer:</b> Sherry will plant a total of 56 vegetable plants in her vegetable garden. The picture should show a 7 by 8 array.</p>	

## Cluster 3.4: Number and Operations

### Mathematically Speaking...

In this task, students are being asked to determine how many total plants are being planted in a garden. Students can determine the number of plants in one row and then multiply by the number of rows. They can also find the total number of each type of plant and then find the sum.



Students may use strategies based on objects, pictorial models, such as arrays, equal groups, repeated addition, properties of operations, or recall of facts. Students may benefit from the use of grid paper because the context of this problem lend to the use of arrays.

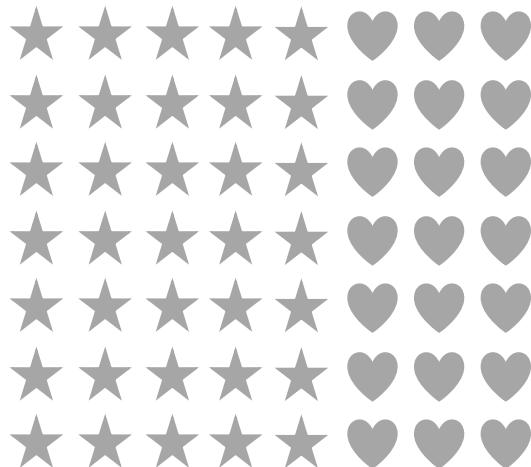
### Possible Solution

Draw a model to represent one row of vegetable plants.

The stars will represent the pepper plants and the hearts will represent the bean plants.



The model above shows there are 8 vegetable plants in each row. Since there are 7 rows, repeat the model 7 times.



Use the model to determine the total number of vegetable plants Sherry plants in her vegetable garden. To do this, skip count by 5 to determine the total number of pepper plants, and skip count by threes to determine the total number of bean plants.

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There are 35 pepper plants and 21 bean plants. Find the sum of 35 and 21.

$$35 + 21 =$$

$$30 + 20 + 5 + 1 =$$

$$50 + 6 =$$

$$56$$

Sherry plants 56 vegetable plants in her vegetable garden.

### Look For...

- understanding there are 8 total plants in each row
- understanding this problem represents a multiplication situation
- the use of repeated addition, equal-sized groups, arrays, skip counting
- the use of objects, pictorial models, properties of operations, and recall of facts
- student justification of choices of solution strategy and/or models

## Cluster 3.4: Number and Operations

### ● Differentiation: Simplified Task

Sherry is planting a vegetable garden. She wants to plant 7 total rows of vegetables. In each row, she wants 8 vegetable plants. What is the total number vegetable plants Sherry will plant in her vegetable garden? Draw a picture to represent your answer. Justify your reasoning.

**Answer:** Sherry will plant a total of 56 vegetable plants in her vegetable garden. The picture should show a 7 by 8 array.

### ■ Differentiation: Enriching Task

Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. In each row, she wants 5 pepper plants and 3 bean plants. What is the total number vegetable plants Sherry will plant in her vegetable garden? Draw a picture to represent your answer.

How many more pepper plants will she plant than bean plants? Justify your reasoning.

**Answer:** Sherry will plant a total of 56 vegetable plants in her vegetable garden. The picture should show a 7 by 8 array. She will plant 14 more pepper plants than bean plants.

## Cluster 3.4: Number and Operations



### Scaffolded Task with Answers

Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. In each row, she wants 5 pepper plants and 3 bean plants.

1. Draw a picture to model the plants in one row.

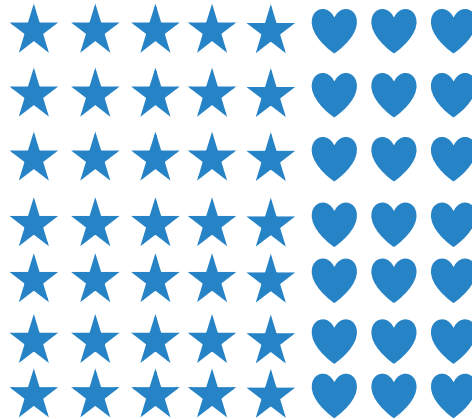
*The stars will represent the pepper plants and the hearts will represent the bean plants.*



*The model above shows there are 8 vegetable plants in each row.*

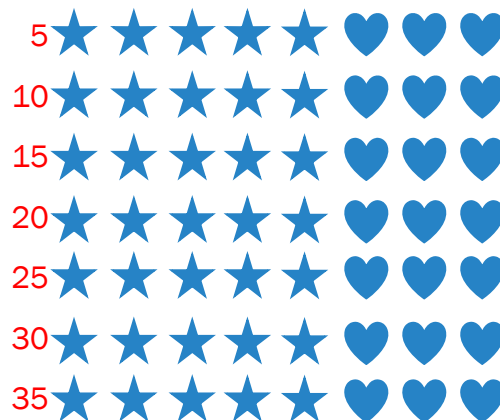
2. Draw a model to represent the number of plants in 7 rows.

*Since there are 7 rows, repeat the model 7 times.*



3. Use the model to determine how many pepper plants Sherry is planting.

*To do this, skip count by 5 to determine the total number of pepper plants.*



*Sherry is planting 35 pepper plants in her vegetable garden.*

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4. Use the model to determine how many bean plants Sherry is planting.

*To do this, skip count by 3 to determine the total number of bean plants.*



*Sherry is planting 21 bean plants in her vegetable garden.*

5. How many total vegetable plants does Sherry plant in her vegetable garden?

*There are 35 pepper plants and 21 bean plants. Find the sum of 35 and 21.*

$$35 + 21 =$$

$$30 + 20 + 5 + 1 =$$

$$50 + 6 =$$

$$56$$

*Sherry plants 56 vegetable plants in her vegetable garden.*

Performance Task: 3.4D  
*Groups and Arrays: Planting a Vegetable Garden*

Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. In each row, she wants 5 pepper plants and 3 bean plants. What is the total number vegetable plants Sherry will plant in her vegetable garden? Draw a picture to represent your answer. Justify your reasoning.

Procedural	0	1	2
Conceptual	0	1	2
Communication	0	1	2

Total points: \_\_\_\_\_



Performance Task: 3.4D  
*Groups and Arrays: Planting a Vegetable Garden*

Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. In each row, she wants 8 vegetable plants. What is the total number vegetable plants Sherry will plant in her vegetable garden? Draw a picture to represent your answer. Justify your reasoning.

Procedural	0	1	2
Conceptual	0	1	2
Communication	0	1	2

Total points: \_\_\_\_\_





Performance Task: 3.4D  
*Groups and Arrays: Planting a Vegetable Garden*

Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. In each row, she wants 5 pepper plants and 3 bean plants. What is the total number vegetable plants Sherry will plant in her vegetable garden? Draw a picture to represent your answer.

How many more pepper plants will she plant than bean plants? Justify your reasoning.

Procedural	0	1	2
Conceptual	0	1	2
Communication	0	1	2

Total points:\_\_\_\_\_



Performance Task: 3.4D  
*Groups and Arrays: Planting a Vegetable Garden*

Sherry is planting a vegetable garden. She wants to plant a total of 7 rows of vegetables. She wants to plant 7 total rows of vegetables. In each row, she wants 5 pepper plants and 3 bean plants.

1. Draw a picture to model the plants in one row.
2. Draw a model to represent the number of plants in 7 rows.
3. Use the model to determine how many pepper plants Sherry is planting.
4. Use the model to determine how many bean plants Sherry is planting.
5. How many total vegetable plants does Sherry plant in her vegetable garden?

