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## **Focused Mathematics Booster Pack—Level 3**

**This sample includes the following:**

- Management Guide Cover** (1 page)
- Table of Contents** (1 page)
- How to Use This Product** (4 pages)
- About the Books and Activities** (2 pages)
- Booster Card Workspace A-C** (3 pages)
- My Mathematician Checklist** (1 page)
- Mathematician Rubric** (1 page)
- Answer Key** (1 page)
- Booster Card** (3 pages)
- Reader** (17 pages)

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Level 3

 Focused  
Mathematics

# Booster Pack

**Management Guide**

Teacher Created Materials  
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## **How to Use This Product**

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## **About the Books and Activities**

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## Kit Components

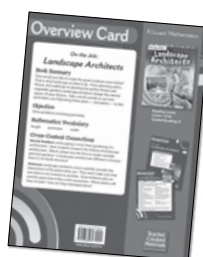
### High-Interest Books (six copies of six titles)

Books feature various, high-interest topics across content areas.



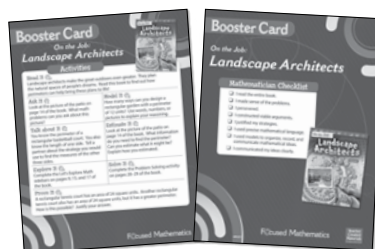
### Overview Cards

Overview cards include a book summary, mathematics objective, reading levels, mathematics vocabulary, and cross-content connections.



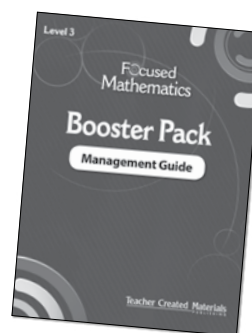
### Booster Cards

Activities engage students in real-world mathematics and require students to demonstrate mathematical practices and processes.



### Management Guide

The Management Guide includes a brief overview of the research, standards correlations, and instructional options and suggestions. Resources include a student activity sheets, reproducible manipulatives, and rubrics.



### Digital and Audio Resources

PDFs of the books, Booster Cards, Response pages, as well as professional audio recordings of the books are included. A complete list of available resources is listed on page 40.

# Pacing and Instructional Setting Options

The following pacing and instructional setting options show suggestions for how to use this product. The *Focused Mathematics Booster Pack* series is designed to be flexible and can be used in tandem with a core curriculum and a teacher’s preferred instructional framework, such as Guided Math.

## Pacing

Teachers should customize pacing according to student need. Each Booster Card includes 100 minutes of activities for a total of 600 minutes. Teachers may assign specific activities to meet instructional objectives or allow students to choose activities. Students may complete one activity or several activities to match the time available and their instructional needs.

| Activity      | Approximate Time |
|---------------|------------------|
| Read It       | 30 min.          |
| Ask It        | 5 min.           |
| Talk about It | 5 min.           |
| Model It      | 10 min.          |
| Estimate It   | 5 min.           |
| Explore It    | 20 min.          |
| Solve It      | 15 min.          |
| Prove It      | 10 min.          |

## Instructional Setting Options

### Whole-Class Instruction

Whole-class instruction is best suited for introducing each text to students or for teaching specific strategies or content-area concepts as they apply to instructional standards and objectives. In this setting, every student engages with the same text at the same time. PDFs of the books are available in the Digital and Audio Resources and are great for displaying to the whole class for a shared-literacy experience.

### Small-Group Instruction

Instructional frameworks, such as Guided Math, support teachers who want to work with a specific group of students on a targeted comprehension or content skill. During small-group instruction, the teacher works with a select group of students with similar instructional needs. Students may sit with the teacher, either at a table or on the carpet. This setting promotes a sense of teamwork and collaboration and encourages participation in mathematical discussions. Working with students in small groups is also a great opportunity for teachers to informally assess student progress and make anecdotal notes.

### Workstations or Centers

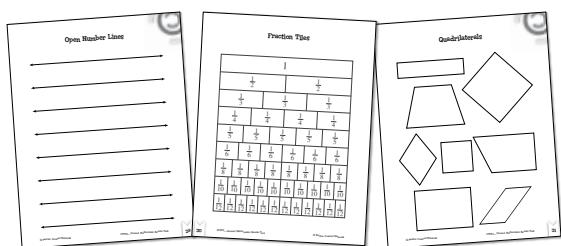
Students may engage independently or with partners at workstations or centers to build fluency, comprehension, and vocabulary, while applying math concepts and process skills. When working within this instructional setting, it is important that procedures and expectations are clear and students are able to complete the activities with little to no teacher guidance so that teachers can spend time with small groups.

# Strategies for Differentiating Booster Card Activities

## Below-Level Learners

You may choose to support below-level learners with some or all of these suggestions:

- **Manipulatives:** Provide below-level learners with concrete or representational manipulatives to help them explore the mathematics concepts. PDFs of reproducible open number lines, fraction tiles, and quadrilaterals (pages 29–31) are available in the Digital and Audio Resources.



- **Total physical response:** Challenge students to create hand motions to represent new math vocabulary.

## Above-Level Learners

You may choose to support above-level learners with some or all of these suggestions:

- **New Booster Cards:** Have students create Booster Cards for books in your classroom library.
- **Multimedia Presentation:** Challenge students to create multimedia presentations to demonstrate what they learned from the *Focused Mathematics: Booster Pack*.

## English Language Learners

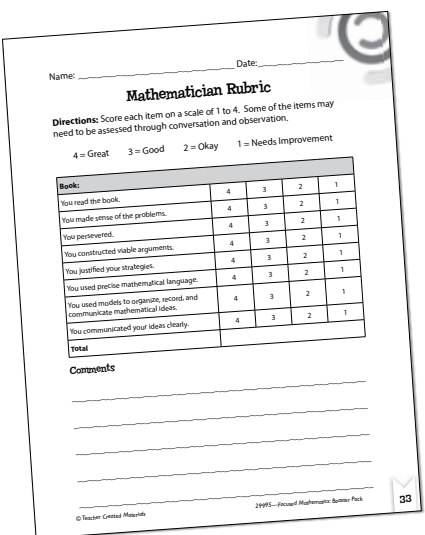
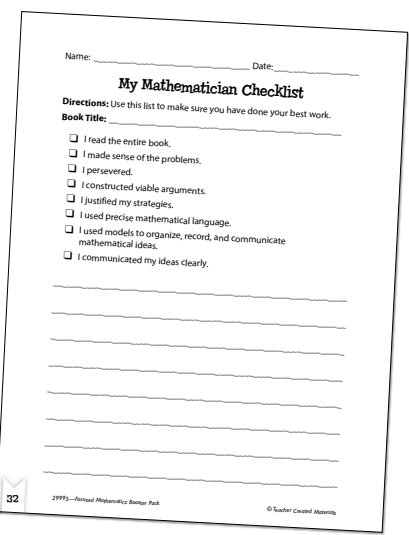
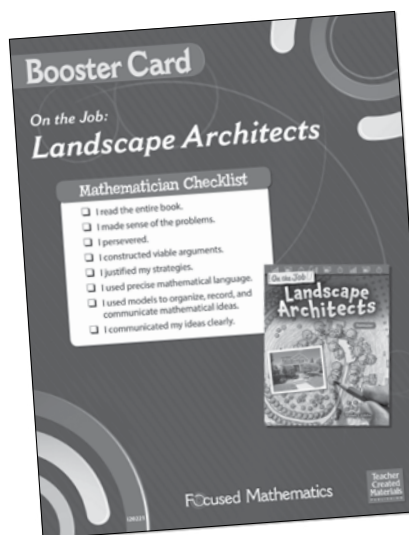
You may choose to support English language learners with some or all of these suggestions:

- **Professional Audio Recordings:** Model fluent reading by having English language learners listen to the professional audio recordings of the books that are available in the Digital and Audio Resources.
- **Sentence Frames:** Support language development and acquisition with sentence frames, such as the following:  
*The least number in the list is \_\_\_\_\_.*  
*The greatest number is \_\_\_\_\_. 34*  
*is \_\_\_\_\_ than 22. 22 is \_\_\_\_\_*  
*than 34.*

# Assessing Activities

Each *Focused Mathematics: Booster Pack* offers multiple assessment opportunities. Teachers can gain insight into student learning through small-group observations and analysis of student responses to the Booster Card activities. These formal and informal assessments provide teachers with additional data to help make informed decisions about what to teach and how to teach it. An answer key is provided (pages 34–38) to help evaluate student responses.

The Mathematician Checklist on the back of the Booster Card provides an opportunity for students to reflect on their work. Distribute copies of the *My Mathematician Checklist* activity sheet (page 32) to students to guide self-reflection. Use the *Mathematician Rubric* (page 33) to assess students' mathematical practices and processes. These rubrics may be used in conjunction with each other to guide conversation during teacher-student conferences.



▲ Use the Mathematician Checklist on each Booster Card as a quick reference while completing activities.

▲ Distribute copies of the *My Mathematician Checklist* (page 32) to students as a way to encourage self-reflection and mathematical practices and processes.

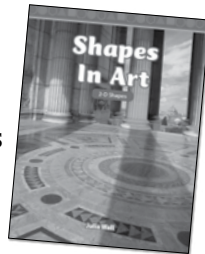
▲ Complete the *Mathematician Rubric* (page 33) to give students feedback.

# Book Summaries

Below are summaries of each book for teacher reference. Decide which books match the content that you would like to cover with students. Use the summaries as a way to begin group discussions with students about the books.

## **Shapes in Art**

The art world is filled with two-dimensional (2-D) shapes. Learn math concepts about shapes while finding shapes in different types of art. Explore work created by great artists and the masterful use of 2-D patterns and symmetry.



## **At Risk!**

Learn about endangered animals and what it means for living things to become extinct. Get to know animals, such as the Sumatran tiger, ivory-billed woodpecker, northern white rhinoceros, and leatherback turtle. As you learn, read, and interpret graphs. Use the graphs to find out important information about the animals.



## **Count Me In! What's for Lunch?**

You look at the classroom clock and hear your stomach growling. It's almost time for lunch! Whether you bring your lunch from home or get it at school, find out how this meal gives you energy to get through the rest of your busy day.



## **Art and Culture: Desserts Around the World**

Fractions are a part of every recipe in every kitchen. That means pastry chefs need to be fraction experts. Enter kitchens around the world to taste test different desserts. Step into a pastry chef's shoes and compare a fraction or two.



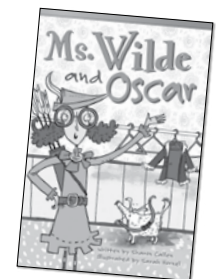
## **On the Job: Landscape Architects**

How would you like to make the great outdoors even better? That's what landscape architects do. From planning patios, fences, and walkways to planting the perfect flower and vegetable gardens, landscape architects design the natural spaces of your dreams. Take a stroll outside to see how perimeters can help bring these plans—and plants—to life!



## **Ms. Wilde and Oscar**

Ms. Wilde is the most interesting teacher in the whole wide world. She tells funny stories, sad stories, stories about faraway places, and stories about wonderful characters. And she acts them out, too! Read this book to find out how kids can work together to solve problems.





# Reading Levels

Teacher Created Materials takes great care to maintain the integrity of authentic, informational text while leveling it to make the text accessible for all students. In this way, our content-area books provide rich informational reading experiences from which students can learn and be ready for the complexity of college-and-career level reading.

To preserve the authenticity of these reading experiences, it is crucial to maintain important academic and content vocabulary.

To support leveled instruction, new and challenging terms are used repeatedly and defined in text to promote understanding and retention.

The measures in this chart are for reference only. Books in the *Focused Mathematics: Booster Pack* series were chosen to include a range of grade-appropriate reading levels to support grade-level mathematics standards.

**Note:** Reading levels vary between programs and do not correlate exactly.

| Title of the Book                                  | Lexile® Level | Guided Reading |
|--|---------------|----------------|
| <i>Shapes in Art</i>                               | 520L          | M              |
| <i>At Risk!</i>                                    | 670L          | P              |
| <i>*Art and Culture: Desserts Around the World</i> | 650L          | R              |
| <i>Count Me In! What's for Lunch?</i>              | 740L          | M              |
| <i>*On the Job: Landscape Architects</i>           | 670L          | R              |
| <i>Ms. Wilde and Oscar</i>                         | 590L          | O              |

*\*These titles have been officially leveled using the F&P Text Level Gradient™ Leveling System.*

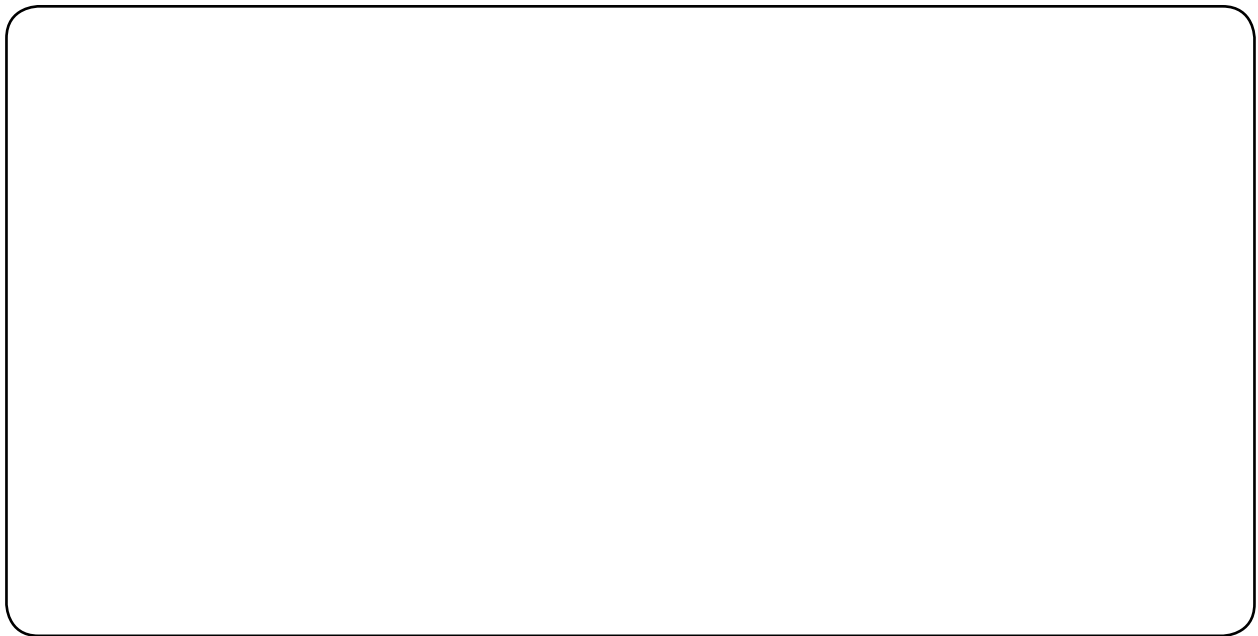
Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Booster Card Workspace A

**Directions:** Complete the Booster Card activities in the workspaces.  
Label your work with the activity titles.

**Book Title:** \_\_\_\_\_

Ask It • Talk about It • Model It • Estimate It • Explore It • Solve It • Prove It



Ask It • Talk about It • Model It • Estimate It • Explore It • Solve It • Prove It

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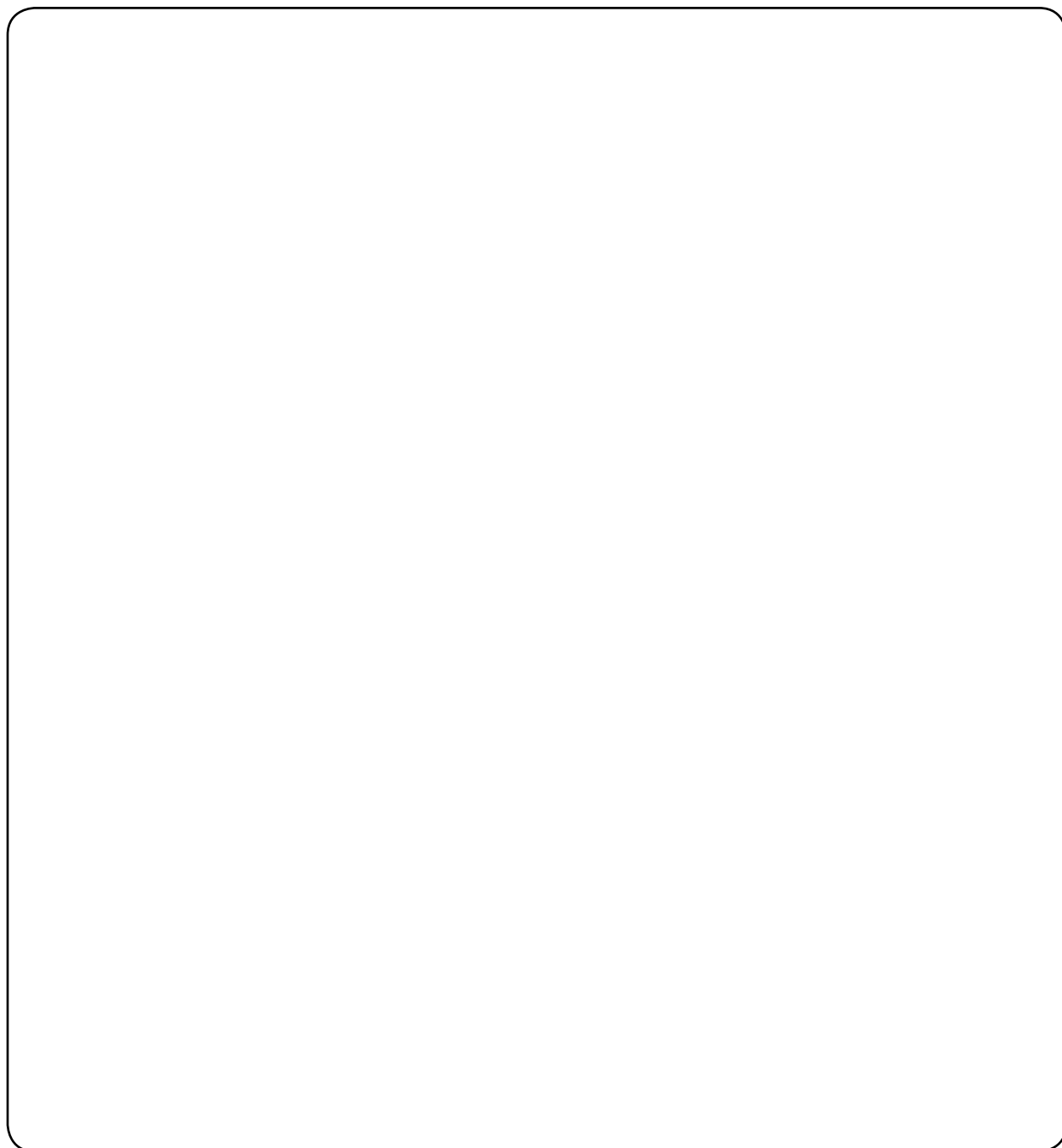
Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Booster Card Workspace C

**Directions:** Complete the Booster Card activities in the workspace.  
Label your work with the activity titles.

**Book Title:** \_\_\_\_\_

Ask It • Talk about It • Model It • Estimate It • Explore It • Solve It • Prove It



Name: \_\_\_\_\_ Date: \_\_\_\_\_

## My Mathematician Checklist

**Directions:** Use this list to make sure you have done your best work.

**Book Title:** \_\_\_\_\_

- I read the entire book.
- I made sense of the problems.
- I persevered.
- I constructed viable arguments.
- I justified my strategies.
- I used precise mathematical language.
- I used models to organize, record, and communicate mathematical ideas.
- I communicated my ideas clearly.

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Mathematician Rubric

**Directions:** Score each item on a scale of 1 to 4. Some of the items may need to be assessed through conversation and observation.

4 = Great      3 = Good      2 = Okay      1 = Needs Improvement

| <b>Book:</b>   |   |   |   |   |
|--|---|---|---|---|
| You read the book.   | 4 | 3 | 2 | 1 |
| You made sense of the problems.  | 4 | 3 | 2 | 1 |
| You persevered.  | 4 | 3 | 2 | 1 |
| You constructed viable arguments.  | 4 | 3 | 2 | 1 |
| You justified your strategies.   | 4 | 3 | 2 | 1 |
| You used precise mathematical language.                                  | 4 | 3 | 2 | 1 |
| You used models to organize, record, and communicate mathematical ideas. | 4 | 3 | 2 | 1 |
| You communicated your ideas clearly.                                     | 4 | 3 | 2 | 1 |
| <b>Total</b>   |   |   |   |   |

### Comments

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# Answer Key (cont.)

## Explore It

### page 5 sidebar:

- birds
- reptiles
- insects

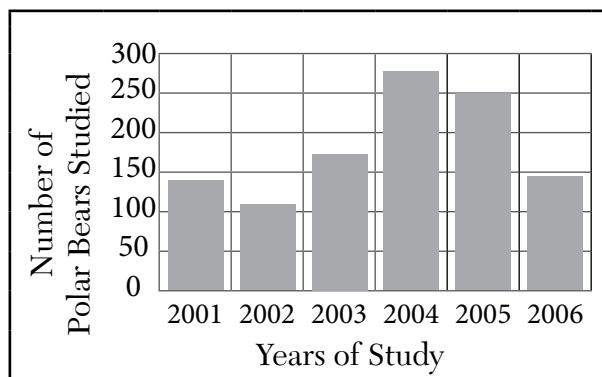
### page 17 sidebar:

- There were 15 more rhinos in 1998 than in 2006.
- The number of rhinos increased in 1991.

### page 23 sidebar:

- The longest sea turtle is the leatherback.
- The next longest sea turtle is the green turtle.
- The olive ridley and Kemp's ridley sea turtles are the smallest. They are 30 inches in length.

## Solve It



- The greatest number of bears was studied in 2004.
- The fewest number of bears was studied in 2002.
- Almost 250 bears were studied in 2005.
- Questions will vary.

## Prove It

Emi's thinking is correct. In 2003, the number of polar bears studied was 170. That number rose to 285 in 2004. This is a difference of 115 bears. In 2005, 249 polar bears were studied and in 2006, only 145 bears were studied. That is a difference of 104. Since 115 is greater than 104, there was a greater change in the number of polar bears studied between 2003 and 2004.

## Count Me In! What's for Lunch?

### Ask It

Responses will vary but may include "How many fourths of a sandwich do I need to make half of a sandwich?"

### Talk about It

Students might discuss chores for allowance or a piggy bank to help them saving money.

### Model It

Answers will vary. Example: yogurt, 170 calories; banana, 105 calories; granola, 130 calories; orange juice, 110 calories; peanut butter and jelly sandwich, 200 calories; chips, 150 calories; spaghetti and meatballs, 500 calories; ice cream, 200 calories; Total: 1,565 calories.

### Estimate It

10 tsp.;  $10 + 10 + 10 + 10 + 10 + (\text{half of } 10) = 55$  tsp.

### Explore It

250 items; 2,500 items; 25,000 items; I see a place value pattern. The factor of 25 stays the same each time and the other factor is 10 times more than the previous factor. So, the product is 10 times more.

### Solve It

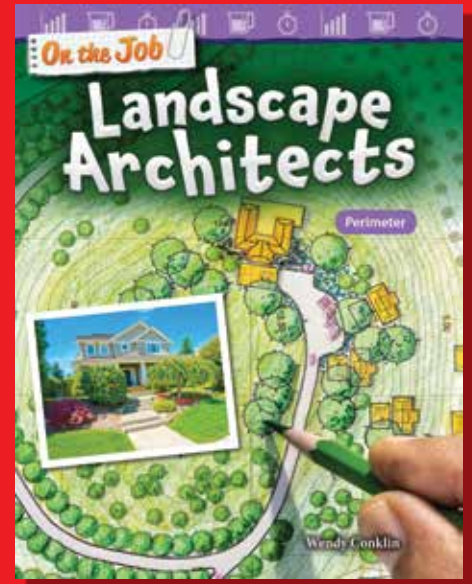
Her class gets 45 minutes for lunch and recess. Answers and opinions will vary. Example: There are 16 reasonable solutions that range from 15 to 30 minutes for lunch.

I prefer 20 minutes for lunch and 25 minutes for recess.

# Overview Card

*On the Job:*

## *Landscape Architects*



### Book Summary

How would you like to make the great outdoors even better? That is what landscape architects do. From planning patios, fences, and walkways to planting the perfect flower and vegetable gardens, landscape architects design the natural spaces of your dreams. Take a stroll outside to see how perimeters can help bring these plans — and plants — to life!

### Objective

Solve problems involving perimeter.

### Mathematics Vocabulary

length    perimeter    width

### Cross-Content Connections

**(Social Studies)** Landscaping is more than gardening; it's architecture. Have students research the history of landscape architecture. Which culture was the first to create carefully planned gardens? Is landscape architecture different in Europe than it is in North America?

**(Science)** Landscape architects must carefully consider the interactions of the plants they use. They must make sure that one plant is not invasive to another. Have students plan an outside space that is like a mini-ecosystem. Which plants will they include? How are they interdependent?

Reading Levels

Lexile®: 670L

Guided Reading: R



TCM 30023 (i20275)

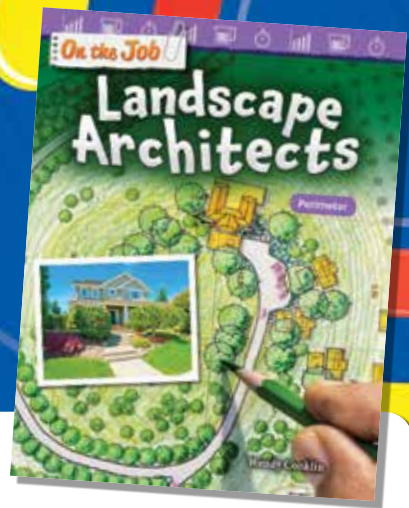
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# Booster Card

## On the Job: Landscape Architects

### Activities



#### Read It $\mathcal{P}_{30}$

Landscape architects make the great outdoors even greater. They plan the natural spaces of people's dreams. Read this book to find out how perimeters can help bring these plans to life!

#### Ask It $\mathcal{P}_5$

Look at the picture of the patio on page 14 of the book. What math problems can you ask about this picture?

#### Model It $\mathcal{P}_{10}$

How many ways can you design a rectangular garden with a perimeter of 12 units? Use words, numbers, or pictures to explain your reasoning.

#### Talk about It $\mathcal{P}_5$

You know the perimeter of a rectangular basketball court. You also know the length of one side. Tell a partner about the strategy you would use to find the measures of the other three sides.

#### Estimate It $\mathcal{P}_5$

Look at the picture of the patio on page 14 of the book. What information do you need to find the perimeter? Can you estimate what it might be? Explain how you estimated.

#### Explore It $\mathcal{P}_{20}$

Complete the Let's Explore Math sidebars on pages 9, 15, and 17 of the book.

#### Solve It $\mathcal{P}_{15}$

Complete the Problem Solving activity on pages 28–29 of the book.

#### Prove It $\mathcal{P}_{10}$

A rectangular tennis court has an area of 24 square units. Another rectangular tennis court also has an area of 24 square units, but it has a greater perimeter. How is this possible? Justify your answer.

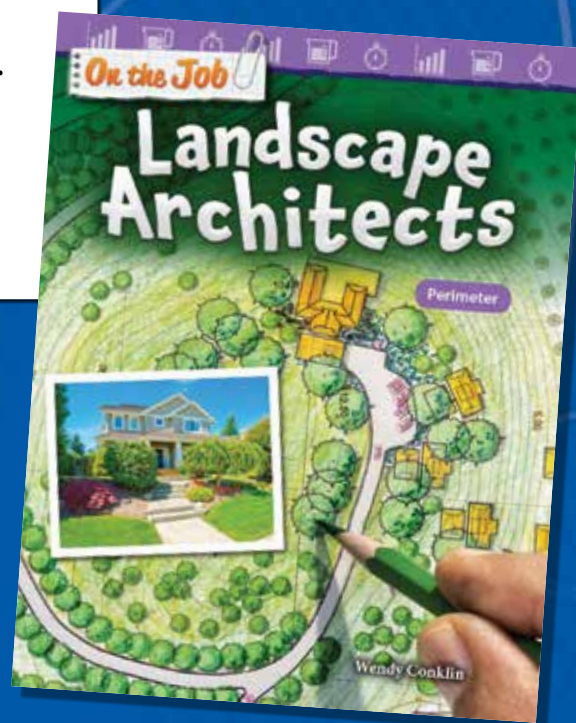
# Booster Card

*On the Job:*

## *Landscape Architects*

### Mathematician Checklist

- I read the entire book.
- I made sense of the problems.
- I persevered.
- I constructed viable arguments.
- I justified my strategies.
- I used precise mathematical language.
- I used models to organize, record, and communicate mathematical ideas.
- I communicated my ideas clearly.



On the Job

# Landscape Architects

Perimeter



Wendy Conklin

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# Landscape Architects

Today, more and more families want to create living spaces outside. But it is not a matter of just bringing indoor things outdoors. They still want plants, flowers, **shrubs**, and trees.

This can be a big job. People might not know how to create these spaces themselves. What types of plants would be best? Do certain flowers attract butterflies? Can there be a stone fire pit for roasting marshmallows? Is there enough space for a path of rocks? There can be a lot to think about!

So, people call **landscape architects** to help. Landscape architects are different than other architects. Architects design buildings. Landscape architects plan for natural areas. Need plans for a house? Call an architect. Want the backyard to be designed? That is a job for a landscape architect! They have been trained to design beautiful outdoor spaces.



A landscape architect plans an outdoor living space that combines nature with other items.

# Getting Started

Once landscape architects are hired, they need to ask their **clients** about their wants and needs. Some clients may be vegetable garden gurus. They want to grow their own meals. Others may be rose garden experts. They want the best red roses in town. Still others may be barbecue masters. They need a shady spot to grill. All of them may want to walk through their yards without getting dirty feet. Landscape architects ask a lot of questions. They listen carefully. It is their job to make these outdoor dreams come true.

To do so, landscape architects need two main types of supplies. They need **softscape** and **hardscape**. Natural things are softscape. These include the plants, flowers, shrubs, and trees that will be used. Things, such as paths, rocks, walls, and stone fire pits, which are added to nature, are hardscape. Landscape architects use these elements to create perfect outdoor spaces.



These herbs and vegetables are almost ready to harvest.

## LET'S EXPLORE MATH

**Perimeter** is the distance around a shape or figure. Imagine that a landscape architect draws a plan for a family's square vegetable garden. A rabbit fence will surround the garden. Why does the landscape architect need to know the perimeter?



All that this outdoor area is missing is food and a willing cook!

After landscape architects learn about what their clients want, they ask themselves questions. How much space is needed? What are the best materials to use? Can a client's dream fit in the space?

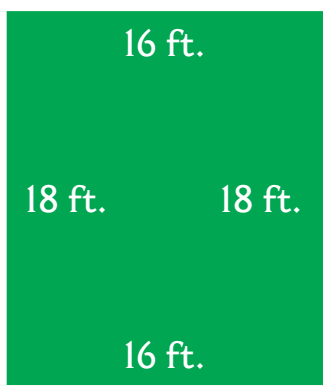
For help, they may call a **surveyor**. Surveyors measure land. Then, they conduct **surveys**. Most surveys are conducted when land is bought or sold. Surveys are the process of taking measurements of a property. To take a survey, a yard surveyor places tiny pins at the four corners of a yard. Then, he or she measures the distance between the pins. The distances are used to calculate the amount of land that is owned.

Other landscape architects conduct their own surveys. They may use websites to help them. These can give **aerial** photos of yards. Landscape architects can then print them. The photos can help them measure the yards.

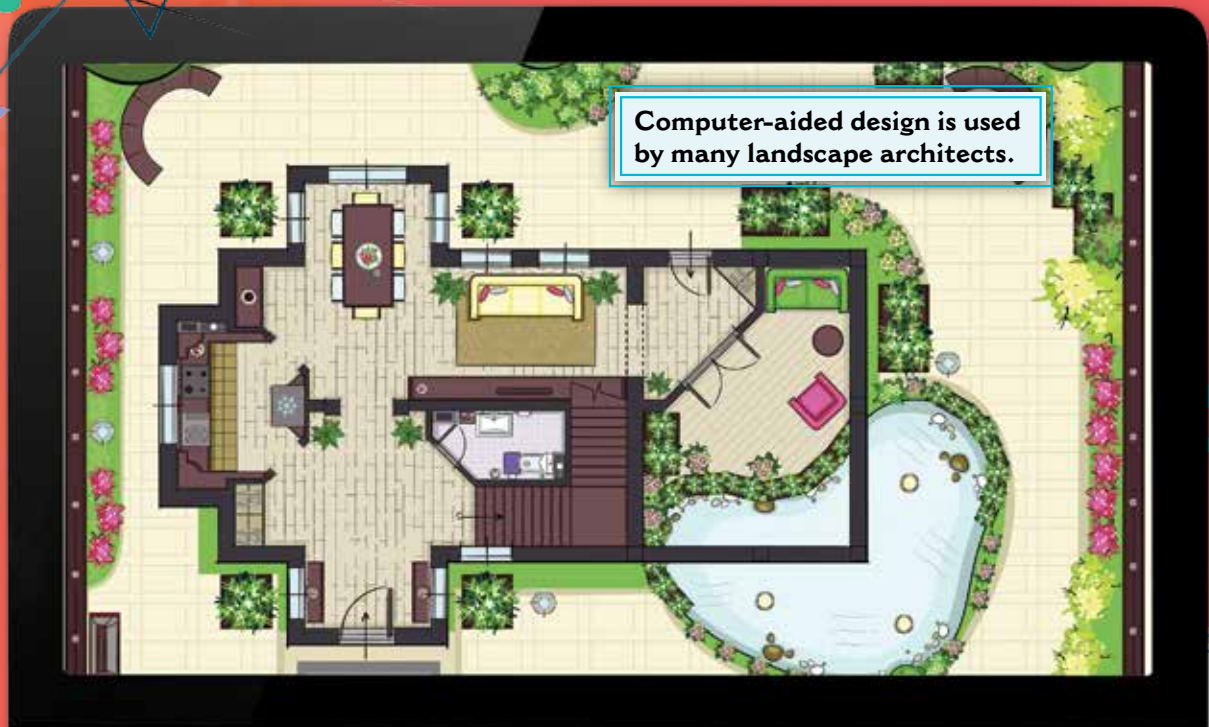
aerial view of a neighborhood

**LET'S EXPLORE MATH**

Imagine that a backyard is in the shape of a rectangle. The yard survey shows that two sides are 18 feet long. The other two sides are 16 feet long. A fence will surround the backyard. What is the perimeter of this backyard? Find two ways to prove your reasoning.



A surveyor takes measurements.



Computer-aided design is used by many landscape architects.

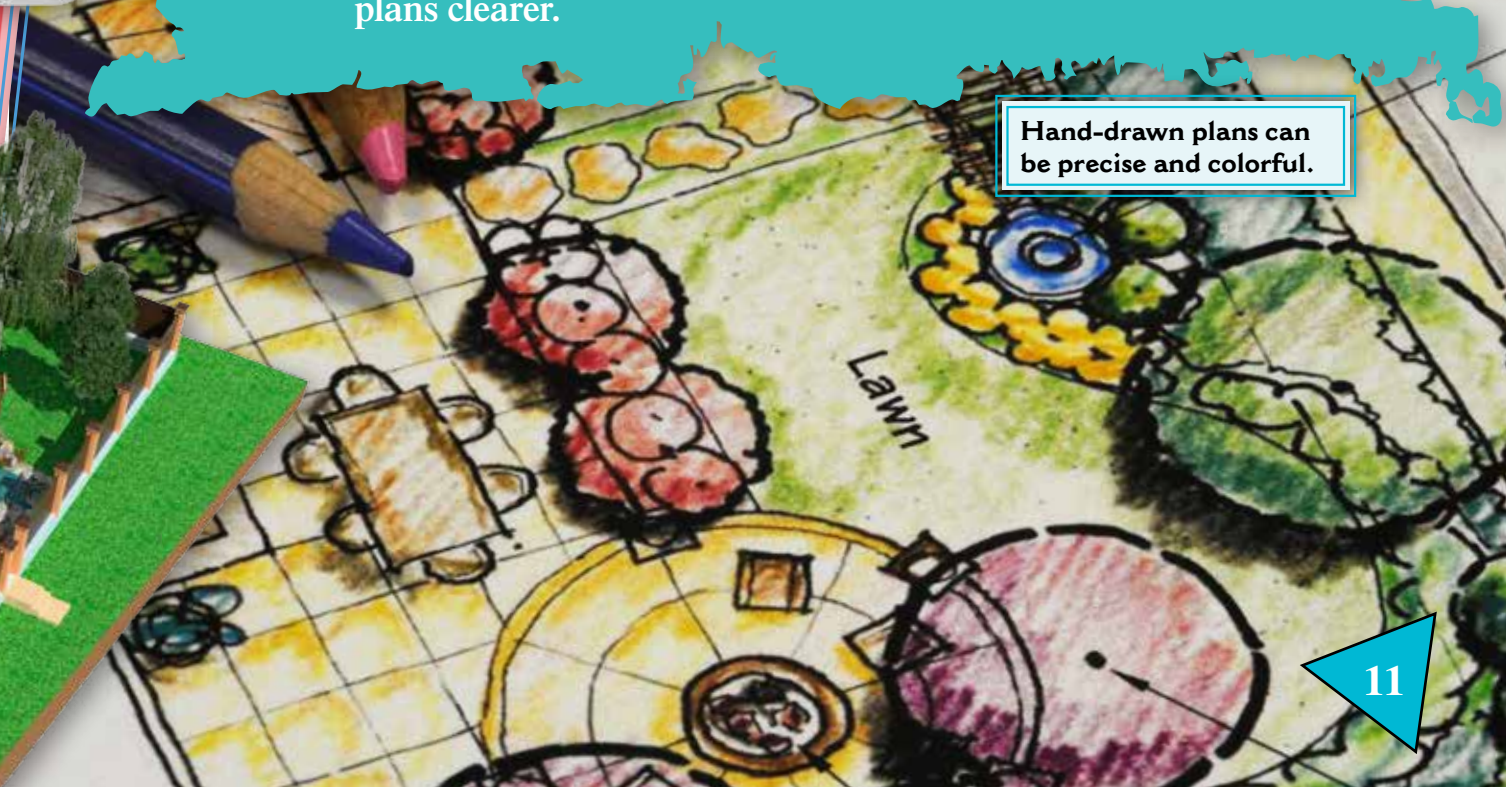
When landscape architects are ready, they can make plans a few different ways. Computer programs may be used to draw ideas. Some of these programs even have three-dimensional views. Or, plans may be drawn by hand. If this is the case, draft paper and pencils are used.

Plans may even be drawn in the backyard with spray paint! Landscape architects use special marking paint to outline spaces where things will go. This helps clients easily see how space will be used. They can imagine what the finished space will look like. This is a good way to help people know early on if they want to change their minds.

Whether done on computer or by hand, plans have to be accurate. This is the only way to know where things will go and whether they will all fit. Details are added to make plans even more precise. Color may be used to make the plans clearer.



three-dimensional plan generated by computer software



Hand-drawn plans can be precise and colorful.




# Working Hard with Hardscape

The plans are finally done. The clients love the ideas. Now, it is time for landscape architects to bring those ideas to life. Projects can all be very different, so they have their work cut out for them.

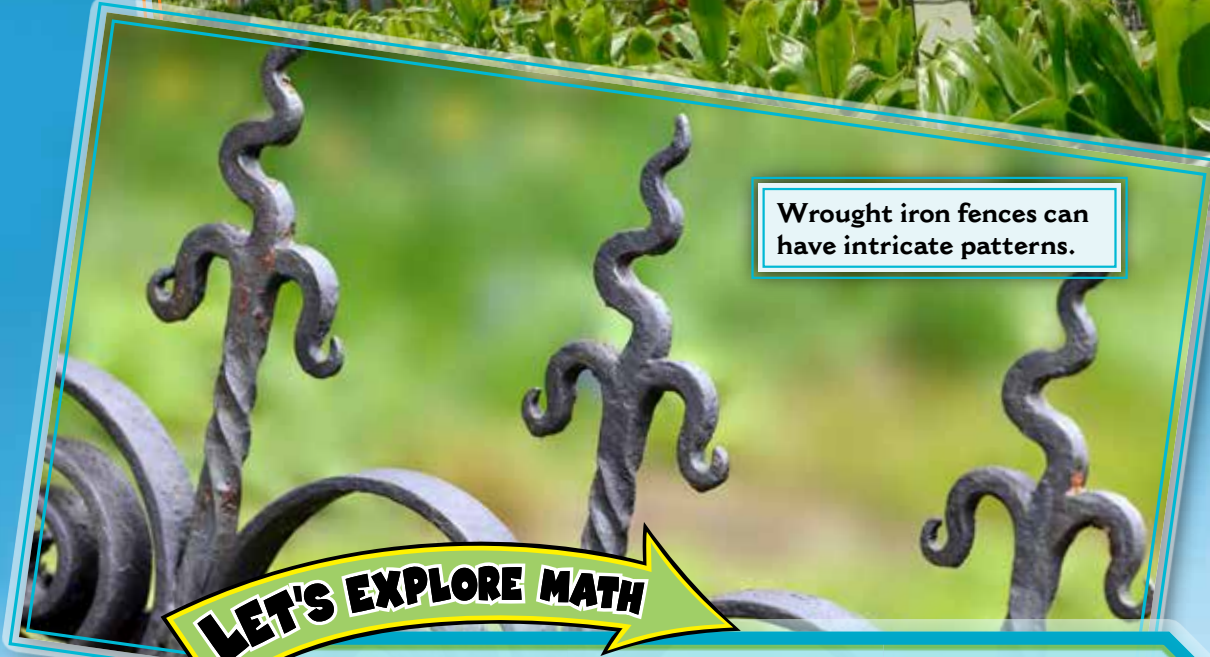
## Fencing the Yard

Fences are popular projects. Families with pets often want fences around their yards. This keeps their pets from running off. If there is a pool on the property, a fence might be needed to keep people safe. Sometimes, a fence is just there to show where a property ends.

There are many types of fences to choose from. Some are made from some very wild materials! But, most people choose something more ordinary. Some fences are made of metal, like **wrought iron**. There are plastic fences, too. Another popular type of fencing is treated wood. It looks natural and is **cost-effective**. Families can get a lot for their money. The treatment on the wood protects the fence from decay, weather, and bugs.



fence made from old surfboards

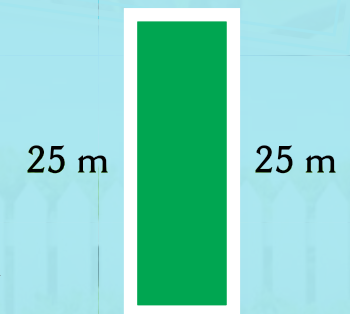


Wrought iron fences can have intricate patterns.

### LET'S EXPLORE MATH

A landscape architect is installing a treated wood fence around a property. From the yard survey, she knows the property's land is in the shape of a rectangle. She also knows that the perimeter is 70 meters. The yard width is labeled as 25 meters on the survey. But, the yard's length got cut off! What is the length of the backyard?

Perimeter: 70 m



# Planning the Perfect Patio

Many outdoor living spaces have patios that can be used as living and dining areas. Patios require plans that use hardscape.

It is very hard to move a patio once it is installed. It is often **cemented** into place! The stones and rocks can weigh a lot, too. So, it is important that measurements are correct the first time.

## LET'S EXPLORE MATH

Find the perimeter of each rectangular tabletop.

| Table | Length | Width | Perimeter |
|-------|--------|-------|-----------|
| 1     | 4 ft.  | 4 ft. |           |
| 2     | 6 ft.  | 3 ft. |           |
| 3     | 8 ft.  | 2 ft. |           |

Precisely laid brick hardscape will form this patio.

This table and chair set was designed to look like mushrooms growing out of the grass.

Clients today think of their outdoor areas as places to live and relax. Patios may have more furniture than just tables and chairs. Some spaces have sofas and refrigerators. They may even have televisions for movie nights!

Landscape architects need to know the sizes of all of these items. There also needs to be enough room for people to walk around furniture. So, hardscape needs to be the correct size. If it is too small, furniture will not fit. But if it is too large, the patio will not fit in the yard.

It's also important to make sure there's room for a walking path. Many clients do not want to walk through grass to get to their patios. They prefer to walk on hard surfaces. So, landscape architects use hardscape to sculpt the paths of their dreams. They also try their best to make the hardscape design blend in with nature.

### LET'S EXPLORE MATH

A landscape architect is installing a rectangular path in a backyard. The family knows the length of the path. Now they need to decide the width. They want to choose a width based on the resulting perimeter.

1. Complete the table so the family can decide.

| Length | Width | Perimeter |
|--------|-------|-----------|
| 9 m    | 2 m   | _____ m   |
| 9 m    | 3 m   | _____ m   |
| 9 m    | 4 m   | _____ m   |
| 9 m    | 5 m   | _____ m   |

2. What do you notice about the perimeters?  
Why do you think this happened?

## Setting Up for S'mores

Oozy chocolate, sweet graham crackers, and melted marshmallows combine for the perfect outdoor treat—s'mores! Or, perhaps you prefer crunchy marshmallows? Either way, they need to be roasted. This is just one reason many clients ask for fire pits in their yards.

For some pits, gas lines are put underground. Fire appears with the flip of a switch. For others, wood is used. These take a little longer to light. Either way, fire pits are made from hardscape. Often, there is hardscape around a fire pit, too. This way, clients can sit around the fire. They can have their chairs on a stable surface.

Safety is key when building fire pits. They cannot be under trees or roofs. No one wants a house to catch fire. So, landscape architects look for safe spaces. A space needs to be far away from trees or other structures. Knowing the perimeter of a fire pit can help people make these plans.



# A Natural Look

Outdoor spaces can be awesome! There can be patios, paths, furniture, and fire pits. Is anything missing? Nature is needed! An outdoor space might look bare with only hardscape. So, landscape architects add plants. This makes the yard come to life. They may add flowers, trees, and shrubbery, too.



These bushes conceal an air conditioner.

# Planting with a Plan

Plants can be used to define a clear perimeter around a space. Landscape architects may choose to plant flowers right next to a fence. This way, they surround the yard. Sometimes trees are planted in the middle of a large grassy area. Flowers can surround a tree to make the space pop with color.

At times, people want to hide things in their yard. For example, an air conditioner may look big and out of place. Garbage cans might not look very pretty. Plants are the perfect camouflage. Tall plants can easily hide these eyesores.



Plants may also be arranged in flower beds. Landscape architects have a few ideas in mind when designing these. First, they may choose to plant flowers in groups. This means that one type of flower is not planted by itself. Instead, many are planted together. This results in a bigger splash of color. Extra border plants can also be planted surrounding a flower bed. This makes it look fuller. Or, flowers might be planted in a bed with shrubs to accent the space.

Next, landscape architects often choose three main colors of flowers. More than three colors might look messy. So instead, they vary the shades.

Finally, they plant flowers by height. Tall plants go in the back. Shorter plants go in the middle or up front. This way, they can be seen. Even smaller plants can border the perimeter of a flower bed.



**A shrub stands behind flowers to fill this space.**



**Orange, yellow, and purple brighten this yard.**



**Tall flowers add dimension to this flower bed.**

A lot of thinking goes into choosing plants. Not every plant will grow well in every space. Some plants need a lot of shade. For these areas, landscape architects might use black bat flowers. Or, they might choose to use yellow rattlesnake plants to make a snake-like border. Both of these plants do well in shade.

Others plants spring up in the sunshine. The obvious choice for a sun-loving plant is a cactus. But an exotic bird of paradise plant would do well there, too. Perhaps a golden egg plant can be placed in full sun with the bird of paradise!

Just like sun and shade, soil can also affect plants. In some places, there is a lot of rocky soil. The **fragrant** lavender plant grows well in those places. Other places have sandy soil. Crape myrtle trees, with their bright pink, red, or purple flowers, would be a good choice in those yards.

A plant's survival also depends on **climate**. For example, most palm trees grow best in warm climates. But, some can thrive in freezing temperatures. Landscape architects know this information. They help people pick the best plants for their yards.



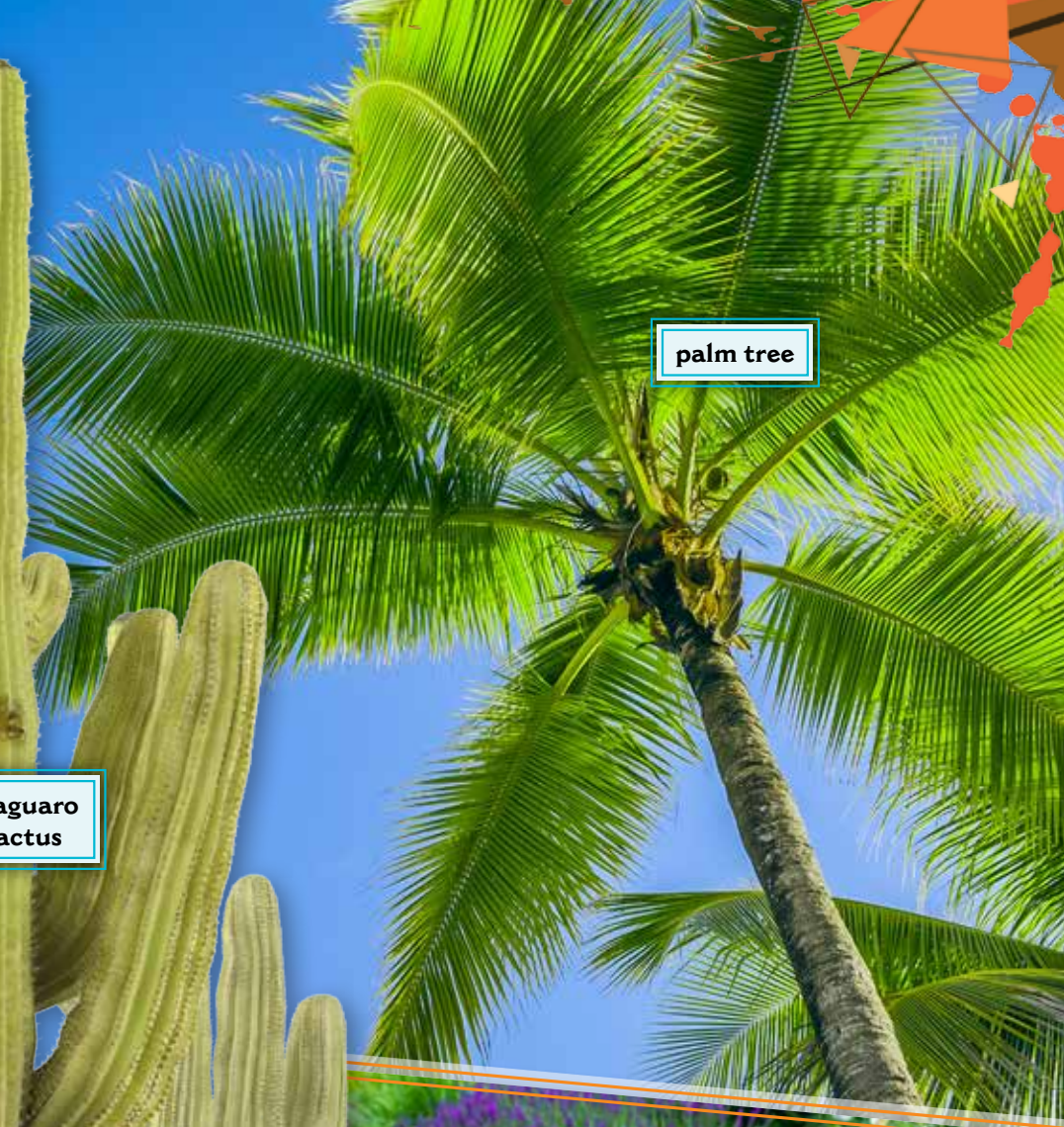
flowers of a crape myrtle tree



bird of paradise



saguaro cactus



palm tree



lavender



# Being an “Outsider”

Do you think you have what it takes to be a true “outsider”? Maybe becoming a landscape architect is for you! To start, you should love the outdoors. Most landscape architects go to college to study math, art, and design. You also have to learn about plants and environments. When you have learned enough, you earn a **license** to do the job.

But, you don’t have to wait to make the outdoors special. Take time to notice the way parks, yards, and gardens are planned. Measure the perimeter of an outdoor space. Plant a small vegetable or flower garden. Not enough room? It only takes one plant in a pot by a window to get you started!

Landscape architects want to make outdoor dreams come true. So, the next time you see a beautiful yard, thank a landscape architect.

And think about what you can do to make the outdoors even better.







# Problem Solving

A landscape architect has been hired to redesign a city park. The city's leaders have some ideas. They know that they want three flower beds in the park. And they want each flower bed to be a rectangle. They also have some thoughts about the size of each flower bed. Complete the table so the landscape architect has all of the information needed. Then, sketch each flower bed. Use your own paper or graph paper.



| Flower Bed Length | Flower Bed Width | Perimeter |
|-------------------|------------------|-----------|
| _____ m           | 1 m              | 8 m       |
| 4 m               | _____ m          | 12 m      |
| 9 m               | 6 m              | _____ m   |



# Glossary

**aerial**—seen from above

**cemented**—joined together with concrete

**clients**—people who pay someone or a company for services

**climate**—the usual weather a place gets

**cost-effective**—producing good results without being too expensive

**fragrant**—having a pleasant smell

**hardscape**—the man-made fixtures of a planned outdoor area

**landscape architects**—people who design yards with hardscapes and plants

**license**—an official document that gives someone permission to do something

**perimeter**—the distance around the outside of a shape

**shrubs**—plants that have stems of wood and are smaller than trees

**softscape**—the natural elements of a planned outdoor area

**surveyor**—a person who measures and inspects areas of land

**surveys**—the act of measuring the dimensions of areas of land

**wrought iron**—a kind of iron that is used for decorative fencing

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# Answer Key

## Let's Explore Math

### page 7:

Perimeter helps the landscape architect know how many meters of fencing will be needed.

### page 9:

68 ft.; Answers will vary but may include:  $18 + 18 + 16 + 16$ , or  $(2 \times 18) + (2 \times 16)$ .

### page 13:

10 m

### page 15:

Table 1: 16 ft.

Table 2: 18 ft.

Table 3: 20 ft.

### page 17:

1.

| Perimeter |
|-----------|
| 22 m      |
| 24 m      |
| 26 m      |
| 28 m      |

2. The perimeters increase by 2 m because the width increases by 1 m each time, and there are two widths in a rectangle.

### Problem Solving

Flower Bed Length: 3 m

Flower Bed Width: 2 m

Perimeter: 30 m

Sketches will vary but should show a 3 m by 1 m rectangle, a 4 m by 2 m rectangle, and a 9 m by 6 m rectangle.

## Math Talk

1. What steps can you follow to find the perimeter of a rectangle?
2. In a backyard, which would be an example of perimeter: the amount of fencing surrounding the yard or the amount of grass covering the yard? Why?
3. You know the perimeter of a rectangle. You also know the length of one side. What strategy would you use to find the measures of the three other sides?
4. How is finding the perimeter of a rectangle similar to finding the perimeter of any other polygon?
5. What kind of rectangles might have greater perimeters: long and narrow rectangles, or short and wide rectangles? How do you know?
6. How many ways can you design a rectangle or square with a perimeter of 12 units?