The BIG Idea

Students first experience patterns at home, in nature, or throughout their daily activities. Although they are not always able to verbalize the patterns, awareness of patterns can aid in being able to predict something that will happen next. Counting and number recognition is background knowledge that they will need to be able to discover a type of pattern, called number patterns. Students need to be able to recognize not only the starting number of the pattern, but the numbers that follow as well. This will be the basis for students to recognize a pattern in numbers. Students having difficulty with number patterns may require improved counting skills and greater number sense. Using a hundred chart can be an ideal way to practice how to identify and name number patterns. As students learn to count by multiples of twos, fives, and tens, a foundation for an understanding of multiplication and division will be laid.

Targeted Standards

GLE 0006.3.1 Identify, duplicate, and extend simple number patterns and sequential and growing patterns.

Skills Trace

Vertical Alignment

Previous Grade
In the previous grade, students learned to:
- Recognize and duplicate simple patterns.
- Start to understand numbers and quantities.

This Grade
During this chapter, students learn to:
- Identify and duplicate simple number patterns.
- Identify and duplicate simple growing patterns.

After this chapter, students will learn to:
- Identify, name, describe, and sort basic two and three dimensional shapes.
- Join to add and separate to subtract.

Next Grade
In the next grade, students will learn to:
- Extend repeating patterns.
- Extend growing patterns.

Vertical Alignment and Backmapping

McGraw-Hill’s Math Connects program was conceived and developed with the final results in mind: student success in Algebra 1 and beyond. The authors developed this brand-new series by backmapping from Algebra 1 concepts, and vertically aligning the topics so that they build upon prior skills and concepts and serve as a foundation for future topics.
# Chapter at a Glance

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<td>GLE 0006.3.1</td>
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<tr>
<td>B Count by 10s</td>
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<tr>
<td>B Identify and Duplicate Number Patterns</td>
<td>GLE 0006.3.1</td>
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<td></td>
<td></td>
<td>eGames, Daily Transparencies, Problem of the Day, Virtual Manipulatives</td>
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</table>
Math Vocabulary

Glossary
The following math vocabulary words are listed in the glossary of the Student Edition. Some of the words are also found in the Alphabet Cards.

Get Connected
Find interactive definitions in 13 languages in the eGlossary and review vocabulary eGames at connectED.mcgraw-hill.com.

Growing Pattern

Number

1, 2, 3, 4, 5, 6, 7, 8, 9

Numbers 1–9

Pattern

Activity

• Tell students that patterns do not always look the same. They can increase or decrease.
• Create a growing pattern using color tiles (Example: red, blue/red, blue, blue/red, blue, blue, blue).
• Have students identify the pattern.
• Have students use color tiles to copy the growing pattern.

Visual Vocabulary Cards

Use Visual Vocabulary Cards to reinforce the vocabulary in this chapter in English and Spanish. (The Define/Example/Ask routine is printed on the back of each card.)
### ELL Support

#### Hundred Chart

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<td>BL</td>
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<td>On and Beyond Level</td>
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#### Growing Number Patterns

<table>
<thead>
<tr>
<th>Level</th>
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<th>Modality</th>
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<tr>
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<tr>
<td></td>
<td>Intermediate</td>
<td>Number Recognition, Logical</td>
</tr>
<tr>
<td>BL</td>
<td>Advanced</td>
<td>Music, Chants and Rhythms, Logical</td>
</tr>
<tr>
<td></td>
<td>Extend</td>
<td>Bilingual Cooperative Groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On and Beyond Level</td>
</tr>
</tbody>
</table>

### ELL Resources

The Professional Development articles listed below can be found in print and online in the Teacher Resource Handbook.

- “English Learners and Mathematics: Best Practices for Effective Instruction” by Kathryn Heinze (pp.TR32–TR33)
- “Engaging English Language Learners in Your Classroom” by Gladis Kersaint (pp. TR34–TR35)
- Multilingual eGlossary
- Visual Vocabulary Cards
- Language Alerts (pp. 275, 291)
- ELL Guide (pp. 60–63)
Science

Count the Petals
- Place each picture of flowers on the clothes line.
- Start at the beginning of the clothes line.
- Count the petals on each flower by twos.
- Flip the picture over to see if you were correct.

Teacher Note: Find flowers in magazines, free clip art images on the internet, ads, or newspapers. Make sure all of the flower petals are easily identified. Only cut out flowers with even numbers of petals. Write the total number of petals on the back of each flower. Tell students to count the number of petals by twos. Have students flip the pictures over and see if they were correct.

Materials:
- pictures of flowers
- clothes pins
- clothesline

Art

Designing Clothes
- Draw four of the exact same shirts on drawing paper.
- Draw two buttons on the first shirt. Draw four buttons on the next shirt. Draw six buttons on the following shirt. Draw eight buttons on the last shirt.
- Color each of the shirts.
- Count the buttons on the shirts by twos.

Teacher Note: Provide students with drawing paper. Make sure students draw the correct number of buttons on each shirt. Count the number of buttons by twos as a class.

Materials:
- drawing paper
- crayons

Health

Hop, Pop, and Jump
- Hop on one foot.
- Count by tens each time you hop.
- Squat down to the floor and pop up in the air.
- Count by fives each time you pop.
- Jump in the air.
- Count by twos each time you jump.

Teacher Note: Have students practice hopping on one foot. Tell students to count by tens each time you hop to 100. Have students practice squating down to the floor and popping up. Tell students to count by fives each time they pop to 25. Have students practice jumping in the air. Have students count by twos each time they jump until they reach 12.

Materials:
- none
**Language Arts**

**Count by Tens**
- Look at the number on each sticky note.
- Mix up the sticky notes on the table.
- Put the sticky notes in order.
- Count by tens.

*Teacher Note: Write the numbers: 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100 on separate sticky notes. Have students work in groups of four. Give each group a set of sticky notes from 0 to 100. Have students place the sticky notes randomly around the table. Have students order the sticky notes. Have students count by tens to 100.*

**Music**

**Music Number Patterns**
- Look at the teacher.
- Copy his or her motions.
- Identify the growing pattern.
- Say the growing pattern.

*Teacher Note: Show students several number growing patterns. Have students copy your patterns. Ask students to identify the growing pattern. Have students say the growing pattern. Use growing patterns such as:
- stomp, clap; stomp, clap, clap; stomp, clap, clap, clap
- strike musical triangles, shake maraca; strike musical triangles, shake maraca, shake maraca

Be certain to say the number as students do the movement.*

**Calendar Time**

- Show students a monthly calendar. Begin a growing number pattern on it using two differently colored stickers.
- Have students identify the growing number pattern such as: 1 orange, 1 yellow; 1 orange, 2 yellow; 1 orange, 3 yellow and so on.
- Ask students to use yellow and orange stickers to show what could come next on the calendar.
- Have students continue the growing number pattern until the end of the month.

*For additional calendar activities, see the Math Routines on the Go cards.*
Introduce the Chapter

Essential Question
- What are some examples of when you might count by twos, tens, or fives? Sample answer: when counting large amounts of objects or counting days on a calendar
- What object(s) can you use to show counting by twos? Sample answer: a hundred chart, a calendar, a number line, connecting cubes

Key Vocabulary
Introduce the key vocabulary in the chapter using the routine below.
Define: A growing pattern is a pattern that has a part that grows or changes by the same amount each time.
Example: Musical chairs is a growing pattern that changes by one each time the music stops.
Ask: What objects can you use to show a growing pattern?
- Student Glossary
- Graphic Organizer

Patterns on the Beach
Read and discuss the story together. You may wish to use the blank Graphic Novels provided in Hands-On Activity Tools and Resources to help develop writing and speech skills.
- What is happening? Sample answer: Alim and Kate are finding patterns created by objects on the beach.
- Have students predict what will happen next.

For additional reading and language arts activities, including support for reading a graphic novel, see Reading and Language Arts Support in the Grade K Math Connects Program Overview.

Key Vocabulary

<table>
<thead>
<tr>
<th>English</th>
<th>Español</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>número</td>
</tr>
<tr>
<td>pattern</td>
<td>patrón</td>
</tr>
<tr>
<td>growing pattern</td>
<td>patrón repetitivo</td>
</tr>
</tbody>
</table>

Visit connectED.mcgraw-hill.com to download the animated version of “Patterns on the Beach.”
Chapter Connections

Real World: Calendar Number Patterns

Tell students they are going to learn how to identify number patterns on a calendar.

Use construction paper squares to cover the even numbers to show how to count by twos on the first three rows of the calendar. Have students identify and show what number could come next in the pattern. Have students say the pattern. Ask students to use the pattern to find out how many days are in the month.

Use construction paper squares to cover numbers to show counting by fives on the first three rows of the calendar. Have students identify and show what number could come next in the pattern. Have students say the pattern.

Use construction paper squares to cover numbers to show counting by tens using all the rows on the calendar. Have students identify and tell what number could come next in the pattern. Have students say the pattern.

Why would you use a number pattern to count the number of days on a calendar? Sample answer: It allows you to count the number of days more quickly.

WRITE MATH
Write this number pattern on the board: 10, 12, 14, 16, 18, 20. Have students duplicate the pattern in their Math Journals. Ask students to identify the number pattern and explain it.

Chapter Project

Number Pattern Hunt

Draw lines to make three columns on a poster board. Label each column with a number pattern: twos, fives, and tens. Divide students into groups of three. Assign each group a number pattern from the poster board i.e. twos, fives, or tens. Guide students to cut out numbers from magazines, ads, or newspapers to show their number pattern. Have students say their number patterns and write them in the columns under the corresponding pattern. Ask groups to say each of the number patterns together.

Reading and Language Arts Support

For activities to connect reading and language arts to this chapter’s math concepts, see Reading and Language Arts Support in the Grade K Math Connects Program Overview.

Dinah Zike’s Foldables®

Use one sheet of art paper per student to make an Accordion Foldable to show counting by 2s, 5s, and 10s.

1. Fold one piece of paper into a hamburger. Fold one side one half inch shorter than the other side.
2. Fold this tab forward over the shorter side, and then fold it back away from the shorter piece of paper.
3. Create an object on your piece of paper. Glue together each group members paper to form an accordion. Glue a straight edge of one section into the valley of another section.

When to Use It Lessons 1B, 1C, and 1D (Additional Instructions for using the Foldable with these lessons are found in the Mid-Chapter Check and Chapter Review/Test.)
You have two options for checking Prerequisite Skills for this chapter.

**Text Option**

“Are You Ready for the Chapter?”

**Online Option**

Take the Online Readiness Quiz.

---

### Directions:

1. Count the objects. Say the number. Write the number on the line.

2. Count the number of dots on each item. Draw a line from the item to the number that tells how many.

3. Identify the growing pattern. Draw what could come next in the pattern.

---

**Online Option** Take the Online Readiness Quiz.
**DIAGNOSE AND PRESCRIBE**

**RtI (Response to Intervention)**
Based on the results of the Diagnostic Assessment, use the charts below to address individual needs before beginning the chapter.

**TIER 1**
**On Level (OL)**

If students miss one in Exercises 1–3,

choose a resource:
- Learning Stations (pp. 271E–271F)
- Are You Ready? Practice

**TIER 2**
**Strategic Intervention (SI)**

If students miss two in Exercises 1–3,

choose a resource:
- Are You Ready? Review
- Get Connect 2D: Lesson Animations

**TIER 3**
**Intensive Intervention (II)**

If students miss three in Exercises 1–3,

use Math Triumphs, an intensive math intervention program from McGraw-Hill

Chapter 2: Compare and Order Whole Numbers
Chapter 10: Patterns

**Beyond Level (BL)**

If students miss none in Exercises 1–3,

choose a resource:
- Chapter Project (p. 271G)
- Are You Ready? Apply
- eGames: Starfish Theater-Count by 2

**REASSESS**

Administer the Diagnostic Test

Diagnostic Test

Administer the Diagnostic Test
Dear Family,

Today my class started the chapter, **Number Patterns**. I will learn to count by 10s, 5s, and 2s and to identify a number pattern. Here are my vocabulary words, an activity we can do, and a list of books we can look for in our local library.

**Activity**
Help your child line up 10 shoes. Have your child count the shoes by 5s and then by 2s. If possible, show 20 of an item such as pennies and have your child count the items by 10s, 5s, and 2s.

**Key Vocabulary**
- **number**: tells how many
- **3**
- **pattern**: A, B, A, B, A, B

The cube train is an example of a pattern.

**Online Option**
See the multilingual eGlossary link at connectED.mcgraw-hill.com to find out more about these words. There are 13 languages.

**Books to Read**
- **Penguin Pairs-Counting by 2s**
  by Amanda Doering Tourville
- **Magic Wagon One is a Snail, Ten is a Crab**
  by April Pulley Sayre & Jeff Sayre
  Candlewick Press
- **Candlewick Press Leaping Lizards**
  by Stuart J. Murphy
  HarperCollins Children’s Books

Love,

---

For more information about parent involvement, read the article, “The Role of Parents and Guardians in Young Children Learning Mathematics” by Paul Giganti, Jr. See the *Teacher Resource Handbook* pp. TR44–TR45.
Estimada familia:
Hoy mi clase comenzó el capítulo, Patrones de números.
Aprenderé a contar en grupos de 10, 5 y 2. También aprenderé a identificar patrones crecientes de números. A continuación están mis palabras del vocabulario, una actividad que podemos hacer y una lista de libros que se encuentran en nuestra biblioteca local.

Cariños,

Vocabulario clave

- número
- patrón

Actividad
Alinee 10 zapatitos con su niño. Pidale que los cuente. Pidale que los cuente en series de 10, 5 y 2.

El tren de cubos es un ejemplo de un patrón.

Opción en línea Visite el eGlosario políglota en connectED.mcgraw-hill.com para aprender más acerca de estas palabras. Hay 13 idiomas.

Libros recomendados

- Cuenta tus gallinas
  de Susan Ring
  Red Brick
- Cuenta con Pablo
  de Barbara Derubertis
  Kane Press

Real-World Problem Solving Library

Math and Science: At the Grocery Store
Use these leveled books to reinforce and extend problem-solving skills and strategies.

Leveled for:
- AL Approaching Level
- OL On Level
- BL Beyond Level
- SP Spanish

For additional support, see the Real-World Problem Solving Reader Teacher Guide.

✓0006.1.9 Use age-appropriate books, stories, and videos to convey ideas of mathematics.

Multi-Part Lesson 1
One Hundred Hungry Ants
Elinor J. Pinczes
Double Those Wheels
Nancy Raines Day
Penguin Pairs: Counting by 2s
Amanda Doering Tourville
Mooove Over! A Book About Counting by Twos
Karen Magnuson Beil

Multi-Part Lesson 2
The Crayola Counting Book
Rozanne Williams

Check with your school library or your local public library for these titles.

✓0006.1.9 Use age-appropriate books, stories, and videos to convey ideas of mathematics.
Hundred Chart

PART

A Explore Number Patterns
B Count by 10s
C Count by 5s
D Count by 2s
E Problem-Solving Strategy: Find a Pattern

Essential Question

What are some patterns you notice on the hundred chart? Sample answer: I notice a pattern of 5s and 10s on the hundred chart.

Focus on Math Background

On a hundred chart, students can see the repeating structure of digits (0–9), which underlies our base-ten number system. As the eye travels across each row of the hundred chart, the predictable sequence of digits representing the one’s place becomes apparent. Similarly, by moving down the vertical path of the columns on the chart, a 1–9 pattern emerges, indicating the decade of each respective row. Moreover, the arrangement of the numbers in the 100 chart reveals the repetitive pattern that results as students skip count by 2s, 5s, or 10s.

Resources

Explore Worksheet
Lesson Animations
Virtual Manipulatives
Hands-On Activity Tools and Resources

Virtual Manipulatives

Explore Number Patterns
(pp. 275–276)
Identify number patterns on a hundred chart.

Count by 10s
(pp. 277–280)
Count by tens to 100.

Standards

GLE 0006.3.1

Vocabulary

number pattern

Materials/Manipulatives

hundred chart/dot cards, craft sticks, glue, crayons, scissors, beans

digital counting bears and boats, construction paper number cards, hundred chart, overhead projector, blank transparency, interactive whiteboard, string, index cards, crayons attribute buttons

Hands-On Activity Tools and Resources

Interactive Whiteboard ready.

Suggested Pacing (8 Days)

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<th>2</th>
<th>Assess</th>
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<td>B</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>PART C</td>
<td>PART D</td>
<td>PART E</td>
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<tr>
<td><strong>Count by 5s</strong> (pp. 281–284)</td>
<td><strong>Count by 2s</strong> (pp. 285–286)</td>
<td><strong>Problem-Solving Strategy: Find a Pattern</strong> (pp. 287–288)</td>
<td></td>
</tr>
<tr>
<td>Count by fives to 100.</td>
<td>Count by twos to 100.</td>
<td>Identify simple number patterns.</td>
<td></td>
</tr>
<tr>
<td>GLE 0006.3.1</td>
<td>GLE 0006.3.1</td>
<td>GLE 0006.1.2</td>
<td></td>
</tr>
<tr>
<td>cups, index cards, overhead projector, hundred charts, crayons, paper, interactive whiteboard, red and blue finger paint, connecting cubes</td>
<td>hundred chart, pink highlighter or marker, pretzel sticks, napkins, interactive whiteboard, calendar, stickers, crayons, connecting cubes</td>
<td>hundred chart, pointer stick, envelopes, tape, construction paper, crayons, color tiles</td>
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<td>Virtual Manipulatives</td>
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<tr>
<td>eGames: Starfish Theater-Count by 5s</td>
<td>eGames: Starfish Theater-Count by 2s</td>
<td>RWPS: At the Grocery Store</td>
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<tr>
<td>Graphic Novel Animation</td>
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<tr>
<td>Hands-On Activity Tools and Resources</td>
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</table>

**Resources**
- ✔ 0006.1.9

**Mid-Chapter Check** (p. 289)

**Game Time** (p. 290)
Differentiated Instruction

Approaching Level

Option 1  Use with 1D

**Hands-On Activity**
- Have students sit in a large circle.
- Ask two students to stand up, the next two students to sit down. Continue until everyone is part of the number pattern.
- Help children count by twos as they look around the circle.
- Ask students if there is another way they could show counting by twos. Allow students to show other ways to count by twos as a class.

Option 2  Use with 1C

**Hands-On Activity**
**Materials:** connecting cubes
- Give each child 20 connecting cubes.
- Chorally count the number of connecting cubes several times.
- Tell student to create cube trains using five cubes.
- Have students count by fives using the cubes.
- Tell students to get in pairs.
- Have them create cube trains using five connecting cubes in each train.
- Have students take turns counting by fives and saying how many connecting cubes they have.

Other Options
- Learning Station Card 37
- Lesson Animations, Virtual Manipulatives, eGames: Starfish Theater-Count by 5s

On Level

Option 1  Use with 1D

**Hands-On Activity**
**Materials:** counters, number line from Hands-On Activity Tools and Resources (p. 124)
- Have each student create his or her own number line from 0 to 20. Chorally count to twenty several times.
- Have students place a yellow counter above the number 1, 3, and 5.
- Help students continue to place yellow counters above the number line on every other number.
- Have students place a red counter below the number 2, 4, and 6.
- Help students continue to place red counters below the number line on every other number.
- Tell students to use the red counters to count by twos from 0 to 20.
- Repeat the activity by using the yellow counters.

Option 2  Use with 1C

**Hands-On Activity**
- Have 10 children stand in line in front of the class.
- Ask students what body part they have five of. **Five fingers on each hand or 5 toes on each foot.**
- Help the group decide which body part they will count and have a volunteer point to the body parts as the group counts by fives.
- Repeat the activity using a new group of 10 children and have them show both hands as the class counts by tens.

Other Options
- Learning Station Card 36
- Lesson Animations, Virtual Manipulatives, eGames: Starfish Theater-Count by 2s, Math Song Animation: Skip Counting
Option 1  Use with 1C

**Hands-On Activity**

**Materials:** number patterns written on sticky notes, number cards from the *Hands-On Activity Tools and Resources* (pp. 100–101), crayons

- Pass out sticky notes to each student with a different number pattern (tens, or fives) on each one.
- Have students copy the number pattern using number cards.
- Ask students to identify and name the number pattern.
- Have students switch sticky notes with another student and repeat the activity.

Option 2  Use with 1D

**Hands-On Activity**

**Materials:** board

- Place these groups of numbers on the board:
  1. 1, 2, 5, 7, 9
  2. 5, 10, 15, 20, 25
  3. 20, 30, 40, 50, 60
  4. 2, 4, 9, 24, 28, 31
  5. 2, 4, 6, 8, 10, 12
- Ask students to identify the pattern that is counting by twos.
- Have students copy the pattern that is counting by twos on a piece of paper.
- Have students identify the pattern that is counting by fives.
- Have students copy the pattern that is counting by fives on the same piece of paper.
- Have students identify the pattern that is counting by tens.
- Have students copy the pattern that is counting by tens on the same piece of paper.

Other Options

- **Learning Station Card 38**
- **Virtual Manipulatives**

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**Beyond Level**

**English Language Learners**

This strategy helps English Learners learn and use the language to identify numbers on a hundred chart.

Find **Core Vocabulary** and **Common Use Verbs** in the online EL strategies to help students grasp the math skills; use **Language Alerts** at point of use in the Teacher Edition.

**AL  Beginning**

**Number Recognition**  Use auditory prompts and visual patterns to teach skip counting on a hundred chart.

- Show a hundred chart. Put your finger on 10. Say “ten.” Highlight it yellow. Repeat for 20, etc. Highlight with gradually darker colors to imply the change in number.
- Use *above* and *below* vocabulary when counting.

**OL  Intermediate**

**Scaffold**  Use prior skills to integrate number patterns.

- Give every student a number from 1 to the class total.
- Show the 0 number card.
- Prompt the student with the 1 number card to stand next to you.
- Repeat for all numbers.

**BL  Advanced**

**Memory Device**  Learn different meanings of skip.

- Show a hundred chart.
- Explain how numbers skip on the hundred chart. What other meanings of skip are there? Sample answer: You can skip rocks on water. How can they help us remember the math meaning?
- Have groups create graphic organizers or memory devices to help remember skip counting. Tell how to use the graphic organizer. Scaffold language as needed.

**Extend**

Have students create hundred chart patterns and have bilingual groups work together to guess the pattern.
Number Patterns

Objective
Identify number patterns on a hundred chart.

Resources

Find the Numbers
Give each student a copy of a hundred chart. Ask students to use a craft stick as a pointer. Have students point to each number as you count. Have students count aloud with you, going from 20 to 29 and from 30 to 39. What patterns do you hear? Sample answer: Each number is one more than the last number that is said. Have students point to 24. What number comes before 24? 23 Have students point to 35. What number comes after 35? 36 Repeat the process counting numbers through 100.

Find the Number Pattern
Review the concept of patterns with students. Explain that numbers can create patterns. Tell students to place beans on these boxes on the hundred chart: 2, 4, 6, 8, and 10. What is the pattern? Sample answer: Beans cover every other number in the row so the pattern is 2, 4, 6, 8, 10. Repeat the activity showing students how to count by 5s and 10s.

Number Pattern Bingo
Tell students they are going to play Number Pattern Bingo. Give several beans and a hundred chart to each student. Explain to students that when a number is called out, find the number on the chart and cover it. If needed, write the number for students to see. Call out numbers in this order: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100; or until a student identifies the number pattern. Have students say the numbers in the pattern. Have students name the number pattern. Repeat the process calling out a new number pattern.
Reflect and Clarify

- What number does the hundred chart begin with?  one
- Have students find the number 21 on a hundred chart. What are the other numbers in this row on the hundred chart?  22, 23, 24, 25, 26, 27, 28, 29, 30
- Have students find the number 16 on a hundred chart. What number is before 16 on the hundred chart?  15
- What is this number pattern: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100?  Sample answer:  Counting by 10s.
- What is this number pattern: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50?  Sample answer:  Counting by 5s.

WRITE MATH  Provide each student with sheets of dot cards for numbers 1–10. Tell students to create a number pattern counting by 2s in their Math Journal. Have students turn their Math Journal page vertically and glue the cards in the correct order to show counting by 2s. Have students write the corresponding numbers below each of the sets of dot cards to show the pattern.

Use the Student Page

- Use the Explore workmat. Tell students to use beans to cover each number as it is called out. Then have students identify the number pattern. Have students remove the beans and repeat with other numbers. Call out these numbers: 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65 and then 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32. Next call out 10, 20, 30, 40, 50, 60, 70, 80, 90, 100. Have students touch and count by 10s the number pattern from 10 to 100. Tell students to color the numbers to show the pattern.
- Use the next page. Have students touch and count by 5s the number pattern from 5 to 100. Have students identify the pattern by coloring each number. As students are ready, have students touch and count backward from 100 to 5 by 5s and from 20 to 2 by 2s.
**PART B**  
Count by 10s

**Objective**  
Count by tens to 100.

**Vocabulary**  
number  
pattern

**Resources**

**Materials:** counting bears and boats from *Hands-On Activity Tools and Resources* pp. 114–115, construction paper number cards, hundred chart from *Hands-On Activity Tools and Resources* p. 121, Activity Flipchart, overhead projector, blank transparency, interactive whiteboard, string, index cards, crayons  
Manipulatives: attribute buttons

**Activity Choice 1: Hands-On**  
- **Materials:** counting bears and boats, number cards, hundred chart  
  - Have students get into ten groups. Have each group place a set of ten bears inside their boat. Give each group a hundred chart for counting.  
  - Call on a volunteer to bring a boat to the front of the class. **How many bears are in the boat?**  
  - Have students count together from 1 to 10. Place the number 10 card next to the boat.  
  - **How could we show 20 bears?** Sample answer: We could show another boat full of 10 bears.  
  - Have another volunteer bring a boat to the front of the class. **How many bears do we have now?**  
  - Have students count together from 10 to 20. Place the number 20 card next to the boat. Repeat until all 100 bears are counted.  
  - Count the bears by 10s as the number cards are shown.

**Activity Choice 2: Activity Flipchart**  
- Turn to page 28 in the Activity Flipchart.  
- Read the poem to the class.  
- Have the class chorally say the poem.  
- Read the first line of the poem. Hold up both of your hands and ask students to count your fingers.  
- Ask another student to hold up his or her hands as the second line is read. Count all fingers.  
- Ask another student to show 10 fingers. Count all his or her fingers as the next lines are read.  
- Line up ten students and count by tens to show how many fingers.  
- **How many fingers were counted?** 100 fingers

**TEACH**

Display a hundred chart on an overhead projector. Touch a number. Say the number. Have students say the number aloud. Ask what number comes before and what number comes after that number.  
- On a overhead transparency, write 10, 20, ____, 40, 50, 60 in order with the number 30 missing. Have students use the hundred chart to determine which number is missing. Write that missing number. Repeat the process for other numbers such as 50, 60, 70, ____, 90, and 100. Have students name the missing number.  
- **What is the number pattern?** Sample answer: The number pattern is counting by 10s.  
- Have students count aloud by tens all of the numbers on the hundred chart.  
- If students are ready, count by 10s backward from 100 to 10, explaining this number pattern.

**COMMON ERROR!**  
Students may have difficulty counting by tens. Give them additional experience with numerals and objects by having them place cubes directly on the numerals on a hundred chart.

**Building Math Vocabulary**  
Write the word **number** and **pattern** on the board.  
- Show students the Visual Vocabulary Card for the word **number**. Review the definition.  
- Have students identify the numbers on the card and write other numbers on the board under the word **number**.  
- Repeat with the word **pattern** following the same procedure at above by reviewing the definition, identifying the pattern, and drawing another pattern on the board under the word **pattern**.
**Alternate Teaching Strategy**

If students have trouble counting by tens to 100...

Then use one of the following reteach options:

1. **AL Reteach Worksheet**
   - Use the virtual color tiles and writing pen tool to reteach the concept of counting by 10s.

2. **IWB Virtual Manipulatives**
   - Form 10 groups of students. Assign each group a different color attribute button. Have each group count out 10 buttons of the same color.
   - Choose a group to come to the front. Have them string 10 buttons while the rest of the class counts the number of buttons.
   - After stringing the buttons have students write the total number of buttons on the string on an index card. Hole punch the index card and place it on the attribute string. Continue this procedure with each group until 100 buttons and number cards have been strung.
   - Model and have students count by tens to 100. Have a volunteer point to each group of ten and each number card as they count.
Guided Practice
- Direct students to the student page.
- Have students count by tens to 100 on the hundred chart.
- Have students color the boxes as you touch and say the numbers.

Independent Practice
Have students turn to the remaining pages. Explain the directions. Have students work independently on the exercises.

Homework Practice Worksheet

Line UP
Have students get into groups of various numbers of 5 to 10 students. Tell students that we are going to count off by the number of fingers there are in each group. Ask students to count off by tens to find the total number of fingers. After telling the correct number of fingers in their groups, allow students to line up.

Directions:
2. Identify the number pattern by connecting the dots. Say the number pattern. Draw a picture on the easel.

Number Patterns
Formative Assessment

- Provide students with a hundred chart from the Hands-On Activity Tools and Resources p. 121.
- Tell students to color in the number 10 on their hundred chart.
- Have students start with number ten and count by tens until they reach 100. Ask students to color in each of the boxes to show the number pattern.
- **What numbers are shaded in?** 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

### Quick Check

Are students still having trouble counting by tens on a hundred chart?

**During Small Group Instruction**
- **If Yes** ➜ **AL** Daily Transparencies
- **If No** ➜ **OL** Skills Practice Worksheet ➜ **BL** Enrich Worksheet

### Fun Facts

- The name of a male panther is panther. The name of a female panther is she-panther. A baby panther is called a cub.
- Panthers can jump over 20 feet. That is the same as jumping over 4 or 5 Kindergarteners who are lying on the floor in a row from head to foot.
- **Have you ever seen a panther? Where?** Sample answer: Yes; zoo, pictures in a book
**Count by 5s**

**Objective**
Count by fives to 100.

**Vocabulary**
- number
- pattern

**Resources**

**Materials:**
- cups, index cards, hundred chart from *Hands-On Activity Tools and Resources* pp. 121–122, Activity Flipchart, overhead projector, crayons, paper, interactive whiteboard, red and blue finger paint

**Manipulatives:**
- connecting cubes

**Leveled Worksheets**

**Get ConnectED**

1. **INTRODUCE**

**Circle Time**

**Activity Choice 1: Hands-On**

**Materials:**
- connecting cubes, cups, index cards, hundred chart
- Have students line up 20 cups in a row.
- Have students place five of the same color connecting cube inside each cup.
- Have a volunteer empty the first cup, line up five cubes, and place an index card with the number 5 after the fifth cube.
- Have another volunteer empty the second cup, line up five more cubes, and place an index card with the number 10 after the fifth cube.
- Have students repeat the process until students have counted by fives to 100.

**What number is being repeated in the pattern?**
- five

- Count the numbers together starting with the number 5 on a hundred chart.
- Have students point to the numbers on the hundred chart while counting together by fives to 100.

2. **TEACH**

Display a hundred chart on the overhead projector with the numbers: 5, 10, 15, 20, 25, 30, 35 . . . up to 100 highlighted. Touch the number 5. Have students say the number aloud.
- Have students count by fives to 100.

**What is the number pattern?**
- counting by fives

**COMMON ERROR!**

Students may have trouble counting by fives on a hundred chart. Have students go through each of the numbers used to count by fives to 100 on the chart. Point out that those numbers always have either a 0 or a 5 at the end of that number.

**Activity Choice 2: Activity Flipchart**

- Turn to page 29 in the Activity Flipchart.
- Tell students that we are going to draw groups of food items that the raccoons would eat at night.
- Point out the two raccoons. Tell students that the raccoons are hungry. Ask students to draw a set of five apples for the raccoons to eat. Have students count the total number of apples. Tell students to make sure to draw the set of apples close together so that they are easily counted.
- Call up another volunteer to draw five apples in another set.
- Continue until students have drawn four sets of five apples.
- Tell students we are going to count the number of apples by fives. Chorally count each group of apples.

**How many apples are there in all?**
- 20 apples

- Repeat the process several times, by having students draw more sets of five apples and counting by fives to find the total number of apples the raccoons ate at night.
Alternate Teaching Strategy

If students have trouble counting by fives on a hundred chart . . .

Then use one of the following reteach options:

1 **AL** Reteach Worksheet

2 **IWB** Virtual Manipulatives Use the virtual counting bears and pen tool to reteach the concept of counting by fives.

3 **Hundred Chart Prints** Give each student a blank hundred chart.
   
   - Have a student place a fingertip in red finger paint. Have them put their fingertip in the first box on the hundred chart. Have them place the rest of their fingertips into the paint one at a time and place them in the next four boxes on the hundred chart.
   
   - Have another student repeat the process by dipping their five fingertips in blue finger paint. Have this student press their fingertips in the next five boxes on the hundred chart.
   
   - Have students to repeat the activity by alternating red and blue prints, filling five boxes with the same color to show counting by fives.
   
   - **What is the number pattern on the chart?** counting by fives
   
   - Tell students to count together by fives all of the fingertips on the chart.
   
   - **How many fingertips are on the chart?** 100 fingertips
Guided Practice
- Direct students to the student page.
- Have students touch and count the numbers by fives to 100.
- Tell students to count the numbers by fives again, and color in the boxes green as they touch and say the numbers.

Independent Practice
Have students turn to the remaining pages. Explain the directions.
Have students work independently on the exercises.

Homework Practice Worksheet
Tell students to count by fives as each student gets into line. If they reach 100, have students begin again with five. If students are ready explain counting beyond 100 by fives.

- Discuss the patterns Alim and Kate found on the beach.
- Tell students to think of a small object that could be found at the beach. Have students draw the same object in several groups of five.
- Ask students to show their drawings to a classmate and count by 5s to determine how many objects were drawn.

See students’ work.

Number Patterns

Directions:
2. Count by 5s. Place a cube train of 5 cubes above each foot to copy the pattern.
Use a hundred chart to find the missing numbers. Write the missing numbers.

Name ____________________________
**ASSESS**

**Formative Assessment**
- Give each student a hundred chart.
- Have students count by fives until they get to 100.
- Have students use a crayon to shade in each number as they count by fives.

**Quick Check**

Are students still having trouble counting by fives on a hundred chart?

- **During Small Group Instruction**
  - **If Yes** → **AL** Daily Transparencies
  - **AL** Differentiated Instruction: Option 2 (p. 275c)
  - **If No** → **OL** Differentiated Instruction: Option 2 (p. 275c)
  - **BL** Differentiated Instruction: Option 1 (p. 275d)
  - **OL** Skills Practice Worksheet
  - **BL** Enrich Worksheet

**Directions:**
3. Start at 0. Connect the dots by counting by 5s to 100.

**Math at Home Activity:** Have family members stand in a line with bare feet. Have your child count by 5s to tell how many toes are in the family.
### Count by 2s

#### Objective
Count by twos to 100.

#### Resources

**Materials:** hundred chart from *Hands-On Activity Tools and Resources* p. 121, pink highlighter or marker, pretzel sticks, napkins, interactive whiteboard, calendar, stickers, crayons

**Manipulatives:** connecting cubes

#### Activity Choice 1: Hands-On

- **Materials:** hundred chart, pink highlighter or marker
  - Have students raise both of their arms high in the air. Tell students we are going to count how many arms there are in our class.
  - Have the class count together each student’s arms one by one.
  - Tell students there is another way to count the arms.
  - Tell students this time, we are going to count each student’s arms by twos. Have students raise their arms high in the air.
  - Count together by twos. Count by twos to 20.
  - Have a volunteer shade in the number two on the hundred chart with a pink highlighter. Ask the class to tell the next number that would be shaded in when counting by twos.
  - Direct students in counting by twos together to ten on the hundred chart.

#### Alternate Teaching Strategy

If students have trouble counting by twos . . .

Then use one of the following reteach options:

1. **AL Reteach Worksheet**

2. **IWB Virtual Manipulatives** Use the virtual calendar and pen tool to reteach the concept of counting by twos.

3. **Calendar Count**
   - Have students count out the numbers on the calendar one by one.
   - Have students place a sticker on the second day of the month. Ask students to show where the next sticker would be placed when counting by twos.
   - Have volunteers count by twos placing stickers on the appropriate days of the month.
   - Direct students in counting by twos all of the numbers with stickers on the calendar.
   - Give each student a hundred chart. Direct students in counting by twos on the hundred chart while they shade in each box yellow as they touch and say the numbers.
   - Have students count together by twos to 100.

#### COMMON ERROR!

Students may have difficulty remembering which number should be counted next. Have students circle the numbers that need to be counted or place a sticky note over the numbers that are not going to be counted. This will help students remember which number should be counted next on the hundred chart.
**Guided Practice**

- Direct students to the student page.
- Tell students to touch and count by twos. Have students color the boxes red to show the pattern.

**Independent Practice**

Have students turn the page over. Explain the directions. Have students work independently to complete the page.

- **Homework Practice Worksheet**

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**Formative Assessment**

- Give each student 12 connecting cubes.
- Have students make cube trains using two cubes.
- Have students count by twos to determine how many connecting cubes they have.
- **How many connecting cubes do you have?** 12 connecting cubes

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**Line UP**

- Have students find the total number of ears there are in the whole class. Tell students to count off by twos. Have students line up after they say their number.
Objective
Identify simple number patterns.

Resources

Materials: hundred chart, pointer stick, envelopes, tape, construction paper, crayons
Manipulatives: color tiles

Leveled Worksheets
Get Connect2

GLE 0006.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution. Also addresses GLE 0006.3.1.
Checks for Understanding ✔ 0006.3.2, ✔ 0006.3.3

INTRODUCE

Circle Time

Activity Choice 1: Hands-On
Materials: hundred chart, pointer stick
- Display a large hundred chart and have a volunteer use a pointer stick to count each number pointed to, until a number with a zero is reached.
- How many numbers did you point at to get to the next number with a 0 in it? ten numbers
- Have students skip count by tens using a pointer to guide them.
- Again use the hundred chart. Have students point to all numbers ending in five and zero as they appear in order on the chart.
- How many numbers did you point at to get to the next number ending in zero or five? five numbers
- Direct students in skip counting by fives to 100.
- Repeat the same procedure for counting by twos.
- Have students count by twos together on the hundred chart.
- Discuss how a hundred chart shows numbers in a way that helps us find number patterns.

TEACH

Activity Choice 2: RWPS Reader
- Read the story, At the Grocery Store, to the class.
- Ask students if they know another way to count the objects in the pictures.
- Turn to page 5. Have students count the number of objects on the page by twos. How many loaves of bread are there? 8 loaves of bread
- Turn to pages 6, 7, and 8 and repeat the process.

Direct students to the student page.
Understand Discuss the picture and identify the problem: What number patterns can you find?
Plan Discuss with students the strategy they could make to solve the problem. Talk about how finding a pattern will help solve the problem.
Solve Guide students to look for the pattern used to solve the problem. Review patterns and explain that they can be made in many ways, including by using numbers, objects, sounds, movement etc. Have students find a pattern to show all the numbers that end in zero.
- What numbers have a zero in them? 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
- How does a hundred chart help you identify the number pattern?
Sample answer: Hundred charts help you see the numbers organized to identify a number pattern.
Check Have students look back at the problem to be sure that the answers fit what they already knew about the problem. Does your answer make sense?

Alternate Teaching Strategy

If students have trouble using the find a pattern strategy . . .
Then use one of the following reteach options:
1 AL Reteach Worksheets
2 Piecing Together Patterns
- Give each pair of students an envelope with all ten rows of a hundred chart cut into strips. Have the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100 highlighted.
- Tell students that the hundred chart has been cut into rows of numbers. Tell students to place the rows of numbers back in order and find the number pattern.
- Have students say the number pattern they found and then tape the strips to construction paper to create a hundred chart.

COMMON ERROR!
Students may struggle to identify a number pattern. Have students use color tiles to represent a number pattern such as one green, two yellow, one green, two yellow, one green, two yellow. Then have them describe what is happening to the color tiles.
**Guided Practice**

- Direct students to the student page.
- Have students find a pattern to show all of the numbers that end in zero.
- Tell students to put an X on the numbers and say the number pattern they find.
- Tell students to choose a blue crayon and color the numbers that show counting by fives.
- Have students identify the number pattern they find.

**Independent Practice**

Have students turn the page over. Explain the directions. Have students work independently on the exercises.

- Homework Practice Worksheet

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**Formative Assessment**

- Color the numbers 1, 3, 5, 7, 9, 11 on a hundred chart. Tell students that these numbers are showing a number pattern.
- Have students copy the number pattern.
- Have students tell if the number pattern is counting by twos or counting by fives. *counting by twos*

**Line Up**

Have students get in groups of five. Have groups count by fives as they line up.

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**Multi-Part Lesson 1** What do you notice when you count by tens? by fives?  
Sample answers: All of the numbers that end in zero; all of the numbers end in five or zero
Formative Assessment
Use the Mid-Chapter Check to assess students’ progress in the first half of the chapter.

ExamView® Customize and create multiple versions of your Mid-Chapter Check and the test answer keys.

Dinah Zike’s Foldables® Use these lesson suggestions for incorporating the Foldable during the chapter.

Lesson 1B Use one sheet of art paper per student to make a Counting-by-Tens Accordion Foldable. Have students work together using a piece of chalk to trace around both hands of each student. Place students into groups with up to and not over 10 students. Have students work together to create their Counting-by-Tens Accordion Foldable.

Lesson 1C Use one sheet of art paper per student to make a Counting-by-Fives Accordion Foldable. Have students work together using a piece of chalk to trace around one hand of each student. Repeat the steps above to make a personalized Counting-by-Fives Accordion Foldable.

Lesson 1D Use one sheet of art paper per student to make a Counting-by-Twos Accordion Foldable. Have students work together using a piece of chalk to trace around one shoe on each student. Repeat the steps above to make a personalized Counting-by-Twos Accordion Foldable.

Data-Driven Decision Making
Based on the results of the Mid-Chapter Check, use the following resources to review concepts that continue to give students problems.

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<thead>
<tr>
<th>Exercises</th>
<th>Tennessee Standard</th>
<th>What’s the Math?</th>
<th>Error Analysis</th>
<th>Resources for Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GLE 0006.3.1</td>
<td>Identify the number pattern and shade in the correct boxes.</td>
<td>Does not identify the correct number pattern. Does not shade in the correct boxes.</td>
<td>Chapter Resource Masters Lesson Animations</td>
</tr>
<tr>
<td>2</td>
<td>GLE 0006.3.1</td>
<td>Identify the number pattern and write the correct number under each picture.</td>
<td>Does not identify the correct number pattern. Does not write the correct numbers.</td>
<td></td>
</tr>
</tbody>
</table>
Race to 100
Count by 10s

Manipulatives: connecting cubes, bears, and a number cube

Introduce the game to students to play as a class, in small groups, or at a learning station to review concepts introduced in this chapter. You may wish to use the available Game Board to play the game.

Instructions

- Have students work in pairs. Tell students to take turns.
- Tell students to choose a bear and place it on Start.
- Tell students to start the game by rolling the number cube. Have them go that many spaces.
- Explain to continue until someone reaches the number 10 to win the race. The winner of this race takes 5 cube trains with 10 cubes on each train.
- Ask students to turn their bear around and roll again.
- Have students race again following the same process. The winner of this race takes 5 cube trains with 10 cubes on each train.
- Tell students to continue racing until the first player acquires 10 cube trains. Have students count their trains by 10s to 100. The student who can count their trains by tens to 100 wins the game.

Extend the Game

- Follow the regular game rules. When students have collected their 10 cube trains, have them count back from 100 by tens.
- For another game focusing on the same mathematical concept see Game Time.

Differentiated Instruction

Use these leveling suggestions to differentiate the game for all learners.

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<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>Have students play the game racing to 10 only one time to win. Have the winner receive five cube trains of 10 each. Guide the student to count trains by tens to 50.</td>
</tr>
<tr>
<td>OL</td>
<td>Have students play the game following the rules.</td>
</tr>
</tbody>
</table>

Number Patterns 290
**Growing Number Patterns**

**Explore** Identify and Duplicate Number Patterns

**Essential Question**
Name something in your classroom that shows a growing number pattern. Explain your choice. Sample answer: calendar numbers, clock numbers, hundred chart

**Focus on Math Background**
As students explore growing number patterns, they will discover how terms in a forward sequence of numbers predictably increase by some rule-governed transformation. For example, in a sequence of numbers, such as 1, 3, 5, 7… students must compare each term to the one before it in order to uncover a constant relationship. In the example presented above, there is a difference of two between each term, thus following a +2 additive pattern. This type of reasoning lays the foundation for some basic types of algebraic relationships, such understanding multiplication as a function of repeated addition.

**PART A**

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<th>Identify and Duplicate Number Patterns (pp. 291–292)</th>
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<tbody>
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</tr>
<tr>
<td>Vocabulary</td>
<td></td>
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<tr>
<td>Materials/Manipulatives</td>
<td>number cards, paper clips, drawing paper, crayons, stamps, stamp pad, glue connecting cubes</td>
</tr>
<tr>
<td>Resources</td>
<td>Explore Worksheets, Lesson Animations, Virtual Manipulatives</td>
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**Explore** Identify and Duplicate Number Patterns

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<th>Identify and Duplicate Number Patterns (pp. 293–296)</th>
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<td>GLE 0006.3.1</td>
</tr>
<tr>
<td>growing pattern</td>
</tr>
<tr>
<td>Visual Vocabulary Card 46</td>
</tr>
<tr>
<td>crayons, paper, board, interactive whiteboard, tape, construction paper color tiles, counters, attribute blocks, connecting cubes</td>
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</tbody>
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**PART B**

**Blended Approach**
Refer to the Blending Math Connects and IMPACT Mathematics guide for detailed lesson plans.

**Problem Solving in Science** (pp. 297–298)

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<td>PART</td>
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<td>B</td>
<td></td>
</tr>
<tr>
<td>Days</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Math Their Way, p. 335**

**Suggested Pacing** (8 Days)

All digital assets are Interactive Whiteboard ready.
Differentiated Instruction

**Approaching Level**

**Option 1**

*Use with 2B*

**Hands-On Activity**

- Make a cube train with 1 red cube and 1 yellow cube. Make another by connecting 1 red cube and 2 yellow cubes, then another using 1 red and 3 yellow.
- Tell students that this is a growing pattern. Have students point to the part that is growing.
- Continue extending the pattern and asking which part is growing.
- Ask students to copy the pattern using connecting cubes.
- When students are ready, show the pattern using numbers such as 1 2 3.

**English Language Learners**

This strategy teaches English Learners the language used with growing number patterns.

Find Core Vocabulary and Common Use Verbs in the online EL strategies to help students grasp the math skills; use Language Alerts at point of use in the Teacher Edition.

**Beginning**

**Background Knowledge** Link previous work of growing patterns to growing number patterns.

- Show a growing pattern (see art). Say, “growing pattern.” Prompt students to count the first item. Write “1” to the side. Repeat for other items.
- Recount pattern as a call and response chant.

**Intermediate**

**Number Recognition** Express growing patterns with numeric oral prompts and integrate the pattern with action.

- Say, “go!” Write, “go!” Say, “one step” and model. Repeat “go!” Move 2 steps. Continue the pattern at least three times.
- Say the pattern as students act out the steps. In student led groups, repeat chorally and kinesthetically.

**Advanced**

**Music, Chants and Rhythms** Internalize a growing pattern with music and use the lyrics to act out the pattern.

- Show a bear in a boat. To the tune of the “Farmer in the Dell,” sing, “There is one bear in one boat (repeat), Lets show how bears can grow, there are two bears in one boat” Add a bear. Remember to change “there is” to “there are” when numbers become plural.
- Continue verses to 10 bears. Students sing as they model the song with manipulatives.

**On Level**

**Option 1**

*Use with 2B*

**Hands-On Activity**

**Materials:** dominos, card stock, markers

- Give a group of students 5 dominos that show these dots: 1 and 1, 2 and 1, 3 and 1, 4 and 1, 5 and 1.
- Show students the dominos with 1 and 1, 2 and 1, 3 and 1, in that order.
- If the pattern continues, which domino would come next?
- Allow students to say the pattern and tell which part of the pattern is growing.
- If students are ready, have them use cardstock and markers to make more dominos that would come next in the pattern.

**Other Options**

Learning Station Cards 39 and 40

**Beyond Level**

**Option 1**

*Use with 2B*

**Hands-On Activity**

- Have students work with a partner.
- Provide students with attribute buttons with two and four holes.
- Tell students to show a number pattern using the number of holes. Have their partner identify the number pattern.
- Ask students to duplicate the pattern using attribute buttons.
- Repeat the activity having their partner show a new pattern.

**Extend**

Show a growing pattern. Bilingual groups use the growing pattern and create an organizer to show their answer. Have students show their work and discuss how they identified the growing pattern.
**Identify and Duplicate Number Patterns**

**Objective**
Identify simple growing number patterns.

**Resources**

**Materials:** number cards made from construction paper, paper clips, drawing paper, crayons, stamps, stamp pad, glue

**Manipulatives:** connecting cubes

**Concept Development**
Identify and copy simple growing patterns using paper clip chains.

**Language Alert!**

**Activate Prior Knowledge: Chain** Students may need help recognizing that there are different types of chains. Show visual examples of other chains to scaffold meaning (a paper chain, a chain on a bike, a chain necklace, etc.).

---

**Start a Growing Pattern**
Give each student 15 paper clips and number cards from 1–5. Tell students they are going to build a paper clip chain. Model and have students hold up one paper clip. Show the number card 1 in the other hand. Tell students to place the number card below the paper clip. Model and have students create a new paper clip chain with two paper clips. Have students place the chain next to the first paper clip. Tell students to place that number card below the paper clip chain.

**Find the Growing Pattern**
Model and have students create a new paper clip chain with three paper clips. Have students place that paper clip chain beside the second paper clip chain. Tell students to place the number card below that paper clip chain. Have students repeat the process creating paper clip chains using 4 and 5 paper clips. How is the pattern changing? Sample answer: It is growing by 1.

**Identify Patterns**
Repeat the activity having students show a number pattern again using paper clip chains showing numbers 5, 4, 3, 2, and 1. Make sure students have their number cards placed directly below the paper clip chains. Have students say the numbers from 5 to 1. What number is the pattern changing by? Sample answer: It is changing by one.
Reflect and Clarify

- What did we talk about today? growing number patterns
- Can number patterns only change by one more or one fewer? no How else can the number patterns change? Sample answer: The patterns can also change by more or fewer of any number.

WRITE MATH  Guide students to fold a piece of drawing paper into three sections. Have students use a crayon to separate the three sections into boxes. Tell students to stamp six times in the first box. Be sure students leave room at the bottom of the page to write the number 6 below the stamps. Have students stamp four times in the middle box and write the number 4 below those stamps. Have students stamp two times in the last box and write the number 2 below those stamps. How much is the pattern changing by? by twos Tell students to glue this piece of paper into their Math Journal.

Use the Student Page

- Use the Explore workmat. Have students use the workmat and connecting cubes to show growing and repeating number patterns. Direct students to begin their patterns on the lower left hand square and work to the right. Slowly call out these numbers:

  - 1, 2, 3, 4, 5, 6, 7
  - 8, 6, 8, 6, 8, 6, 8
  - 7, 5, 3, 7, 5, 3, 7
  - 8, 7, 6, 5, 4, 3, 2

Tell students to show their own number pattern using connecting cubes. Have students write the numbers under each column. Direct students to tell their number pattern to a classmate and explain his or her thinking. Have the classmate check if the pattern is correct.

- Use the next page. Have students identify the number pattern. Ask students to write the numbers to show the pattern on the lines below.

Number Patterns
Identify and Duplicate Number Patterns

Objective
Identify and duplicate simple number and growing patterns.

Vocabulary
growing pattern

Resources
Materials: crayons, paper, board, interactive whiteboard, tape, construction paper
Manipulatives: color tiles, counters, attribute blocks, connecting cubes

Leveled Worksheets
Get ConnectED

Activity Choice 1: Hands-On
Materials: color tiles

• Have two students come to the front of the room to form a line.
• Ask a volunteer to come to the end of the line and stand behind the two students in the line.
• **How many students joined the line?** one student
• Allow another student stand behind the last student that just joined.
• **How many students joined the line?** one student

Explain that this number pattern is growing by one.

• Have students repeat the activity this time beginning with eight color tiles and decreasing the number of tiles in the pattern by two. Direct students to write the number of tiles below each group of tiles to show the number pattern. 8, 6, 4, 2, 0
• Allow students to show a growing number pattern. Have a partner duplicate the pattern with the color tiles then identify and say the number pattern.
• Have pairs switch roles and repeat.

COMMON ERROR!
Students may have difficulty remembering the numbers that have been added each time a new person or object is added to the pattern. Have students write down or hold up number cards to show the amount that is added on to the total to help them identify the number pattern.

Activity Choice 2: Art
Materials: crayons, paper, board

• Draw five ladybugs on the board. Show a number pattern by drawing one dot on the first ladybug, two dots on the second ladybug, three dots on the third ladybug, four dots on the fourth, and five dots on the fifth.
• Ask them to identify and name the pattern.
• Have students duplicate the pattern by drawing it in their Math Journals.
• Ask students to share their drawings with a classmate.

2 TEACH
Direct students to the top of the page.

• Have students identify the objects in the picture.
• **Do you notice anything different about the bees?** Yes **What is different?** The bees have a different number of stripes.

• Have students count the number of stripes. Have students duplicate the growing number pattern by placing the same number of counters as the number of stripes on the bee.
• **What is the growing number pattern that the stripes are making?** The stripes increase by one on each bee.
• Have students write the number of stripes below each bee.

GLE 0006.3.1 Identify, duplicate, and extend simple number patterns and sequential and growing patterns.
Checks for Understanding ✔ 0006.3.2, ✔ 0006.3.3
**Alternate Teaching Strategy**

**If** students have trouble identifying growing number patterns . . .

**Then** use one of these reteach options:

1. **Reteach Worksheet**

2. **IWB Virtual Manipulatives** Use the virtual attribute buttons and pen tool to reteach the concept of identifying and duplicating number patterns.

3. **Creating Patterns**
   - Provide students with attribute blocks. Tell students that they will copy the shape and amount as it is shown on the board.
   - Tape up a rectangular cut out then tape another rectangle beside it. **How many rectangles were added?** one rectangle
   - Repeat by adding another rectangle. **Do you notice a certain number of objects are added each time?** Yes **What number is it changing by?** one
   - Begin a new growing pattern. Place one red square on the board. Add two blue squares to the board. **How many squares were added?** two blue squares
   - Repeat the process using one red square and four blue squares. **What is the number pattern?** Sample answer: Each time two more blue squares are added to one red square.
Guided Practice

- Direct students to Exercise 1.
- Have students identify the objects in the picture.
- **Do you notice any differences among the flowers? Yes If so, what is it?** The flowers have a different number of petals on them.
- Have students count the number of petals on each flower and write the number underneath the flower.
- **What is the growing number pattern?** The petals increase by two on each flower.

Independent Practice

Have students turn to the remaining pages. Explain the directions. Have students work independently on the exercises.

Homework Practice Worksheet

**Line UP**

Place children in a movement growing pattern. Have students place their hands on hips, hands on head; hands on hips, hands on head, hands on head; hands on hips, hands on head, hands on head, hands on head. Ask students to line up repeating the growing pattern until every student is in line.

**TEACH with TECH**

Use an interactive whiteboard and virtual manipulatives to create a growing pattern. Have students identify the growing pattern. Choose one student to show how to duplicate the pattern.

Directions:

4. Say the number pattern. Trace the numbers. Draw seeds on each packet to copy the number pattern.
5. Say the number pattern. Trace the numbers. Draw dots on each lady bug’s wings to copy the number pattern.

Name ____________________________

1 3 5 7

See students’ work.

2 1 2 1 2 1

See students’ work.
4 ASSESS

Formative Assessment

- Give each student a handful of 20 connecting cubes all the same color.
- Show students a row of cube trains made from 2, 4, 6, and 8 cubes. Show them in that order.
- Tell students to use cubes to copy the growing pattern. Have students write the numbers that show the growing number pattern.

Quick Check

Are students still having trouble recognizing number patterns?

During Small Group Instruction

If Yes →
- AL Daily Transparencies
- AL Differentiated Instruction: Option 1 (p. 291b)

If No →
- OL Differentiated Instruction: Option 1 (p. 291b)
- BL Differentiated Instruction: Option 1 (p. 291b)
- OL Skills Practice Worksheet
- BL Enrich Worksheet

Multi-Part Lesson 2

How can you identify a growing number pattern? Sample answer: The number changes by the same amount each time.
**Objective**
Discuss and identify number patterns.

**Activate Prior Knowledge**
Before you turn students’ attention to the pages, discuss with them things they know about space:

- **What are some things we know are in space?** Sample answers: stars, planets, moons, satellites, rockets
- **How can we see things in space?** Sample answers: telescopes, photos
- **What can we see in the sky at night that we usually cannot see during the day?** Sample answers: the stars, planets, the Moon
How many craters do you see on the Moon?

Count the craters by 5s.
There are ______ craters.

See students’ work.

Draw six planets in the telescope.
Count the planets by 2s.

Use the Student Pages

Page A  Discuss what a telescope is used for.

Pages B and C  Ask students to identify sets of ten stars and sets of five moon craters. Supply them with counters and ten-frames to practice counting by fives and tens.

Page D  Help students count by twos. Allow them to use counters to aid in grouping. Encourage them to add details to their pictures.

WRITE MATH  As a group, use letter sounds to spell star on the board. Ask students to copy it and draw a picture of a star. Collect the papers and count the total number of star papers using number patterns such as counting the stars by fives or twos.

Fun Facts

- Earth has only one moon. Jupiter has more than 60 moons! Technology helps scientists see moons that are near other planets.
- The Sun is not a planet. It is a star. Many stars look like they are very small because they are far away. Actually, some of them are bigger than our Sun!
The **BIG Idea**

As a class, revisit this chapter’s Big Idea.

**How can I identify and copy number patterns?**

Sample answer: I can identify patterns by looking for the part of the pattern that is growing. I can copy the number pattern by writing the numbers of the amount of objects that are in the pattern.

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**Dinah Zike’s Foldables®**

If students have not yet completed their Foldable, guide them to create and fill in the appropriate information using the instructions on the Chapter Opener and Mid-Chapter Check pages. You may choose to use the Foldable to help students review the concepts presented in this chapter and as a tool for studying for the Chapter Review/Test. Review counting by twos, counting by fives, and counting by tens using the Accordion Foldable.

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**Chapter Project**

**Number Pattern Hunt**

Use these alternate leveled chapter tests to differentiate assessment for the specific needs of your students.

<table>
<thead>
<tr>
<th>Chapter Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level</strong></td>
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<tr>
<td>AL</td>
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<tr>
<td>AL</td>
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<tr>
<td>OL</td>
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<tr>
<td>OL</td>
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<tr>
<td>BL</td>
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<tr>
<td>BL</td>
</tr>
</tbody>
</table>

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**Additional Chapter Resource Masters**

- OL = Oral Assessment
- OL = Listening Assessment

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**Data-Driven Decision Making**

Based on the results of the Chapter Review/Test, use the following to review concepts that continue to present students with problems.

<table>
<thead>
<tr>
<th>Exercises</th>
<th>Tennessee Standards</th>
<th>What’s the Math?</th>
<th>Error Analysis</th>
<th>Resources for Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GLE 006.3.1</td>
<td>Counts by tens and writes the numbers.</td>
<td>Counts incorrectly. Does not write the correct number below each picture.</td>
<td>Chapter Resource Masters</td>
</tr>
<tr>
<td>2</td>
<td>GLE 006.3.1</td>
<td>Counts by fives and shade in the correct boxes.</td>
<td>Counts incorrectly. Does not shade in the correct boxes.</td>
<td>Get Connected</td>
</tr>
<tr>
<td>3</td>
<td>GLE 006.3.1</td>
<td>Identifies the number pattern. Writes the number to show the pattern below.</td>
<td>Does not identify the correct pattern. Writes the wrong number.</td>
<td>Lesson Animations</td>
</tr>
</tbody>
</table>
Vocabulary Review
Review chapter vocabulary using one of the following options.
- Visual Vocabulary Cards (42 and 46)
- eGlossary

Chapter Test
Find alternative summative assessment options.

ExamView Assessment Suite
Customize and create multiple versions of your Chapter test and their answer keys.