

Coming for  
Back to School  
2019!

 Ready® | Mathematics

# 2020 Edition (Grades 6–8)



## LOOK INSIDE TO LEARN ABOUT UPCOMING ENHANCEMENTS

- ✓ **Problem Solving and Mathematical Discourse**
- ✓ **Enhanced Features to Support English Learners**  
*(based on recommendations from the Council of the Great City Schools English Language Development framework)*

# Teacher Support

Lesson 0 provides teachers with a full guide on how to introduce the Think–Share–Compare Routine and the presentation slides provided for every lesson help facilitate the discussion.

## Lesson 0

Provides lessons for the first five days to introduce teachers’ and students’ roles in using Think–Share–Compare and research-based language routines.

### Mathematics Lessons

**Lesson 0** Lessons for the First Five Days ..... **Teacher Toolbox**  
Using the Think–Share–Compare Routine



### Think–Share–Compare Routine

- 1. Make Sense of the Problem**  
Read and understand the problem or question. Think about the key information.
- 2. Solve and Support Your Thinking**  
Include pictures, models, and/or explanations in your solutions. If you have time, show another way to solve it.
- 3. Discuss**  
Explain your thinking to a partner. Discuss how your strategies are alike and different.
- 4. Compare**  
Compare your strategies with the class, including the strategies in the *Ready* book.
- 5. Connect and Reflect**  
Complete and discuss the *Connect It* questions.
- 6. Apply**  
Apply what you have learned to a new problem. Be sure to support your answer.

### Think–Share–Compare Routine

Engages students in solving problems and discussing their work, first with partners, then with the whole class. Teachers select from the Step-by-Step questions in the lessons to guide discussion during the Compare portion of the routine.

### Whole Class Instruction

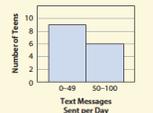
Presentation slides are provided for every skill and strategy lesson in the Teacher Toolbox and follow the Think–Share–Compare Routine.

#### Step 1 Make Sense of the Problem

- What is the problem about?
- What are you trying to find out?
- What information is important?

#### Problem Think about ways to solve the problem.

Caroline looked at the text messaging data and drew the histogram to the right. She noticed that this histogram does not show how most of the data points are clustered around 10 and 20 text messages per day.



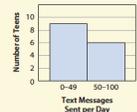
Draw a histogram to show the data grouped in a different way.

#### Step 2 Solve and Support Your Thinking

- Solve the problem.
- Record your process.
- Solve another way.

#### Problem Think about ways to solve the problem.

Caroline looked at the text messaging data and drew the histogram to the right. She noticed that this histogram does not show how most of the data points are clustered around 10 and 20 text messages per day.



Draw a histogram to show the data grouped in a different way.

#### Step 3 Discuss

- Share your thinking with a partner.

#### Discussion Starters Use these to start sharing your thinking.

- I knew ... so I ...
- I don't understand how ...
- How did you get started?
- I disagree with this part because ...

Language and Content Objectives are provided for every lesson to help teachers address students needs.

### Language Objectives

Indicate the language students both understand and produce as they work on lesson objectives.

### Language Objectives

- Compare the shapes of graphs using the terms *skewed left*, *skewed right*, *symmetrical graph*, *peak*, and *outlier*.
- Explain in writing the mathematical processes for finding measures of center and measures of variability using transition words and sequential language.
- Use the Lesson Vocabulary accurately in discussing and writing about variability in data sets.

# Language Support for All Students

Language routines, found in the Teacher Resource Book, enhance the overall Think–Share–Compare discourse routine and suggest an overall approach to teaching problems.

## Integrating Language and Mathematics

Outlines language routines that can be used within any part of the Think–Share–Compare Routine. They offer consistent, repeatable structures to understand language and express ideas so students can focus on the mathematics they are learning. For example, “In your own words” is a routine that allows students to restate an idea they read or heard in their own words. It requires students to clarify understanding and use clear, specific language.

## Integrating Language and Mathematics

*Ready® Mathematics* integrates language and mathematics instruction to support all students in learning. These research-based language routines provide powerful language-based activities through which students access, create, and express their growing mathematical understanding.

### Three Reads

**What It Is** A three-step routine for making sense of word problems or mathematical tasks.

**How to Use It** The task is read three times, each time with a different purpose:

- What is this task about?
- What do we need to do or find?
- What quantities or information are important? How are they related?

The class comes to agreement on answers to each question.

While initially teacher-led, over time students can use Three Reads independently. Three Reads may be done orally, or students may respond in writing first, before class discussion.

**When to Use It** When helping students make sense of a task.

Adaptations for language proficiency levels include:

- volunteers rather than the teacher reading the task.
- students reading the task silently or chorally for some readings.
- pairing or grouping students.
- having one partner read to the other.
- calling on several students or groups to respond to each question.

**Why It Matters** Students make sense of the task by

- making personal connections to problem situations.
- clarifying which quantities or pieces of information are important.

(or other students when processing text) decides whether the restatement is complete and correct. If not, students discuss together and then revise the restatement. Teachers may call on one or several students to restate the same idea.

**When to Use It** After reading or during a discussion to

- confirm understanding of written text or points in a discussion.
- focus attention on important ideas.
- let students hear an idea more than once and in more than one way.
- require that students listen to one another.
- give students time to process what was said or read.

**Why It Matters** Expressing an idea in your own words requires comprehension and personal engagement. Hearing an idea stated more than once and in slightly different ways builds understanding. Restating an idea, confirming accuracy, and then refining the restatement builds the habit of listening carefully and speaking clearly and precisely.

### Act It Out

**What It Is** Support for making sense of written or spoken language.

**How to Use It** Review tasks and explanatory text ahead of time. Look for contexts that are likely to be unfamiliar, particularly contexts that students *must understand* in order to make sense of the problem. Gather pictures or objects (realia) to help convey important parts of the context or concept. When presenting the problem, sketch, use gestures, or act out the problem, or call on students to do so.

**When to Use It** Before introducing problems or tasks with contexts that are likely to be unfamiliar to your students.

**Why It Matters** Act It Out helps all students make sense of word problems and explanatory text by clarifying unfamiliar or partially understood concepts and contexts.

### In Your Own Words

**What It Is** A routine to confirm and clarify understanding, highlight ideas, encourage students to listen to one another, and lead students to use clear and specific language.

**How to Use It** The teacher calls on students to restate an idea they have read or heard “in your own words.” The original speaker

## English Language Development

Offers suggestions for scaffolding language use during the lesson so students at different levels of English proficiency can access the mathematics and express their own ideas.

## ELL English Language Development

### Prepare for Day 1: Use with *Think It Through*

#### ELP Levels 1–3

**Reading/Speaking** Read aloud or paraphrase *Think It Through*. Display the terms *vary*, *variety*, *variability*, and *variable* and explain that the terms are related. Use these sentence frames to guide discussion.

- To *vary* means “to change” or “be different.”
- A *variable* is a symbol that represents a value. It is usually represented by a letter.
- *Variability* means “change” or “amount of change.” It makes a statistical question different from a non-statistical question.
- Statistical questions have answers that can *vary*. When we ask a statistical question, we expect a *variety* of answers.

#### ELP Levels 2–4

**Reading/Speaking** Have students partner-read *Think It Through*. Display the terms *vary*, *variety*, *variability*, *variable*, *statistical*, and *non-statistical*. Have pairs use the *Turn and Talk* routine to discuss how the words can be used to complete these sentence frames:

- A *variable* is a symbol usually represented by a letter that stands for a value.
  - *Variability* means “change” or “amount of change.” It makes a statistical question different from a non-statistical question.
  - Statistical questions have answers that can *vary*. When we ask a statistical question, we expect a *variety* of answers.
- Call on pairs to share their work.

#### ELP Levels 4–5

**Reading/Speaking** Have students partner-read *Think It Through*. Form pairs to discuss what statistical questions are and how they differ from non-statistical questions. Before they begin, display the terms *vary*, *variety*, *variability*, *statistical*, and *non-statistical*. Clarify meanings as needed. Then ask each student to write the terms in a list. Ask students to use this structure in their discussion: Partner A explains what statistical questions are and how they differ from non-statistical questions. Partner B listens and keeps track of the number of times Partner A uses each of the displayed terms. Partners switch roles. Finally, partners co-construct an explanation of how statistical and non-statistical questions differ.

# Building on Familiar Concepts and Vocabulary

The beginning of every unit in the **Student Instruction Book** gives students the opportunity to review mathematical and academic vocabulary and to access and build on familiar concepts that are important for the upcoming unit.

**Unit 5**  
**Preview the Unit**

**Review Words**

data      data display  
survey    the mean of the data

**Build Your Vocabulary**

Below are words and phrases you may know. For each, write a meaning or example or write "I don't know yet." Share your answers with a partner. Together add meanings and examples that you discuss.

Term	Meaning or Example
data	

**Build Your Vocabulary**

Provides opportunities for students to review previously taught mathematical or general academic vocabulary.

**Real-World Connection**

Asks students to make personal connections to real-world, familiar applications of the mathematics in the unit.

Teacher Resource Book

**Real-World Connection**

- Read aloud the **Real-World Connection** from the previous page and the directions for **Read and Write for the Real-World Connection** on this page as students follow along. To confirm understanding, ask students to explain what restaurant owners, city planners, and coaches do and why they might want to collect the information.
- Discuss ways in which the workers mentioned in **Real-World Connection** might collect information. Students may suggest surveys. Encourage them to think of other methods, such as counting the orders

**Concept Development**

Provides collaborative visual activities so students with a range of mathematical and English language proficiencies can access and build upon familiar concepts that are prerequisite for the unit.

Teacher Resource Book

**Concept Development**

Here is data about the ages of people in two different groups. The mean age in both groups is 13. How are the groups alike and different? Write your ideas in the Venn diagram.

**Group A**

11, 13, 13, 14, 12, 14, 13, 13, 12, 15

**Group B**

2, 24, 22, 1, 26, 25, 2, 1, 26, 1

**Preview Academic Vocabulary**

Suggests activities through which students examine word meanings, word structure, and related words to create a word wall that students can refer to during the unit.

**Preview Academic Vocabulary**

- Preview the statistical term central to this unit, *variability*. First display related terms that may be more familiar:
  - The store has a *variety* of fruits so that people can choose the ones they like best.
  - Matt likes to *vary* the color of his shirt so that he doesn't wear the same color every day.
  - The weather will be *variable* tomorrow: cloudy, then rainy, and finally some sunshine.
- Explain that *variability* in statistics refers to how the numbers in a data set differ from one another. Use the data in Group A and Group B of the Venn diagram as an example.
- Brainstorm as a class other data sets that would have a lot of variability (e.g., the height of middle school students) and those that might have very little (e.g., the ages of first graders).
- Post the term *variability* on a word wall or on an anchor chart for students to refer to throughout the unit. Have students add the word to their Math Journals.