Grade 7 Unit 4: Proportional Relationships and Percentages
Lessons 1–5: Proportional Relationships with Fractions

Explore, Play, and Discuss

- I can find dimensions on scaled copies of a rectangle.
- I remember how to compute percentages.

Activity Suggestions:

➢ Lesson 1: Focus on applying proportional relationships to solve problems with fractional ratios, rates, percents, and constants of proportionality. Activity 2 may need to be adjusted from groups of 3-4 to individuals. Debrief as a whole class.

Assessment Suggestions:

➢ Check Your Readiness assessment: Administer all items within the first or second day of this section. Use the guidance provided with each problem to adjust instruction so that students can access the math in the unit.

Deep Dive

- I can solve problems about ratios of fractions and decimals.
- I can use a table with 2 rows and 2 columns to find an unknown value in a proportional relationship.
- When there is a constant rate, I can identify the two quantities that are in a proportional relationship.

Activity Suggestions:

➢ Lesson 2: Focus on ratios of fractions and fractional percentages in situations where they naturally occur. *Activity 4 is optional and has a digital version.*

➢ Lesson 3: Focus on solving problems involving proportional relationships by more efficient methods, especially by setting up and reasoning about a two-row table of equivalent ratios. *Activity 4 is optional.*

Assessment Suggestions:

➢ Lesson 2 cool-down

➢ Lesson 3 cool-down

Synthesize and Apply

- I can use the distributive property to rewrite an expression like $x + \frac{1}{2}x$ as $(1 + \frac{1}{2})x$.
- I understand that "half as much again" and "multiply by $\frac{3}{2}$" mean the same thing.
- I can write fractions as decimals.

Activity Suggestions:

- ➢ Combine Lesson 4 and Lesson 5: Focus on how to use the distributive property to write a compact expression for situations where one quantity is described in relation to another quantity. *Lesson 4 Activity 4 and Lesson 5 Activity 4 are optional making these lessons ideal for combining.*
- ➢ Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Assessment Suggestions:

- ➢ Lesson 4 cool-down
- ➢ Lesson 5 cool-down
- ➢ Revisions to previous assessment prompts
- ➢ Students use learning targets to decide what additional practice they need.

Ongoing Practice

- Assign one or more of the distributed practice problem sets from lessons 1–5 to be completed over the time period that the section is being worked on.
- These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit.
- Specify which problems students should submit, or let them choose.
- Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources

- Delve into any of the skipped optional activities of Lesson 4 and Lesson 5.
- Use any of the lessons from Grade 6, Unit 3 focusing on unit rates and percentages.
- Use any of the lessons from Grade 6, Unit 5 focusing on multiplying decimals.

Lessons 6–9: Percent Increase and Decrease

Explore, Play, and Discuss

- I can draw a tape diagram that represents a percent increase or decrease.
- When I know a starting amount and the percent increase or decrease, I can find the new amount.

Activity Suggestions:	Assessment Suggestions:
➢ Lesson 6: Focus on using tape diagrams to represent percent increase and percent decrease, and to solve problems. *Activity 4 is optional.*	➢ Lesson 6 cool-down

Dive Deep

- I can use a double number line diagram to help me solve percent increase and decrease problems.
- I understand that if I know how much a quantity has grown, then the original amount represents 100%.

Activity Suggestions:	Assessment Suggestions:
➢ Lesson 7: Focus on using double number lines to visualize given situations in order to help students see clearly which of the two amounts involved, the starting amount or the final amount, is to be regarded as the whole, or 100%. Grouping in this lesson may need to be adjusted. *Activity 4 is optional.*	➢ Lesson 7 cool-down

Synthesize and Apply

- I can solve percent increase and decrease problems by writing an equation to represent the situation and solving it.
- I can find percentages of quantities like 12.5% and 0.4%.
- I understand that to find 0.1% of an amount I have to multiply by 0.001.

Activity Suggestions:

- ➢ Combine Lesson 8 and Lesson 9: In Lesson 8, focus on writing equations and understanding their connection to the context. In Lesson 9, focus on how to calculate a fractional percentage. Grouping may need to be adjusted for partner or group activities. Lesson 9 Activity 2 has a digital version. *Omit Lesson 8 Activity 4 and Lesson 9 Activity 4 to account for time.*

Assessment Suggestions:

- ➢ Lesson 8 cool-down
- ➢ Lesson 9 cool-down
- ➢ Revisions to previous assessment prompts
- ➢ Students use learning targets to decide what additional practice they need.

Ongoing Practice

- Assign one or more of the distributed practice problem sets from Lessons 6–9 to be completed over the time period that the section is being worked on.
- These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit.
- Specify which problems students should submit, or let them choose.
- Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources

- Delve into any of the skipped activities of Lessons 1–9.

Lessons 10–16: Applying Percentages

Explore, Play, and Discuss

- I understand and can solve problems about sales tax and tip.
- I understand and can solve problems about commission, interest, markups, and discounts.

Activity Suggestions:

- ➢ Lesson 10: Focus on making the connection between tape diagrams and double number lines to the more efficient equation of the form $y = kx$. *Omit optional Activity 3 if needed.*
- ➢ Lesson 11: Students are introduced to contexts involving markups, discounts, and commissions, and they continue to study contexts involving tax and tips. *Activity 4 is optional, but much of the vocabulary is discussed here.*

Assessment Suggestions:

- ➢ Lesson 10 cool-down
- ➢ Lesson 11 cool-down

Dive Deep

- I can find the percentage increase or decrease when I know the original amount and the new amount.
- I can represent measurement error as a percentage of the correct measurement. I understand that all measurements include some error.

Activity Suggestions:

- ➢ Lesson 12: Focus on having students move towards using equations to represent problems, which will enable them to see the common underlying structure behind different problems. Students will need access to calculators. Grouping for Problem and Data cards in Activity 4 may need to be altered.
- ➢ Lesson 13: Students see how measurement error can arise in two different ways: from the level of precision in the measurement device and from human error. Measuring to the Nearest blackline master may need to be provided for each student based on grouping options. Activity 3, “Measuring Your Classroom”, may need to be modified if learning at home.

Assessment Suggestions:

- ➢ Lesson 12 cool-down
- ➢ Lesson 13 cool-down

Synthesize and Apply

- I can solve problems that involve percent error.

Activity Suggestions:

- ➢ Lesson 14: In this lesson students apply using the language of percent error in various different situations and identifying the correct amount, which is the whole, and the incorrect amount.

Assessment Suggestions:

- ➢ Lesson 14 cool-down
- ➢ Optional Lesson 15
- ➢ Lesson 16
- ➢ Revisions to previous assessment prompts
- ➢ Students use learning targets to decide what additional practice they need.

Ongoing Practice

- Assign one or more of the distributed practice problem sets from Lessons 10–15 to be completed over the time period that the section is being worked on.
- These could also be lagging, so that students are working on practice problems from the previous section or unit during this section or unit.
- Specify which problems students should submit, or let them choose.
- Note: Several existing platforms already have IM's practice problems loaded so that students can complete and submit them online. Some can be autoscored.

Anytime Resources

- Delve into any of the activities of Lesson 15 or Lesson 16.