Grade 7 Unit 5: Proportional Relationships and Percentages
Lessons 1–7: Adding and Subtracting Rational Numbers

Explore, Play, and Discuss

- I can compare rational numbers.
- I can use rational numbers to describe temperature and elevation.
- I can use a number line to add positive and negative numbers.
- I understand how to add positive and negative numbers in general.

Activity Suggestions:

- ➢ Lesson 1: Focus on the context of temperature and elevation to provide concrete examples of signed numbers. *Activity 4 is an optional card sort*.
- ➢ Combine Lesson 2 and Lesson 3: When discussing positive and negative numbers on a number line, draw students' attention to how positive addends are represented by arrows that point to the right, and negative addends by arrows that point to the left. *There is a digital version of Lesson 2, Activity 3 and Lesson 3, Activity 2. Lesson 3, Activity 4 is optional.*

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.
- ➢ Lesson 1 cool-down
- ➢ Lesson 2 cool-down
- ➢ Lesson 3 cool-down

Deep Dive

- I understand what positive and negative numbers mean in a situation involving money.
- I can explain the relationship between addition and subtraction of rational numbers.
- I can use a number line to subtract positive and negative numbers.

Activity Suggestions:

- ➢ **Combine** Lesson 4 and Lesson 5: Focus on using negative numbers in the context of money, including the vocabulary **deposit** and **withdrawal** in Lesson 4, Activity 3. Then focus on subtraction of signed numbers on a number line by relating it to an addition equation with a missing addend in Lesson 5.

Assessment Suggestions:

- ➢ Lesson 4 cool-down
- ➢ Lesson 5 cool-down

Synthesize and Apply

- I can find the difference between two rational numbers.
- I understand how to subtract positive and negative numbers in general.
- I can solve problems that involve adding and subtracting rational numbers.

Activity Suggestions:

- ➢ Combine Lesson 6 and Lesson 7: Using the geometry of the number line in Lesson 6, Activities 2 and 3. Students should see that the difference between two numbers can be positive or negative, but the distance between two numbers is always positive. In Lesson 7, Activities 3 and 4, students apply their knowledge to real life contexts. *Lesson 7 Activity 4 is digital.*
- ➢ Teach and encourage students to study the lesson summaries (at the end of every lesson) and refer back to them.

Assessment Suggestions:

- ➢ Lesson 6 cool-down
- ➢ Lesson 7 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 1–7 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 1, Lesson 3, Lesson 6, and Lesson 7.
- Use any of the lessons from Grade 6, Unit 7 that focus on rational numbers.

Lessons 8-12: Multiplying and Dividing Rational Numbers

Explore, Play, and Discuss

- I can multiply a positive number with a negative number.
- I can use rational numbers to represent speed and direction.
- I can explain what it means when time is represented with a negative number in a situation about speed and direction.
- I can multiply two negative numbers.

Activity Suggestions:

- Combine Lesson 8 and Lesson 9: Focus on multiplying a negative number with a positive number, using the context of velocity, time, and position. Then guide students to develop rules for multiplying two negative numbers. *Lesson 9, Activities 3 and 4 are digital and optional.*

Assessment Suggestions:

- Lesson 8 cool-down
- Lesson 9 cool-down

Dive Deep

- I can divide rational numbers.

Activity Suggestions:

- Lesson 11: Focus on the relationship between multiplication and division to develop rules for dividing signed numbers. *There is a digital version of Activity 3.*

Assessment Suggestions:

- Optional Lesson 10
- Lesson 11 cool-down

Synthesize and Apply

- I can solve problems that involve multiplying and dividing rational numbers.
- I can solve problems that involve negative rates.

Activity Suggestions:

- Lesson 12: Focus on negative rates of change. Many of the activities in this lesson involve more reading than most lessons. Be prepared to support students with unfamiliar words. Grouping in Activity 3 may need to be adjusted.

Assessment Suggestions:

- Lesson 12 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 8–12 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 1–12.

Lessons 13-17: Four Operations with Rational Numbers

Explore, Play, and Discuss		
	• I can add, subtract, multiply, and divide rational numbers. • I can evaluate expressions that involve rational numbers.	
	Activity Suggestions: ➢ Lesson 13: Focus on algebraic expressions with variables. Activity 2 is a card sort that may need to be modified. *Activity 4 has a digital version and is optional.*	**Assessment Suggestions:** ➢ Lesson 13 cool-down

Dive Deep

- I can represent situations with expressions that include rational numbers.
- I can solve problems using the four operations with rational numbers.
- I can solve equations that include rational numbers and have rational solutions.

Activity Suggestions:

- ➢ Lesson 14: The problems in this section are designed so that it is natural to solve them by filling in tables or making numerical calculations. Groupings may need to be adjusted if needed.
- ➢ Lesson 15: Connect what students learned in Lesson 14 to solving algebraic equations in this lesson. *There is a digital version of Activity 2. The card sort in Activity 4 has a digital version and is optional.*

Assessment Suggestions:

- ➢ Lesson 14 cool-down
- ➢ Lesson 15 cool-down

Synthesize and Apply

- I can explain what the solution to an equation means for the situation.
- I can write and solve equations to represent situations that involve rational numbers.

Activity Suggestions:

- ➢ Lesson 16: Encourage students to look at the structure of an equation and decide if its solution is positive or negative, without solving it. *There is a digital version of Activity 2 and Activity 3 is optional.*

Assessment Suggestions:

- ➢ Lesson 16 cool-down
- ➢ Optional Lesson 17
- ➢ 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 13–17 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 13, Lesson 15, Lesson 16, or Lesson 17.