

Adding and Subtracting Decimals

Overview Students will time something outside. Back inside they will add and subtract the numbers they found. Then they will continue with their practice of adding and subtracting decimals.

Lesson Planner

Time Required	1 hour
Key Concepts/Terms	Addend, Sum, Difference, Decimals, Tenths, Hundredths
Prerequisites	<ul style="list-style-type: none">• Knowledge of expectations for outdoor classroom conduct.• 3rd grade understanding of adding and subtracting decimals.• Place value
Setting	<ul style="list-style-type: none">• 10-minute field study outside• Remainder of lesson inside

Standards MD VSC 4th Grade
6.C.1.f. Add two decimals.
6.C.1.g. Subtract decimals.

Objectives Students will take some measurements outside and then practice adding and subtracting decimals using their data.

Materials Required

- Timers that measure time to the tenth or hundredth of a second
- Test tubes that measure mLs if measuring rainfall
- Clipboards with notepaper or notebooks
- Pencils
- Grid paper
- Math textbook

Background Information

The assessment limits for both standards are:

- Use the same number of decimal places but no more than 2 decimal places and no more than 4 digits including monetary notation and numbers (0 – 100)

Procedure

Follow the steps in the table below to conduct the activity. **Sentences in bold are suggestions for what teachers might say to students.** *Items in italics are possible teacher answers to questions.*

Phase	Step	Action
Engage	1	<p><u>Ten Minute Exercise:</u> Introduction to concept maps/outdoor learning.</p> <p>If students are unfamiliar with concept maps and/or using the schoolyard as a classroom, begin by creating a concept map together as a class to go over rules and expectations for learning outside.</p> <p>As you go through the concept map, think aloud for how you are choosing where to draw your bubbles to connect different concepts on the map. For instance,</p> <p>“I am going to write the idea first and then put a bubble around it to make sure my bubble isn’t too big or too small for my information.”</p> <p>Or</p> <p>“I am going to connect this idea to that one instead of the main topic since they are related.”</p> <p>Or</p> <p>“That’s a good idea! Where would you connect that idea on our concept map?”</p> <p>Have in mind some expectations for outdoor learning specific to your schoolyard that you want to be sure students include. For instance,</p> <ul style="list-style-type: none">• <i>Regular school rules still apply (respect each other, listen to the speaker, follow directions, etc.)</i>• <i>No yelling, screaming, tapping on/waving into windows that will disrupt class learning inside the school building.</i>• <i>“Look, learn, and let go” when you see insects.</i>

	2	<p><u>Directions</u> (8 minutes)</p> <p>Have students set up their grid paper (name, date, etc.). They should fold their paper into four sections. One section should be marked data; another adding decimals; another subtracting decimals; another drawing conclusions. Give students directions for what to do outside. They should work in small groups.</p> <p>“When outside, I would like you to time (see options below) and record your time on your grid paper in the section called ‘data.’”</p> <p>Some options for what to time:</p> <ul style="list-style-type: none"> • How long a bird soars for before flapping its wings. • The students in a group sit with their backs together facing away from one another. They take turns keeping track of the time until one of them sees a grasshopper (or cricket...) hop. Each time, mark how much time has passed. • How long it takes for 1mL (2mL, 5mL...) of rain to collect in a test tube. • How long a butterfly (or bee...) stays in a flower before moving to the next. <p>Model how to read the time off the timer to the nearest tenth or hundredth and how to record a note of what was timed along with the time. The paper may look like this:</p> <table border="1" data-bbox="813 1335 1261 1640" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Data for rain 1mL – 10.2 s 2mL – 24.5 s</td> <td style="padding: 5px;">Adding Decimals</td> </tr> <tr> <td style="padding: 5px;">Subtracting Decimals</td> <td style="padding: 5px;">Drawing Conclusions</td> </tr> </table> <p>You may ask students to make predictions before heading outside.</p>	Data for rain 1mL – 10.2 s 2mL – 24.5 s	Adding Decimals	Subtracting Decimals	Drawing Conclusions
Data for rain 1mL – 10.2 s 2mL – 24.5 s	Adding Decimals					
Subtracting Decimals	Drawing Conclusions					
Explore	3	<p><u>10-Minute Field Study</u></p> <p>Bring students outside, and give them a time limit to collect and record their data.</p>				

Explain	4	<p><u>Practice Skill</u> (10 minutes)</p> <p>Once back in the classroom model how to add the numbers, two or three at a time. Model how to regroup.</p> <p>Model how to subtract the numbers in order to compare different data points. Model how to regroup.</p> <p>Students should then practice on their own paper with their data. They may work together as a group. You may choose to have student volunteers model on the board as well.</p> <p>Then, model for students how to draw a conclusion based on what they discovered when adding and/or subtracting their data. I.e., It took 34.7 seconds to collect 3mL of water. OR It took 14.3 seconds longer to collect 2mL of water than 1mL of water. Have students write at least one conclusion they can draw about their data.</p>	
		5	<p><u>Finish lesson</u> (20 minutes)</p> <p>Follow the regular procedure for the remainder of the math lesson. A small group for reteaching may be pulled of students who did not understand very well how to add and/or subtract their decimals. Students should practice adding and subtracting decimals from their math textbooks. An exit ticket may be given at the end, or collect the students' data sheets.</p>
		6	<p><u>Discussion</u> (2 minutes)</p> <p>To wrap up, have a class discussion about why being able to add and subtract decimals is an important skill. When would they need to know how to use this skill? What types of jobs will require using this skill?</p>

Vocabulary

Understanding of the following terms is required in this activity.

Term	Definition
Addend	Numbers that are combined when adding.
Sum	The answer to an addition problem.
Difference	The answer to a subtraction problem.
Decimal	Numbers that represent parts of wholes.

Tenth	The first place value to the right of the decimal point. There are ten tenths in one whole. 0.95
Hundredth	The second place value to the right of the decimal point. There are 100 hundredths in one whole. 0.95

Written by Christa Haverly



October 15, 2009