

Let's Take a Field Trip (Grades 3-5)

Students love talking about field trips. They get to ride with their friends on the bus or walk into town together, parents come along as chaperones, and everyone makes sure they pack or order the required brown bag lunch. But how often are students invited to help decide where they should go? What makes a field trip a good choice? In this modeling task, students make a field trip recommendation to their principal by predicting how much it will cost for their class, their grade level, or their school.

Launch the Task		
Goal: Generate interest in the task. Support students in thinking about the different ways field trip decisions could be made.		
Suggested Activities	Students Are...	The Teacher Is...
<ul style="list-style-type: none"> • Provide a writing prompt for students. Examples: If our class could take a field trip anywhere, where would you want to go and why? How would you convince our principal that we should be allowed to go on this field trip? • Invite the principal to talk to your class and ask for their help in deciding what the best fieldtrip for their class or grade level would be. • Have a class discussion about past field trips. Ask students why they think those field trips were selected. 	<ul style="list-style-type: none"> • Activating prior knowledge about field trips • Considering field trips from a variety of perspectives (the teacher, the student, the administrator) 	<ul style="list-style-type: none"> • Creating a public record of student ideas (anchor chart, shared electronic document) • Pressing students to consider ideas from others' perspective ("Which field trips do you think our principal would be okay with? Why?")
Voices of Experience - Initially, students might have a difficult time generating a variety of ideas. They may also only generate ideas that they think the teacher will approve of. It is important to help students understand that their opinions and ideas matter. Try not to veto any ideas, even if they are outlandish. You can leverage the power of the group to narrow to more realistic choices in the next phase.		

Pose Mathematical Questions		
Goal: Learn to pose questions that can be investigated and answered using mathematics. Develop a question that will help the principal decide which field trip they can go on.		
Suggested Activities	Students Are...	The Teacher Is...
<ul style="list-style-type: none"> • Remind students that the principal has the final say about the field trip. Ask them to generate a list of questions the principal might ask. This could be done in partners, small groups, or as a whole class. • Have students decide which of the questions can be answered using mathematics. 	<ul style="list-style-type: none"> • Looking at a field trip from the principal's perspective. • Identifying multiple factors that all need to be weighed when making a decision about fieldtrips. • Identifying questions that can be answered using mathematics. 	<ul style="list-style-type: none"> • Recording student ideas. • Looking and listening for factors that can be investigated using mathematics (e.g. cost of the field trip, distance from the school, etc.) • Adding factors that don't come up through class discussion. • Affirming all options, telling students the class will focus on predicting the cost of the fieldtrip.
Voices of Experience - Record the mathematical question(s) students are pursuing in a prominent place in the classroom. For this activity, the question might be, "How much will it cost for our 3 rd grade class to take a one-day field trip to Virginia City? In some classes, teachers and students all agreed on one field trip. In these cases, all of the students developed models that predicted the cost of the same trip. The models varied because the students made different choices (for example, packing vs. purchasing lunch), but the trip didn't. In other classes, each group developed a model for a different field trip, but they all worked on predicting cost.		

Build Solutions

Goal: Students develop and carry out a mathematical strategy to predict the cost of a field trip.

Suggested Activities	Students Are...	Teachers Are...
<ul style="list-style-type: none"> As a class, decide on some of the parameters for your solutions. Are you predicting cost for just your class? Your grade level? Are you calculating the “door to door” cost or just the cost once you arrive? Have students make a plan for predicting the cost and decide what information they need. Regroup periodically to discuss strategies students are using as they build solutions. Older students might decide which quantities are fixed and which quantities might vary. 	<ul style="list-style-type: none"> Deciding what factors they need to consider when predicting cost (e.g. transportation, entrance fees, food) Deciding whether their model will predict cost per person or cost per class. Researching to find needed information. Using mathematics to build solutions. 	<ul style="list-style-type: none"> Monitoring students as they work. Noting similarities and differences between students’ approaches. Selecting students to share ideas with the class. Bringing the class back together for discussion when needed.

Voices of Experience

Sometimes, students want to use mathematics they haven’t officially learned yet. We think this is a great opportunity! It is okay to insert mini-lessons if you need to, give students tools like calculators, or just provide necessary information. For example, in once class, students needed to find the hourly cost of a bus. They used repeated addition to add \$51.50 seven times, but had only worked on whole number addition in their regular mathematics curriculum. Some used calculators, some used pretend money, and others invented strategies. The teacher adapted her instruction according to the choices groups were making. Sometimes, research can take a long time. Consider creating informational sheets for students that include items like the cost of a bus, driving or walking times, and cost of various activities. Learning to find information is great, but we have found that it is easy to lose track of the mathematics.

Communicate Results

Goal: Students discuss their results with one another and decide how they should share their project outcomes with the client (in this case, the principal). Older students might also consider generalizing their model by considering whether it could work for other classes, schools, or for other field trips.

Suggested Activities	Students Are...	Teachers Are...
<ul style="list-style-type: none"> Ask students to share their predictions with the class. Make a public record of the different solutions students develop. Discuss similarities and differences amongst solutions. Ask students to share their result with the client. Students could give a presentation, write a letter, or prepare a formal report. Older students: Discuss ways their models could be adapted to for other classes, schools or fieldtrips. Develop a general “field trip cost” model. 	<ul style="list-style-type: none"> Communicating their results with the class. Using mathematics to justify their results. Asking and answering questions about their solution strategies. Choosing a way to communicate results to the client. 	<ul style="list-style-type: none"> Selecting and sequencing solutions for a whole-class discussion. Noting similarities and differences amongst the models. Asking students questions to help them understand each other’s approaches.

Voices of Experience

Consider providing a template for the letter, presentation, or report students give to the client. Decide what you will do to help students stay focused on the mathematics. Sometimes, students want to spend time finding and inserting pictures into a presentation, changing the font size, or developing a persuasive letter. These can all be fun, interesting activities, but they can also distract students from the mathematics. Decide ahead of time how you will help students focus on communicating their mathematical ideas. If at all possible, we recommend going on the field trip you planned. It is very empowering for students to see that the mathematical work they did made a difference! Consider comparing the actual cost of the field trip to the cost your students predicted and modify models as necessary.