

***Mathematics: The Language of STEM***  
Lesson 2 - Zoo Day: How Much Will It Cost?  
By: Evie Champoux

## **CONTENT AND TASK DECISIONS**

**Grade Level(s):** 2

### **Description of the Task:**

Students will be able to calculate the cost, to the dollar value, of their scheduled zoo day. They will use addition and subtraction to calculate the cost of zoo admission and the events of their schedule, which was created in the lesson: *“Time” for a Zoo Day!*

### **Indiana Mathematics Content Standards:**

2.M.7: Find the value of a collection of pennies, nickels, dimes, quarters and dollars.

### **Indiana Mathematics Process Standards:**

PS.1: Make sense of problems and persevere in solving them.

- Students will make sense of the price of each zoo event and persevere in calculating the cost of their zoo day schedule.

PS.3: Construct viable arguments and critique the reasoning of others.

- Students will be able to defend and explain the cost of their zoo schedule to others. Then they will critique other students' zoo schedule costs as well.

PS.4: Model with mathematics.

- Students will model their mathematics by showing the way that they calculated the cost of their zoo schedule.

PS.6: Attend to precision.

- Students will maintain a high level of precision by accurately calculating the amount of money needed to go on their zoo outing.

### **Mathematics Content Goals:**

Students will be able to calculate the cost, to the dollar value, of their scheduled zoo day. They will use addition and subtraction, of dollar amounts, to calculate the cost of zoo admission and the events for their schedule.

### **Language Objectives:**

Students will participate in partner work and turn and talk discussions. The document camera and visual cues at the front of the room will be used to enhance the visual connection for students as well. They will also use graphic organizers to help them organize their learning. All students will have access to money manipulatives for the lesson. These strategies will be helpful for all students but especially the English Language Learners.

### **Materials:**

Computer

Projector

*The Big Buck Adventure* by Shelley Gill

Fort Wayne Zoo Admission and Experiences PowerPoint

- Displayed with projector
- Printed copy for all students (2 slides per page)

Zoo Schedule Organizer: Completed in Lesson 1 - *“Time” for a Zoo Day!* (pages 1 – 3)

Zoo Day Cost Organizer

Manipulative coins and bills

Partner groups assigned (same as Lesson 1)

## THE LESSON

### Before:

Student actions:

- Students will be engaged in the read aloud.
- They will respond to the story by discussing the value of items and the need for money in everyday life with their classmates.
- Students will listen attentively to the project idea.

Teacher actions:

### Activate prior knowledge:

- The lesson will begin by the teacher reading *The Big Buck Adventure* by Shelley Gill to the students. The teacher will use the document camera to display the book.
- At the end or throughout the read aloud, the teacher will ask the students questions. (If it is the first time reading the story, the teacher should read through without stopping and then discuss. If it is the second time reading the story, stopping to “turn and talk” would be appropriate.)
- The teacher should give the students adequate time to think about the questions and respond by raising their hand in the whole group setting or sharing with their turn and talk partner, which should be previously assigned. If the turn and talk method is used, the teacher should then discuss some of the answers in the whole group setting.
  - “Our main character gets a raise in allowance at the beginning of the story. Why is this important to our main character?”
  - “Do any of you earn an allowance? How much is it?”
    - Compare the amount of money earned by students in the classroom.
  - “Is there anything at school that costs money?”
    - Discuss the cost of school lunch and book fees. Point to the lunch menu and school textbooks while discussing for EL learners.
  - “What would happen if we didn’t have money to spend?”
  - “Why is it important to know how much things cost? How can this help us in life?”

### Be sure the problem is understood:

- The teacher will say, “Schedules and costs are extremely important, especially when you’d like to go somewhere. If I want to go on a trip, I need to know a lot about time and money so that I can have a good trip! Most things that you like to do with your families’ costs money, so we need to be able to calculate those costs.”
- The teacher will show the Fort Wayne Zoo Admission and Experiences PowerPoint slides that correlate with what is being said using the projector. The teacher will go to slide 26 which is titled *Lesson 2: How much will it cost?*
- “Now that I have my perfect zoo day with a good friend, I need your help calculating how much the trip will cost!”
- The teacher will explain that the students will work with their “turn and talk” partners, which are already assigned. The teacher will say, “Each partner group will calculate the cost of their schedule. I will leave slide 26 up for you to see, but it is also in your PowerPoint packet.”

### Establish clear expectations:

- The teacher will show the students the Zoo Schedule Organizer. The teacher will say, “This organizer will help you keep the cost of your schedule organized. You will already have your

mathematical thinking written down such as 'Eating lunch' in the left event box, the digital time in the middle, and the analog time on the clock to the right. Now you need to add the cost of each event that you chose. Place the cost next to your labeled event such as 'Eating lunch' in the left event box. You also have a Zoo Day Cost Organizer that can help you keep track of the cost of each event. Don't forget that I will need to know how much it costs for both my friend and I to go on the trip! You can estimate the cost of things as well to make sure that we will have enough money for everything that we want to do! Why is it important to estimate at times?"

- If needed, discuss the importance of estimating the cost of lunch for the zoo event. If they are eating lunch at the zoo, the prices at the restaurants are not listed. It will be important to estimate a good amount for lunch at this point. If they are bringing their lunch from home and having a picnic, they can account for much less money in the budget.
- The teacher will explain other behavioral expectations by saying, "You and your partner must agree on the schedule. Work together and decide what you think my friend and I would have fun doing. Take turns writing on the schedule so that you're both working on it. There are coins and bills available to use while you work. If you them, please ask! Keep your voice at a level 1 whisper so that your schedule will be kept a secret from the rest of the class. Have fun and work hard! Don't forget to keep your good attitude while you work!"
- The teacher will ask, "Are there any questions before we begin?"

### **During:**

#### **Let go:**

- The teacher will let go by being an observer for this part of the lesson. They will not try to control how the students make their schedules. The teacher can clarify any student questions that come up but the students should be using their own problem solving skills.

#### **Listen actively:**

- The teacher will move around the room and listen to the groups work on calculating the cost of their zoo trip.
- The teacher will listen specifically for students who are keeping the guidelines in mind and doing correct calculations and maintaining precision. The teacher will also listen for students who are working together and sharing responsibilities.

#### **Provide appropriate support:**

- "Are your calculations adding up?"
- "How much did you calculate for lunch? How did you know how much to estimate for that?"
- "Now that you're paying attention to the price, would you go back and my any changes to your schedule? If yes, what would you change and why?"

#### **Provide worthwhile extensions:**

- If a partner group gets done with calculating the cost of their zoo schedule, the teacher will have them expand their thinking by creating a perfect zoo day with different parameters. Slide 27 and 28 of the PowerPoint show the extension. The teacher will describe to the students that after their done, they will edit their current schedule a little bit and create a new one. This new schedule will be for the teacher, their sister, and two nieces. The students must think about including children in the experience and what they might want to do that will be different than a schedule for adults. The teacher will give them another copy of the Extension Zoo Schedule Organizer for them to use so that it is clearly defined. Then they will take this new zoo schedule and calculate the cost of the day. They can compare their original zoo cost with the cost of their new family zoo schedule. The costs should be significantly different with more people involved in the extension activity.

### **AFTER:**

**Promote a mathematical community of learners:**

- After the class has had sufficient time to complete their schedules, the teacher will call the class to attention. All materials will be put away except for the zoo schedules and zoo cost organizers. The teacher will have the students sit on the carpet to share their schedules.
- The teacher will say: “You and your partner will share your Zoo Schedule and Zoo Cost Organizer with the partner group closest to you. Please do your best listening while the other partner group is sharing their calculations with you. Compare the two calculations and schedules that each group created. We will come back as a group to discuss in a few minutes.”
- After a few minutes of groups turning and talking, call them back and discuss some of the findings as a group. Here are some more questions that the teacher can ask during discussion:
  - “Did you have any events that were the same so they had the same cost? Which events were different and made a difference in price for your two groups? What was your most expensive event? What was your groups least expensive event? Going back, would you change any events based on what they cost? Why?”

**Listen actively without evaluation:**

- The teacher will move around the carpet listening to presentations. Based on the information shared, the teacher will make decisions about the topics that need to be discussed as an entire class at the end of the lesson.

**Make connections:**

- Collect the schedules and cost organizers and discuss the connections that should have been made.
- The teacher will say, “At the beginning we read the story about *The Big Buck Adventure* and we discussed why she had an allowance and what she did with it.
  - “What connections can you share about the book and the activity that we just engaged in? Why is it important to know how to tell time to follow a schedule AND know how much things cost? How did knowing dollar amounts and prices help us create our zoo schedule? Why is it important to consider different ways organize a schedule based on the cost of events?”

**Summarize main ideas:**

- “Prices affect adults every day. Many adults make decisions based on the cost of things. If I was planning a real day at the zoo with my friend, I normally wouldn’t include a VIP experience, for example, because of the high cost. That would have to be a very special event for me to pay that amount of money. In life, you must determine the importance of different events and decide if the cost is worth it! Would you say that the cost of your zoo experience is worth it? Why or why not?”
- “We made connections to an allowance from our main character at the beginning of the activity. How is an allowance like an adult’s pay check?”
- After a student answers, discuss the connection between earning an allowance and earning a paycheck and how earning money involves for work. Then discuss how students can use critical thinking to make decisions about how to spend their money for events such as the zoo day experience.

**ASSESSMENT****OBSERVE:**

During:

- The teacher will move around the room and listen to the groups work on their schedule.

- The teacher will listen specifically for students who are keeping the guidelines in mind and doing correct calculations and maintaining precision. The teacher will also listen for students who are working together and sharing responsibilities.

After:

- The teacher will move around the carpet listening to presentations. Based on the information shared, the teacher will make decisions about the topics that need to be discussed as an entire class at the end of the lesson.
- The teacher will collect the schedules and cost organizers and discuss the connections that should have been made. They should be able to observe the students that understand how to calculate the cost of events and why it's important to use judgment in choosing events base on their price.

Ask:

- “Our main character gets a raise in allowance at the beginning of the story. Why is this important to our main character?”
- “Do any of you earn an allowance? How much is it?”
- “Is there anything at school that costs us money?”
- “What would happen if we didn't have money to spend?”
- “Why is it important to know how much things cost? How can this help us in life?”
- “Why is it important to estimate at times?”
- “Are there any questions before we begin?”
- “Are your calculations adding up?”
- “How much did you calculate for lunch? How did you know how much to estimate for that?”
- “Now that you're paying attention to the price, would you go back and my any changes to your schedule? If yes, what would you change and why?”
- “Did you have any events that were the same so they had the same cost?”
- “Which events were different and made a difference in price for your two groups?”
- “What was your most expensive event?”
- “What was your groups least expensive event?”
- “Going back, would you change any events based on what they cost? Why?”
- “What connections can you share about the book and the activity that we just engaged in?”
- “Why is it important to know how to tell time to follow a schedule AND know how much things cost?”
- “How did knowing dollar amounts and prices help us create our zoo schedule?”
- “Why is it important to consider different ways organize a schedule based on the cost of events?”
- “Would you say that the cost of your zoo experience is worth it? Why or why not?”
- “We made connections to an allowance from our main character at the beginning of the activity. How is an allowance like an adult's pay check?”

## **Zoo Day Cost:**

<b>Event:</b>	<b>Check when completed:</b>
<b>Admission</b>	
<b>Lunch</b>	
<b>VIP Experience</b>	
<b>Two Rides</b>	# 1 - # 2 -
<b>Feeding Animals</b>	
<b>Attraction areas</b>	#1 - #2 -

**\*Use space on the back to work out your problems if needed. \***

**Total Amount for 1<sup>st</sup> person:**

\_\_\_\_\_

**Total Amount for 2<sup>nd</sup> Person:**

\_\_\_\_\_

**Total Amount for Both:** \_\_\_\_\_