A New Look: Redecorating our bedroom using math

Danielle Ducharme
FLA 518- Summer 09
Introduction
Unit Selection

1) Title: A New Look: Redecorating our bedroom using math!

2) Grade level for unit: 8th grade

3) Target group: Mainstream classroom with integrated ELL students

4) Source of written materials:
   Book found online.

   Book information:

   Website where the book was found:

5) Source of lessons:
   Book listed above; taken from the website above, pages 23-30.

6) Learning goals:
   I want my students to know how to measure in feet and calculate square feet.

   I want my students to know how to calculate the area (or square footage) of squares and rectangles.

   I want my students to know the difference between trade offs, budget constraints and expenses.

   I want my students to know how to redecorate their bedroom using a budget.

**This unit is planned to be for 5 consecutive days. However, only 3 lessons are shown here. The lessons that are not shown are the lessons that require the students to measure their own room and redecorate it using a budget, similarly to how they practiced in this lesson.**

***Lesson one is planned for a 90 minute class while lessons two and three are for a 45 minute class. In my particular middle school setting we have one double block a week. Lesson one is planned for the double block (of 90 minutes) while the others are for single (45 minute) blocks.***
Lesson 1
### Content/Knowledge Goals

1) Students will be able to find the height and width of the classroom walls.

2) Students will be able to determine the square footage of the classroom.

3) Students will be able to decide how much square feet of wallpaper is needed to wallpaper our classroom.

### Language Goals

1) In a whole group discussion students will orally explain how to find the height and width of something, and then the area of the given object, including how to use the correct label (in., cm., yd., etc.).

   In groups students will measure the length and width of the classroom walls and record their group measurements, using the correct label.

   Working within their groups students will discuss and write the mathematical process for determining the square footage of the classroom (area), and will then complete the computations and record them.

   2) Individual groups will report their computations of area to the class both orally and on the board; all groups will copy the findings off of the board onto their paper.

   Within small groups students will discuss how to find the average square footage of the classroom and will then calculate the average square footage of the classroom.

   3) In full group discussion students will agree on the average square footage of the classroom and will agree on how much square feet of wallpaper is needed for our classroom.

<table>
<thead>
<tr>
<th>Domain/Topic</th>
<th>Level 5 Nearly Fluent</th>
<th>Level 4 Intermediate</th>
<th>Level 3 Speech Emerging</th>
<th>Level 2 Early Production</th>
<th>Level 1 Preproduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking- Explain how to find length, width and area of a rectangle or square, and thereby the classroom walls.</td>
<td>Students will explain how to find the length, width and area of both rectangles and squares. Students will use complete sentences and will use the proper labels, using our vocabulary words of cm, in, yards, etc.</td>
<td>Students will explain how to find the length, width and area of both rectangles and squares. Students will participate in the discussion by using short sentences and/or phrases. Students will use the proper labels: cm, in, yards, etc.</td>
<td>Students will explain how to find the length, width and area of both rectangles and squares using guiding prompts from the teacher.</td>
<td>Students will explain how to find the length, width and area of both rectangles and squares by completing various teacher prompted sentences about determining length, width and area, using one to two word responses.</td>
<td>Students will point to the correct definition of length, width and area using a mathematical definitions chart.</td>
</tr>
<tr>
<td>Writing-Record measurements of the walls, using correct labels.</td>
<td>Students will record measurements of each wall using complete sentences and correct labels.</td>
<td>Students will record measurements of each wall using short sentences and correct labels. Students will be allowed to rewrite their sentences after peer review.</td>
<td>Given a written guide, students will fill in the given blanks with the measurements and proper labels of walls, using one to two word phrases.</td>
<td>Given a written guide students will fill in the given blanks with only the measurements. The labels will already be recorded.</td>
<td>Students will match an already determined chart of measurements to a model of the room on their paper.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Writing-Writing the mathematical process used for determining the square footage of the classroom.</td>
<td>Create a written sequential explanation of how to determine the square footage based on previous classroom discussion. Using complete sentences, the group will create a minimum of 5 thorough sequential steps for determining this.</td>
<td>Create a written sequential explanation of how to determine the square footage based on previous classroom discussion. Using phrases or short sentences, the group will create a minimum of 5 sequential steps for determining this.</td>
<td>Students will write a series of sentences explaining how the square footage of the classroom is determined.</td>
<td>Students will fill in the blanks of sequential steps used for determining the square footage of the classroom, with the help of a word bank.</td>
<td>Students will match 3 steps with the appropriate mathematical computation.</td>
</tr>
<tr>
<td>Speaking-Discuss how to find the average of a group of numbers.</td>
<td>Discuss orally as a full group using complete sentences to explain how we find an average number of a group of numbers.</td>
<td>Discuss orally as a full group using short sentences and/or phrases to explain how we find an average number of a group of numbers.</td>
<td>Students will participate in full group discussion using guided prompts from the teacher.</td>
<td>Students will participate in full group discussion by completing various teacher prompted sentences about determining the average of a group of numbers, using one to two word responses.</td>
<td>Students will match the correct definition of determining average to the correct visual showing how an average is determined.</td>
</tr>
</tbody>
</table>
## Functional / Notional Chart: Lesson 1

<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words</th>
<th>Grammar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe</td>
<td>Their bedroom</td>
<td>I like ________ in my room.</td>
<td>My bed, the color, my furniture, my posters,</td>
<td>Nouns Possessive pronouns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I don't like ________ in my room.</td>
<td>the decorations</td>
<td></td>
</tr>
<tr>
<td>Explain</td>
<td>Mathematical formulas</td>
<td>Height is __________.</td>
<td>Measuring up and down.</td>
<td>verbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Width is __________.</td>
<td>Measuring across.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>You find area by __________.</td>
<td>Multiplying height times width.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>You find the average by ______.</td>
<td>Adding up all the numbers and dividing by how</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>many numbers you added together.</td>
<td></td>
</tr>
<tr>
<td>Explain</td>
<td>Sequence of finding the square</td>
<td>I multiplied height X width of ________.</td>
<td>Each wall, area or square footage.</td>
<td>Use of transitions to show sequence.</td>
</tr>
<tr>
<td></td>
<td>footage</td>
<td>This is the ______.</td>
<td>Area, square footage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I added up the ____ of each wall.</td>
<td>Multiplied height times width</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This is the total ______ of the room.</td>
<td>Added up the area of each wall.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>First, I _____________________________.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Then, I ______________________________.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lesson Plan #1 (modified)
Designed for a 90 minute 8th grade math class

**Lesson objectives:**
SWBAT measure each wall of the classroom.
SWBAT find the square footage of the classroom.

**Procedure:**

**A. Class brainstorming session: (10 minutes)**
- Individually students will describe their bedrooms at home. Students will complete a graphic organizer (T chart) detailing what they like, don’t like, and would change about their rooms.
- After Ss have completed their sheets, we’ll discuss the sheets as a class.

***** **ELL modifications:**
- Level 4 & 5: T chart titled “My Bedroom” to complete. See page A-1
- Level 3: T chart titled “My Bedroom” to complete with word bank on bottom. See page A-2
- Level 2: T chart titled “My Bedroom” to complete with word bank and graphics. See page A-3
- Level 1: T chart titled “My Bedroom” to complete by using a checklist. See page A-4

**B. Class reading of “The Story of Tom,” a story about a young boy who is not happy with his bedroom and wants to change the wallpaper. (15 minutes)**
- Distribute the handout of the story to Ss.
- In pairs, Ss with read the story.
After reading the story, debrief as a class, outlining what math Tom needs to figure out how much wallpaper he needs to redecorate his room.

***** ELL modifications:
- Level 5: Text of the story. See page A-5
- Level 4: Text of the story with the main ideas highlighted. See page A-6
- Level 3: Modified text of the story with summary in the margins. See page A-7
- Level 2: Modified text of the story with main ideas highlighted and summary in margins. See page A-8
- Level 1: Sequence of events with main ideas from the text underneath graphics. See page A-9

C. In groups of 3-5 Ss will measure the walls of the classroom & complete the information chart. (25 minutes)
- Put Ss into groups based on varying language ability (highs with lows)
- Handout yardsticks and information chart to Ss
- Ss will have the task of measuring the height and width of each wall in the classroom
- Ss will complete their information chart with measurements of each wall. Once all four walls have been measured and the measurements recorded on their sheets, Ss will then write 4 sentences, 1 for each wall, telling the height and width of each wall.
- When Ss are done with their “Classroom Measurements” sheet, we’ll briefly review their findings orally as a class.

***** ELL modifications:
- Level 5: handout titled “Classroom Measurements” See page A-14
- Level 4: handout titled “Classroom Measurements,” however; Ss do not need to write complete sentences. They may use short words or phrases. See page A-15
- Level 3: handout titled “Classroom Measurements” Ss will complete the chart with the measurements, but, will have to fill in blanks in the sentences with the measurements. Ss may use other group members as a resource. See page A-16
- Level 2: handout titled “Classroom Measurements” Ss will complete the chart with the measurements. Ss will complete blanks in the sentences with the correct measurements. The use of graphics and bolded words are employed to direct Ss attention. Again, Ss may use their group members as a resource. See page A-17
D. As a class, Ss will discuss and review four main mathematical functions Toms needs to determine how much wallpaper he needs. Ss will review: height, width, area (used interchangeably with square footage in this lesson) and average. (10 minutes)

- Handout the listening guide to Ss.
- Discuss the 4 mathematical functions listed on the listening guide. Write main ideas on board.
- Ss will complete the listening guide with the information they both hear during class discussion and copy off of the board while the discussion is taking place.

***** ELL modifications:

- Levels 4 & 5: Handout titled “Listening guide.” See page A-10
- Level 3: Ss will complete the handout titled “Listening guide,” but will only fill in the blanks with the key terms. Ss can obtain these terms either by hearing them or copying off of the board. See page A-11
- Level 2: Ss will complete the handout titled “Listening guide,” but will fill in one blank. Ss will have use of a word bank and graphics. See page A-12
- Level 1: Ss will receive the handout titled “Listening guide.” This handout is completely filled out, but Ss will follow along with the discussion. See page A-13

E. In their work groups (the groups they did the measurements with) Ss will discuss how to find the square footage of each wall and then the total square footage of the classroom. (20 minutes)

- Ss will work in their groups discussing and ultimately arriving at the manner in which they’ll find the square footage of each wall and in turn the total square footage of the classroom. (height of each wall times the width of each wall. Do for each of four walls. Add the square footage of each wall together for the total square footage of the room.)
- Once Ss arrive at their process for determining the square footage, they’ll explain it to the teacher. Once the T approves, Ss will begin calculating the square footage each wall and in turn the room.
- After the square footage of the room has been determined, Ss will complete a detailed explanation of 4 steps they followed to arrive at the square footage.

***** ELL modifications:
• Level 5: Ss will receive handout “How to determine area..” See page A-18
• Level 4: Ss will receive handout “How to determine area..” but are permitted to write in short words or phrases. The explanation is not expected to be as detailed. See page A-19
• Level 3: Ss will receive handout “How to determine area..”. The handout has transition words already filled in and Ss are not expected to use complete sentences, but rather one or two words. See page A-20
• Level 2: Ss will receive handout “How to determine area..” Ss are required to fill in the blanks with the use of graphics and a word bank. See page A-21
• Level 1: Ss will receive handout “How to determine area..” Ss will complete a sentence with the correct order word. They have multiple choice for this. See page A-22

F. When Ss are done with their area worksheet, groups will report their square footage findings to the class. One student from each group will record each group’s square footage measurement on the board. As a class we’ll determine how to find the average square footage of the classroom. As a class we’ll then agree on how much square feet of wallpaper we’ll need for the classroom. (10 minutes)
   ◆ Each group will report their square footage measurement to the class. One student from each group will write their total on the board.
   ◆ As a class we’ll determine the average square footage of the classroom.
   ◆ As a class we’ll agree on how much square feet of wallpaper we need for the room.

***** ELL modifications:
• Levels 4 & 5: Ss will complete the average on their own.
• Level 3: Ss may use their handout (page A-11) to guide them. Ss may use a group member for help.
• Level 2: Ss may use their handout (page A-12) as a resource. Ss will complete the mathematical operation with a partner.
• Level 1: Ss may use their handout (page A-13) as a resource. Ss will complete the mathematical operation with a partner.
Lesson 1: A New Look: Redecorating Our Bedroom Using a Budget

Personal Reflection: How I modified for ELL’s

**Graphic Organizers (G.O.):** In order to create a shared background about the theme of the unit, I provided all students a graphic organizer (T chart) to complete about their bedrooms. Levels 4 and 5 students received the same g.o. with no modifications. Ss are permitted to use complete sentences, phrases or simple one word responses. Level 3 students have the g.o, however, there are suggested words to use on the bottom. (See page A-2) Level 2 students again have the same g.o but have use of a word bank with graphics. (See page A-3) Level 1 students have the same type of g.o. but, Ss will complete a checklist of what they like and don’t like about their rooms. The checklist has words and graphics.

**Text Modification:** In order to set the stage for the unit, students will read a short story about a young boy named Tom. Tom is unhappy about his bedroom and ultimately wants to re-wallpaper his bedroom. This story is vital in setting the stage! I modified the text in a few ways. Level 5 students received the story without modifications. (see page A-5) Level 4 students received the text, but the main ideas are highlighted. (see page A-6) Level 3 students received a modified version of the story. The main ideas are also summarized in simple language in the margins. (See page A-7) Level 2 students received the same text as Level 3 students, but the main ideas are highlighted. The main ideas are also summarized in the margin. (See page A-8) Level 1 students received a story map. Pieces of the text are listed underneath graphics that represent the main idea. (See page A-9)

**Chalk/white board use:** Definitions that are discussed will be written on the board. Ss will also make use of the board for their mathematical findings. The board provides extra support for Ss who need visuals or who might need reinforcement to oral discussions.

**Group / Partner work:** This lesson is primarily student centered. ELL’s of lower ability will be paired with L’s of higher ability so that Ss can negotiate meaning with one another.

**Modeling:** Teacher provides modeling in various areas of the lesson. When discussing the bedroom the teacher will share his/her feelings about their own bedroom. The teacher provides modeling of how to measure the room. When students are asked to find the square footage of the classroom (lesson plan section E) the teacher provides group support in a one-on-one situation, allowing Ss to negotiate meaning and gain more understanding from the teacher.
### My Bedroom

**Levels 4 & 5**

<table>
<thead>
<tr>
<th>Things I like about my bedroom</th>
<th>Things I dislike about my bedroom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# My Bedroom

## Level 3

<table>
<thead>
<tr>
<th>Things I like about my bedroom (+)</th>
<th>Things I do not like about my bedroom (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Words to use:**  
the color  the size  the decorations  the furniture  my bed  my pictures  my posters
My Bedroom

Level 2

<table>
<thead>
<tr>
<th>Things I like about my bedroom (+)</th>
<th>Things I do not like about my bedroom (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Words to use:**

- the color
- the size **BIG**
- small
- my bed
- my posters
# My Bedroom

**Level 1**

Put a check ✓ next to what you like (+) or do not like (-) about your bedroom.

<table>
<thead>
<tr>
<th>Things I like about my bedroom (+)</th>
<th>Things I do not like about my bedroom (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>the color</td>
<td>the color</td>
</tr>
<tr>
<td>my bed</td>
<td>my bed</td>
</tr>
<tr>
<td>the size BIG</td>
<td>the size BIG small</td>
</tr>
<tr>
<td>my posters</td>
<td>my posters</td>
</tr>
</tbody>
</table>
The story of Tom
Level 5

My room still looks EXACTLY the way it did when I was ten. Can you believe it? I just can’t stand it any longer. So, over the weekend, I asked Mom if I could change my room. I told her that I wanted to rip down the race car wallpaper and put up something else. Mom said I could change my room, but I couldn’t put up strange stuff like skull and crossbones wallpaper. She also said I would have to figure out how much wallpaper I needed before we could shop for wallpaper. I said, “That’s easy, I need enough to cover all the walls. The person at the wallpaper store will know.” Mom replied, “Tom, the person at the store needs some help. You have to measure the walls and have some idea about how much wallpaper you need before you ever go to the store. This is where all those important math skills you’ve learned at school will come in handy. Let’s talk about what you need to know.”
The story of Tom  
(Level 4)

My room still looks EXACTLY the way it did when I was ten. Can you believe it? I just can’t stand it any longer. So, over the weekend, I asked Mom if I could change my room. I told her that I wanted to rip down the race car wallpaper and put up something else. Mom said I could change my room, but I couldn’t put up strange stuff like skull and crossbones wallpaper. She also said I would have to figure out how much wallpaper I needed before we could shop for wallpaper. I said, “That’s easy, I need enough to cover all the walls. The person at the wallpaper store will know.” Mom replied, “Tom, the person at the store needs some help. You have to measure the walls and have some idea about how much wallpaper you need before you ever go to the store. This is where all those important math skills you’ve learned at school will come in handy. Let’s talk about what you need to know.”
The story of Tom  
(Level 3)

My room still looks EXACTLY the way it did when I was ten years old. I can not stand it anymore! Over the weekend I asked mom if I could change my room. I wanted to rip down the old wallpaper and hang up new wallpaper.

Mom said I could change my room. She also said I have to figure out how much wallpaper I needed before we could shop for wallpaper.

I said, “That’s easy, I need enough to cover all the walls. The person at the store will know.” Mom replied, “Tom, the person at the store needs some help. You have to measure the walls and have some idea about how much wallpaper you need before you ever go to the store. This is where all those important math skills you’ve learned at school will come in handy. Let’s talk about what you need to know.”

Tom does not like his room. Tom wants to change his room. Tom will hang up new wallpaper.

Tom’s mom told Tom he needed to figure out how much wallpaper he needs.

Tom said the worker at the store knows how much wallpaper he needs.

Tom’s mom said no! Tom’s mom said Tom needs to use his math to measure his room!
The story of Tom
(Level 2)

My room still looks EXACTLY the way it did when I was ten years old. I can not stand it anymore! Over the weekend I asked mom if I could change my room. I wanted to rip down the old wallpaper and hang up new wallpaper.

Mom said I could change my room. She also said I have to figure out how much wallpaper I needed before we could shop for wallpaper.

I said, “That’s easy, I need enough to cover all the walls. The person at the store will know.”

Mom said, “Tom, the person at the store needs some help. You have to measure the walls and have some idea about how much wallpaper you need before you ever go to the store. This is where all those important math skills you’ve learned at school will help you measure your room. Let’s talk about what you need to know.”

Tom wants to put up new wallpaper in his room.

Tom’s mom said Tom needs to know how much wallpaper he needs.

Tom said he needs enough to cover the walls.

Tom’s mom said NO! Tom’s mom said Tom needs his math to measure the room.
The story of Tom
(Level 1)

1. Tom is in his bedroom.
2. Tom does not like his bedroom.
3. Tom wants to change his room.
4. Tom wants to change the wallpaper in his room.
   Tom wants to hang up new wallpaper in his room.
5. Tom needs to measure his room.
   Tom needs to measure his room to find out how much wallpaper he needs.
6. Tom needs to use all of the math he learned in school to measure how big his room is.
Listening guide

How to find height, width and area of a room
(Level 4 & 5)

Fill in the lines with important information you hear about finding the height, width, area, and average.

Height: ________________________________

Width: ________________________________

Area: ________________________________

Average: ________________________________
Listening guide

How to find height, width and area of a room
(Level 3)

Fill in the lines with important information you hear about finding the height, width, area, and average.

<table>
<thead>
<tr>
<th>Height</th>
<th>area</th>
<th>width</th>
<th>average</th>
</tr>
</thead>
</table>

________ is when you measure something ______ and ________.

________ is when you measure something ________________.

________ is when you multiply _________ times ____________.

The ____________ is the when you add up all of the numbers and __________ by how many numbers you added.
Listening guide

How to find height, width and area of a room
(Level 2)

Fill in the lines with important information you hear about finding the height, width, area, and average.

<table>
<thead>
<tr>
<th>Height</th>
<th>area</th>
<th>width</th>
<th>average</th>
</tr>
</thead>
</table>

_________ is when you measure something up and down.

_________ is when you measure something side to side.

_________ is when you multiply (x) height X width.

The ____________ is the when you add up all of the numbers and divide (by how many numbers you added).

Words to use

Height=

Width=

Area= times (x)

Average= number+number+number / amount of numbers added
Listening guide

How to find height, width and area of a room
(Level 1)

Follow along with us as we review the important information!
Circle words you hear!

**HEIGHT** is when you measure something up \( \uparrow \) and down \( \downarrow \).

**WIDTH** is when you measure something side to side \( \rightarrow \).

**AREA** is when you multiply (x) height \( \uparrow \uparrow \) \( \times \) width \( \leftarrow \).

The **AVERAGE** is the when you add up all of the numbers and divide \( \frac{\text{sum}}{\text{number of terms}} \) (by how many numbers you added).
Directions: Complete the chart below with the correct measurements of the room. Then, write 4 complete sentences on the bottom telling the height and width of each wall, be sure to use your labels!

<table>
<thead>
<tr>
<th>Wall #</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall # 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. ____________________________________________

2. ____________________________________________

3. ____________________________________________

4. ____________________________________________
Classroom Measurements
(Level 4)

Directions: Complete the chart below with the correct measurements of the room. Then, write 4 sentences or phrases on the bottom telling the height and width of each wall, be sure to use your labels!

<table>
<thead>
<tr>
<th>Wall</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall # 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. ______________________________________
2. ______________________________________
3. ______________________________________
4. ______________________________________
Classroom Measurements
(Level 3)

Directions: Complete the chart below with the correct measurements of the room. Then, complete the sentences on the bottom telling the height and width of each wall, be sure to use your labels!

<table>
<thead>
<tr>
<th>Wall</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall # 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The height of wall 1 is ________________ and the width of wall 1 is ________________.

2. The height of wall 2 is ________________ and the width of wall 2 is ________________.

3. The height of wall 3 is ________________ and the width of wall 3 is ________________.

4. The height of wall 4 is ________________ and the width of wall 4 is ________________.
Classroom Measurements
(Level 2)

Directions: Complete the chart below with the correct measurements of the room. Then, complete the sentences on the bottom telling the height and width of each wall.

<table>
<thead>
<tr>
<th>Wall</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall # 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall # 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The height of wall 1 is __________ feet and the width of wall 1 is __________ feet.

2. The height of wall 2 is __________ feet and the width of wall 2 is __________ feet.

3. The height of wall 3 is __________ feet and the width of wall 3 is __________ feet.

4. The height of wall 4 is __________ feet and the width of wall 4 is __________ feet.
### Classroom Measurements (Level 1)

**Directions:** Complete the chart below with the correct measurements of the room. Match the sentences on the bottom!

<table>
<thead>
<tr>
<th>Wall</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall #1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall #3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall #4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. ______ The height of wall #1 is **15 feet** and the Width of wall #1 is **21 feet**.

2. ______ The height of wall #2 is **15 feet** and the Width of wall #1 is **23 feet**.

3. ______ The height of wall #3 is **15 feet** and the Width of wall #3 is **21 feet**.

4. ______ The height of wall #1 is **15 feet** and the Width of wall #1 is **23 feet**.

A. 15ft. X 23 ft.  
B. 15ft. X 23 ft.
How to determine area...
(Level 5)

Directions: Once your group has decided on how to determine the square footage of the classroom, write a detailed explanation about the steps you followed to figure out the square footage of the room.

Step 1: ___________________________________________.

Step 2: ___________________________________________.

Step 3: ___________________________________________.

Step 4: ___________________________________________.

Step 5: ___________________________________________.
How to determine area...

(Learned 4)

Directions: Once your group has decided on how to determine the square footage of the classroom, write a brief explanation about the steps you followed to figure out the square footage of the room.

Step 1: ________________________________.

Step 2: ________________________________.

Step 3: ________________________________.

Step 4: ________________________________.

Step 5: ________________________________.
How to determine area...
(Level 3)

Directions: Once your group has decided on how to determine the square footage of the classroom, write an explanation about the steps you followed to figure out the square footage of the room.

Step 1: First, ________________________________.

Step 2: Second, ________________________________.

Step 3: Then, ________________________________.

Step 4: Next, ________________________________.

Step 5: Finally, ________________________________.
How to determine area...
(Level 2)

Directions: Once your group has decided on how to determine the square footage of the classroom, fill in the blanks with the word that tells how you found the square footage.

Step 1: **First**, you __________ the height of wall 1 by the width of wall 1.

Step 2: **Second**, you __________ the height of wall 2 by the width of wall 2.

Step 3: **Then**, you __________ the height of wall 3 by the width of wall 3.

Step 4: **Next**, __________ the height of wall 4 by the width of wall 4.

Step 5: **Finally**, you __________ all of the numbers together. This is your total square footage.

Words to use:

| Add (+) | Multiply (×) | Divide (÷) | Subtract (-) |
Area
(Level 1)

Directions: MATCH the math expression to each step.

1. Find the height \( \uparrow \downarrow \) and width \( \downarrow \uparrow \) __________

2. Multiply the height \( \uparrow \downarrow \) times the width \( \downarrow \uparrow \) __________

3. This is the square footage. __________

Words to choose from:

A. First (1\textsuperscript{st})
B. Second (2\textsuperscript{nd})
C. Third (3\textsuperscript{rd})
Lesson 2
## A New Look: Redecorating our Bedroom Using Math

Danielle Ducharme

**Lesson 2**

<table>
<thead>
<tr>
<th>Content/Knowledge Goals</th>
<th>Language Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Students will be able to determine whether their measurements are accurate.</td>
<td>1) In a whole group discussion students will orally express whether their measurements of the classroom are accurate.</td>
</tr>
<tr>
<td>2) Students will be able to determine the square footage of wallpaper needed based on corrected measurements of square footage of the classroom.</td>
<td>In whole group discussion students will discuss whether or not the door, window, and white board in the classroom will be covered with wallpaper.</td>
</tr>
<tr>
<td>3) Students will be able to decide how many rolls of wallpaper are needed to wallpaper our classroom.</td>
<td>In whole group discussion students will discuss how we will figure out the correct square footage of the room without including the door, window, and white board.</td>
</tr>
<tr>
<td>2) Individual groups will measure the white board, door, and window and subsequently determine the square footage of all three.</td>
<td>3) In small groups students will determine how many rolls of wallpaper are needed to correctly wallpaper our classroom.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain/Topic</th>
<th>Level 5 Nearly Fluent</th>
<th>Level 4 Intermediate</th>
<th>Level 3 Speech Emerging</th>
<th>Level 2 Early Production</th>
<th>Level 1 Preproduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking- Discuss and express whether our measurements are accurate in determining how many square feet of wallpaper we need.</td>
<td>Students will explain whether our measurements are accurate. Students will use complete sentences and will express thoughts regarding the inclusion of the window, door, and</td>
<td>Students will explain whether our measurements are accurate. Students will use short sentences and/or phrases and will express thoughts regarding the inclusion of</td>
<td>Students will explain whether our measurements are accurate. Students will have a listening guide to follow along in the discussion and will respond to</td>
<td>Students will explain whether our measurements are accurate. Students will have a listening guide, including words and graphics to follow along in the</td>
<td>Students will follow along with a partner and realize whether our measurements are accurate. Students will have a listening guide with pictures and highlighted words to</td>
</tr>
<tr>
<td>Writing-Record measurements of the window, door, and white board and determine the square footage of each.</td>
<td>Students will record measurements of the window, door, and whiteboard using complete sentences and correct labels.</td>
<td>Given a written guide, students will fill in the given blanks with the measurements and proper labels of the window, door, and whiteboard, using one to two word phrases.</td>
<td>Students will complete sentence stems with the measurement of the window, door, and white board.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking-Discuss how to use the square footage of the door, window, and white board to determine the square footage of wallpaper needed.</td>
<td>Discuss orally as a full group using complete sentences to explain how we use the square footage of what we measured to determine the actual square footage of wallpaper needed.</td>
<td>Students will participate in full group discussion using guided prompts from the teacher.</td>
<td>Students will number the mathematical expressions in correct order of how they're used to determine the final square footage of wallpaper needed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing: Determine how many rolls of wallpaper are needed.</td>
<td>Students will complete calculations to determine how many rolls of wallpaper are needed. Ss will write in complete sentences.</td>
<td>Students will complete calculations to determine how many rolls of wallpaper are needed. Ss will write in short sentences or phrases.</td>
<td>Given a written guide, students will complete sentences about how many rolls of wallpaper are needed.</td>
<td>Students will complete sentence stems with correct number of wallpaper rolls needed.</td>
<td>Students will complete sentence stems with correct number of wallpaper rolls needed. Students will have use of a word bank.</td>
</tr>
</tbody>
</table>
## Functional / Notional Chart: Lesson 2

<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words</th>
<th>Grammar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain</td>
<td>Measurements</td>
<td>Our measurements _______.</td>
<td>are correct, are not correct.</td>
<td>adjectives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I don't like _______ in my room.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explain</td>
<td>Accuracy of measurements.</td>
<td>We will not cover _______ with wallpaper.</td>
<td>the door, the window, the white board</td>
<td>nouns</td>
</tr>
<tr>
<td>Determine</td>
<td>Correct square footage of the</td>
<td>The correct _______ of the classroom is ____ square feet.</td>
<td>area, square footage # found by the Ss</td>
<td>Vocab. words</td>
</tr>
<tr>
<td></td>
<td>classroom.</td>
<td></td>
<td></td>
<td>verbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We had to _______ the square footage of the window, door, and white board from the square footage of the walls.</td>
<td>subtract</td>
<td></td>
</tr>
<tr>
<td>Determine</td>
<td>How many rolls of wallpaper we</td>
<td>I _______ the square footage of the classroom by 30.</td>
<td>divided</td>
<td>Past tense –ed</td>
</tr>
<tr>
<td></td>
<td>need.</td>
<td>I _______ the square footage of the classroom by 30 because one roll of wallpaper covers 30 square feet.</td>
<td>divided</td>
<td>verbs</td>
</tr>
</tbody>
</table>
Lesson Plan #2 (modified)
Designed for a 45 minute 8th grade math class

Lesson objectives:
SWBAT determine the square footage of wallpaper needed, based on new calculations.
SWBAT determine how many rolls of wallpaper are needed for our classroom.

Procedure:

A. Class brainstorming session: (10 minutes)
   ♦ As a group Ss will discuss whether our previous measurements, done in lesson 1, are accurate in determining how many square feet of wallpaper we need. T will guide Ss to think about the window, door, and white board in the classroom.
   ♦ Ss will have a guide to follow along with.

***** ELL modifications:
   • Level 4 & 5: Handout titled “Are our measurements accurate” to complete. See page B-1
   • Level 3: Handout titled “Are our measurements accurate” to complete. The questions are not open-ended, but rather YES-NO questions. See page B-2
   • Level 2: Handout titled “Are our measurements accurate” to complete. The questions are YES-NO and have graphics and bolded words. See page B-3
   • Level 1: Handout titled “Are our measurements accurate” to complete by using a checklist. See page B-4

B. In groups (the same groups as Ss had in lesson 1 for measuring) Ss will measure the door, whiteboard, and window. Ss will record their measurements of these items and determine the square footage of each object. Ss will write 3 complete sentences telling their measurements. (15 minutes)
♦ Distribute yardstick to Ss.
♦ In groups, Ss complete the measurements and complete their handout.

***** ELL modifications:
- Level 5: Handout titled “Measurements”. See page B-5
- Level 4: Handout titled “Measurements” Ss will not be required to write in complete sentences. The beginning of each sentence is filled out already. See page B-6
- Level 3: Handout titled “Measurements” Ss have use of a word bank to complete the sentences. See page B-7
- Level 1 & 2: Handout titled “Measurements” Ss have a modified version with graphics and bolded words. Ss only need to fill in the blanks with the measurements. See page B-8

C. In full group discussion, T will tell Ss that 1 roll of wallpaper covers 30 square feet. Ss will need to use their measurements (from pages B-5 - B-8) to determine how many rolls of wallpaper we’ll need. (5 minutes)
♦ Put Ss back into their measurement groups
♦ Give Ss handout “How much wallpaper do we need?”
♦ Have Ss work with their group to determine how many rolls of wallpaper we’ll need for the classroom.
♦ Ss will complete their handout with their calculations and final answer.
♦ When Ss are done with their “How much wallpaper do we need?” sheet, we’ll briefly review their findings orally as a class.

***** ELL modifications:
- Level 5: handout titled “How much wallpaper do we need?” See page B-9
- Level 4: handout titled “How much wallpaper do we need?,” however; Ss do not need to write complete sentences. They may use short words or phrases. See page B-10
- Level 3: handout titled “How much wallpaper do we need?” Ss will complete calculations, but the directions are simplified. Ss do not need to write a complete sentence, but rather fill in the blank with the number of rolls plus a label. See page B-11
- Level 1 & 2: handout titled “How much wallpaper do we need?” Ss will complete the calculations, but directions are simplified. Ss will complete the blank in the sentence with the number of rolls needed. Ss may use their group members as a resource. See page B-12
D. Class reading of “The Story of Tom, continued”  This is a continuation of the story we began yesterday. (Lesson 1 pages A-5 - A-9) (15 minutes)
   ◆ Distribute the handout of the story to Ss.
   ◆ In pairs, Ss with read the story.
   ◆ After Ss have read the story in their pairs, we’ll read the story as a class. T will focus on the vocab word BUDGET CONSTRAINT. After reading the story, debrief as a class, outlining how much Tom will spend on his wallpaper and how much Tom’s mom will spend in total.

***** ELL modifications:
   • Level 5: Text of the story. See page B-13
   • Level 4: Text of the story with the main ideas highlighted. See page B-14
   • Level 3: Modified text of the story with summary in the margins. See page B-15
   • Level 2: Modified text of the story with main ideas highlighted and summary in margins. See page B-16
   • Level 1: Sequence of events with main ideas from the text underneath graphics. See page B-17
Lesson 2: A New Look: Redecorating Our Bedroom Using a Budget

Personal Reflection: How I modified for ELL’s

**Text Modification:** In order to continue on thru the unit, students will continue reading about a young boy named Tom. The continuation of this story is important for the learning of the key vocabulary I want my students to learn. I modified the text in a few ways. Level 5 students received the story without modifications. (see page B-13) Level 4 students received the text, but the main ideas are highlighted. (see page B-14). Level 3 students received a modified version of the story. The main ideas are also summarized in simple language in the margins. (See page B-15) Level 2 students received the same text as Level 3 students, but the main ideas are highlighted. The main ideas are also summarized in the margin. (See page B-16) Level 1 students received a story map. Pieces of the text are listed underneath graphics that represent the main idea. (See page B-17)

**Chalk/white board use:** Definitions that are discussed will be written on the board. Ss will also make use of the board for their mathematical findings. The board provides extra support for Ss who need visuals or who might need reinforcement to oral discussions.

**Group / Partner work:** This lesson is primarily student centered. ELL’s of lower ability will be paired with L’s of higher ability so that Ss can negotiate meaning with one another. Also, the groups for today’s lesson are the same as in lesson 1, providing students with a sense of security.

**Modeling:** Teacher provides modeling in various areas of the lesson. When discussing the accuracy of our measurements the teacher will pretend to wallpaper the room, covering the door, window and white board. When students are asked to find the square footage of the door, window, and white board, the teacher will reinforce how to measure these (a quick review, reinforcement from yesterday). The teacher provides group support in a one-on-one situation, allowing Ss to negotiate meaning and gain more understanding from the teacher.
Are our measurements accurate?
Can we use our measurements to decide how many square feet of wallpaper we need?
Levels 4 & 5

Are we going to cover all of the walls with wallpaper?

Are there any parts of the walls that we are NOT going to cover?

What parts of the walls are we NOT going to cover?

What can we do about that?
Are our measurements accurate?
Can we use our measurements to decide how many square feet of wallpaper we need?

Level 3

Directions: For every question, write YES or NO.

Are we going to cover ALL of the walls with wallpaper?

Are we going to cover the window with wallpaper?

Are we going to cover the door with wallpaper?

Are we going to cover the white board with wallpaper?
Are our measurements accurate?
Can we use our measurements to decide how many square feet of wallpaper we need?

Level 2 + Level 1

Directions: For every question, write YES or NO.

Are we going to cover the door with wallpaper? _______

Are we going to cover the window with wallpaper? _______

Are we going to cover the white board with wallpaper? ___
**Measurements**

**Level 5**

Directions: Complete the chart with the correct measurements. Then, write 3 complete sentences on the bottom telling what the square footage (area) of each object is.

<table>
<thead>
<tr>
<th>Object</th>
<th>Height</th>
<th>Width</th>
<th>Square Footage (AREA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White board</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current square feet of the classroom: __________
Total number of square feet to subtract: _______
New square footage of the classroom = __________

Sentences telling the square footage of each item:

1. ____________________________________________

2. ____________________________________________

3. ____________________________________________

4. The new square footage of the classroom is: ________________
Measurements

Level 4

Directions: Complete the chart with the correct measurements. Then, write 3 sentences or short phrases on the bottom telling what the square footage (area) of each object is.

<table>
<thead>
<tr>
<th>Object</th>
<th>Height</th>
<th>Width</th>
<th>Square Footage (AREA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White board</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current square feet of the classroom:__________
Total number of square feet to subtract: ______
New square footage of the classroom = ____________

Sentences or short phrases telling the square footage of each item:

1. The window:
   ________________________________________

2. The door:
   ________________________________________

3. The white board:
   ________________________________________

4. The new square footage of the classroom is: ________________.
Measurements

Level 3

Directions:
First, complete the chart with the correct measurements. Then, complete the sentences on the bottom telling what the square footage (area) of each object is. Use the words below!

<table>
<thead>
<tr>
<th>Object</th>
<th>Height</th>
<th>Width</th>
<th>Square Footage (Area)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White board</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Square feet of the classroom: _______ - square feet of objects _______ = _______ new square footage of classroom.

Sentences telling the square footage of each item:

1. The square feet of the _______ is _______ square feet.

2. The square feet of the _______ is _______ square feet.

3. The square feet of the _______ is _______ square feet.

Window         door         white board

4. The new square footage of the classroom is: __________________.
Measurements

Levels 1 & 2

Directions:
First, complete the chart with the correct measurements.
Then, complete the sentences on the bottom telling what the square footage (area) of each object is. Use the words below!

<table>
<thead>
<tr>
<th>Object</th>
<th>Height</th>
<th>Width</th>
<th>Square Footage (AREA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White board</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Square feet of the classroom from our old worksheet: _____  - total square feet of objects _______ = _______ new square footage of classroom.

Sentences telling the square footage of each item:

1. The square feet of the window is __________ square feet.

2. The square feet of the door is __________ square feet.

3. The square feet of the white board is __________ square feet.

4. The new square footage of the classroom is: ________________.
How much wallpaper do we need?

Level 5

Wallpaper comes in rolls. A roll of wallpaper covers 30 square feet. How many rolls do we need for the classroom?

Calculations:

Now, write a complete sentence telling how many rolls of wallpaper we need.

__________________________________________________________________________.
How much wallpaper do we need?
Level 4

Wallpaper comes in rolls. A roll of wallpaper covers 30 square feet. How many rolls do we need for the classroom?

Calculations:

Now, write a short sentence telling how many rolls of wallpaper we need.

________________________________________.
How much wallpaper do we need?
Level 3

Wallpaper comes in rolls. A roll of wallpaper has 30 square feet. How many rolls of wallpaper do we need for the classroom?

How I figured out how many rolls of wallpaper we need for the classroom:

We need ________________ to cover the walls in the classroom.
How much wallpaper do we need?
Levels 1 & 2

Wallpaper comes in rolls. A roll of wallpaper covers 30 square feet. How many rolls do we need for the classroom?

The math I used to figure out how many rolls of wallpaper we need for the classroom:

We need ________ rolls of wallpaper to cover the classroom.
(how many?)
The story of Tom, continued

Level 5

My mom and I figured out the wall area of my room. Then we went shopping at a huge hardware store. It had everything—wallpaper, paint, lamps, blinds, rugs, pictures, and posters.

I found some great wallpaper for only $36 per single roll!

I gave the store clerk the area that Mom and I calculated. She explained that I would need at least 15 single rolls of paper. I also found two posters, a basketball lamp, some great soccer posters, and paint for the baseboards in my room.

My room was going to look fabulous, but my mom spoiled the whole thing with, you guessed it, MATH! First she asked, “Tom, if the wallpaper is $36 a roll and you need 15 rolls, how much will that cost?” I replied, “Oh, mom, I don’t know. Don’t you have a calculator?”

How much will Tom’s wallpaper cost him? __________

“Tom,” my mom said, “that’s $540 just for wallpaper. How much is a gallon of paint?” “$25 I answered.” “And, you want pictures, posters, a lamp, a bedspread and blinds?” I think you should know that there’s a limit to what I will spend,” Mom explained.

Well, that ended my shopping spree. My mom told me that she was willing to spend a total of $700 on the project. She said that $700 was my **budget constraint**. How am I supposed to get everything I want? If I spend $540 on wallpaper, I’ll only have, um …”

How much will Tom have left if he spends $540 on wallpaper? __________
The story of Tom, continued
Level 4

My mom and I figured out the wall area of my room. Then we went shopping at a huge hardware store. It had everything—wallpaper, paint, lamps, blinds, rugs, pictures, and posters.

I found some great wallpaper for only $36 per single roll!

I gave the store clerk the area that Mom and I calculated. She explained that I would need at least 15 single rolls of paper. I also found two posters, a basketball lamp, some great soccer posters, and paint for the baseboards in my room.

My room was going to look fabulous, but my mom spoiled the whole thing with, you guessed it, MATH! First she asked, “Tom, if the wallpaper is $36 a roll and you need 15 rolls, how much will that cost?” I replied, “Oh, mom, I don’t know. Don’t you have a calculator?”

**How much will Tom’s wallpaper cost him?** _________

“Tom,” my mom said, “that’s $540 just for wallpaper. How much is a gallon of paint?” “$25 I answered.” “And, you want pictures, posters, a lamp, a bedspread and blinds?” I think you should know that there’s a limit to what I will spend,” Mom explained.

Well, that ended my shopping spree. My mom told me that she was willing to spend a total of $700 on the project. She said that $700 was my **budget constraint**. How am I supposed to get everything I want? If I spend $540 on wallpaper, I’ll only have, um …”

**How much will Tom have left if he spends $540 on wallpaper?** _________
The story of Tom, continued
Level 2

My mom and I figured out the wall area of my room. We went shopping at the store. The store had everything—wallpaper, paint, lamps, blinds, rugs, pictures, and posters.

I found some wallpaper for only $36 per single roll!

I gave the store worker the area of my bedroom that Mom and I figured out. The worker told my mom and I that I would need 15 single rolls of paper. I also wanted two posters, a basketball lamp, some soccer posters, and paint for the wood in my room.

My room was going to look great, but my mom ruined the whole thing with MATH! First my mom asked, "Tom, if the wallpaper is $36 a roll and you need 15 rolls, how much will that cost?"

**How much will Tom's wallpaper cost him?**

\[
15 \text{ rolls of wallpaper} \times \$36.00 \text{ for 1 roll} = \$540 \text{ on wallpaper}
\]

"Tom," my mom said, "that's $540 just for wallpaper. How much is a gallon of paint?"
"$25 I answered." "And, you want pictures, posters, a lamp, a bedspread and blinds?" I think you should know that I will only spend a certain amount of money," Mom explained.

My mom told me that she was willing to spend a total of $700 on the project. My mom said that $700 was my **budget constraint**. How am I supposed to get everything I want? If I spend $540 on wallpaper, I'll only have, um ...

**How much will Tom have left if he spends $540 on wallpaper?**

\[
\$700 \text{ total} - \$540 \text{ on wallpaper} = \$160 \text{ left, to spend on decorations}
\]
The story of Tom, continued
Level 1

1. Tom and his mom figured out how much wallpaper he needed.

2. Tom and his mom went to the store. The worker said that Tom needs 15 rolls of wallpaper.

3. The wallpaper costs $36 a roll.

4. Tom will spend $540 on 15 rolls of wallpaper.

5. Tom also wants some new paint and new posters.

6. $700 Tom’s mom will only spend $700. $700 is Tom’s BUDGET CONSTRAINT.
Lesson 3
### A New Look: Redecorating our Bedroom Using Math

**Danielle Ducharme**  
*Lesson 3*

<table>
<thead>
<tr>
<th>Content/Knowledge Goals</th>
<th>Language Goals</th>
</tr>
</thead>
</table>
| 1) Students will be able to define the terms budget constraint and expenses. | 1) In a whole group discussion students will orally express how much over the budget constraint Tom went.  
Working with a partner Ss will define what budget constraints and expenses are, using an itemized list. |
| 2) Students will be able to determine what a trade off is. | 2) As a class we will read a continued story of Tom. Students will determine what trade offs are.  
In small groups students will re-read the story of time that we read as a class and determine what trade offs Tom made. |

<table>
<thead>
<tr>
<th>Domain/Topic</th>
<th>Level 5 Nearly Fluent</th>
<th>Level 4 Intermediate</th>
<th>Level 3 Speech Emerging</th>
<th>Level 2 Early Production</th>
<th>Level 1 Preproduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking - Discuss and define what budget constraints and expenses are.</td>
<td>Students will explain how much over the budget constraint the character in the story’s expenses were. Students will speak in complete sentences.</td>
<td>Students will explain how much over the budget constraint the character in the story’s expenses were. Students will use short sentences and/or phrases and will express thoughts regarding the budget constraint.</td>
<td>Students will explain what a budget constraint is. Students will discuss how much over the budget constraint the expenses were. Students will have a listening guide, including words and graphics to follow along in the discussion and will respond to various teacher prompted questions.</td>
<td>Students will follow along with a partner and realize what a budget constraint is. Ss will also discuss the expenses. Students will have a listening guide with pictures and highlighted words to focus attention. Students will be able to point to the correct</td>
<td></td>
</tr>
<tr>
<td>Writing - Define budget constraint and expenses.</td>
<td>Students will define both budget constraint and expenses using complete sentences.</td>
<td>Students will record define both budget constraint and expenses using short sentences and/or phrases. Students will be allowed to rewrite their sentences after peer review.</td>
<td>Given a written guide, students will fill in the given blanks with the correct vocabulary word from a word bank.</td>
<td>Students will complete sentence stems with the correct vocabulary word from the word bank.</td>
<td></td>
</tr>
<tr>
<td>Speaking - Discuss how to adjust expenses to fit the budget constraint. Realize what a trade off is.</td>
<td>Discuss orally as a full group using complete sentences to brainstorm ways that Tom can change his expenses to fit the budget constraint. Discuss trade offs and how making trade offs help.</td>
<td>Discuss orally as a full group using short sentences and/or phrases to brainstorm ways that Tom can change his expenses to fit the budget constraint. Discuss trade offs and how making trade offs help.</td>
<td>Students will participate in full group discussion using guided prompts from the teacher. Ss will have a listening guide and words to use.</td>
<td>Students will have pictures of the objects that Tom can &quot;trade off&quot; to lower his expenses and stay within the budget constraint. Ss can answer questions with yes/no or head nods.</td>
<td></td>
</tr>
<tr>
<td>Writing- Listing trade offs that Tom can make to lower his expenses.</td>
<td>Students will complete a worksheet listing trade offs that Tom can make to stay within his budget constraint. Ss will write in complete sentences.</td>
<td>Students will complete a worksheet with sentence stems telling what trade offs Tom can make. Ss will write in short sentences or phrases.</td>
<td>Given a word bank Ss will list trade offs Tom can make.</td>
<td>Students will check off items that Tom can trade off to stay within budget constraints. Ss will have graphics.</td>
<td>Students will check off items that Tom can trade off to stay within budget constraints. Ss will have graphics and will work with a partner.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Reading- Comprehending and listing trade offs</td>
<td>Students will read a story about Tom. Ss will use complete sentences to answer comprehension questions about the boy in the story.</td>
<td>Students will read a story, with highlighted main ideas, about Tom. Ss will use short phrases / sentences to answer comprehension questions.</td>
<td>Students will read a modified text about Tom. Ss will answer questions with the help of a word bank.</td>
<td>Students will read a modified text, with highlighted main ideas, about Tom. Ss will fill in the blanks to comprehension questions with words from a word bank.</td>
<td>Students will read a sequence of events. Students will complete mathematical operations, but not comprehension questions.</td>
</tr>
<tr>
<td>Function</td>
<td>Situation</td>
<td>Expression</td>
<td>Words</td>
<td>Grammar</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>Define</td>
<td>Budget constraints</td>
<td>A budget constraint is ________</td>
<td>The amount of money you can spend, the amount of money you have to spend.</td>
<td>Indefinite articles</td>
<td></td>
</tr>
<tr>
<td>Define</td>
<td>Expense</td>
<td>An expense is _______________</td>
<td>The amount of money you spend on everything you want, the total amount you spend.</td>
<td>Indefinite articles</td>
<td></td>
</tr>
<tr>
<td>List</td>
<td>Trade offs</td>
<td>A trade off is _______________.</td>
<td>Getting something instead of another item, changing what you want so that you can stay within your budget constraint.</td>
<td>Vocab. words -ing verbs</td>
<td></td>
</tr>
</tbody>
</table>
Danielle Ducharme  
FLA 518  
July 23, 2009  

Lesson Plan #3 (modified)  
Designed for a 45-minute 8th grade math class  

Lesson objectives:  
SWBAT define the terms budget constraint and expenses.  
SWBAT list trade offs.  

Procedure:  

A. Class discussion session: (10 minutes)  
♦ Pass out handout “Tom’s Expenses.” As a group Ss will discuss Tom’s expenses. Ss will also discuss the budget constraint and how much over the budget constraint Tom went.  
♦ The list of expenses is also an overhead. Please utilize the overhead at the same time as the discussion.  
♦ In pairs Ss will complete the bottom of the handout “Tom’s Expenses.”  

***** ELL modifications:  
• Level 5: Handout titled “Tom’s Expenses” to complete. See page C-1  
• Level 4: Handout titled “Tom’s Expenses” to complete. The questions have highlighted key words and Ss are not required to write in complete sentences. See page C-2  
• Levels 2 & 3: Handout titled “Tom’s Expenses” to complete. The worksheet has graphics and highlighted and bolded words. Ss will define budget constraints and expenses with the use of a word bank. See page C-3  
• Level 1: Handout titled “Tom’s Expenses” to complete. Ss will complete the definition of budget constraint and expenses with the use of a word bank. See page C-4
B. In groups based on language ability Ss will brainstorm ideas about how Tom can lower his expenses and stay within his budget constraint. Ss will use the term trade off. (10 minutes)

- Distribute handout “What can Tom do?” to students.
- In groups, Ss complete the worksheet.
- Debrief as a class. List ideas on the board.

***** ELL modifications:
- Level 5: Handout titled “What can Tom do?” See page C-5
- Level 4: Handout titled “What can Tom do?” Ss will not be required to write in complete sentences. The beginning of each sentence is filled out already. See page C-6
- Level 3: Handout titled “What can Tom do?” Ss have use of a word bank to brainstorm ideas. See page C-7
- Levels 1 & 2: Handout titled “What can Tom do?” Ss have a modified version with graphics and bolded words. Ss need to place a check mark next to possible trade offs. See page C-8

C. In pairs, students will read the story “Tom and his trade offs” and complete questions on the bottom of the story. Debrief and review questions as a class. (13 minutes)

- Put Ss with a pair
- Give Ss handout “Tom and his trade offs”
- Have Ss work with their partner reading aloud the story.
- Ss will complete the questions on the bottom of the story together.
- When Ss are done review the story and questions orally as a class.

***** ELL modifications:
- Level 5: handout titled “Tom and his trade offs” See page C-9
- Level 4: Text of the story with the main ideas highlighted. See page C-10
- Level 3: Modified text of the story with summary in the margins. See page C-11
- Level 2: Modified text of the story with main ideas highlighted and summary in margins. See page C-12
- Level 1: Sequence of events with main ideas from the text underneath graphics. See page C-13
D  Class reading of “Tom and more trade offs”  This is a continuation of the story we just read. (12 minutes)
  ♦  Distribute the handout of the story to Ss.
  ♦  In the same pairs, Ss will read the new story and answer the comprehension questions.
  ♦  After Ss have read the story in their pairs, we’ll read the story as a class. T will focus on the vocab word TRADE OFF. After reading the story, debrief as a class, outlining what trade offs Tom made and how the trade offs affected his expenses and budget constraint.

***** ELL modifications:
  •  Level 5: Text of the story. See page C-14
  •  Level 4: Text of the story with the main ideas highlighted. See page C-15
  •  Level 3: Modified text of the story with summary in the margins. See page C-16
  •  Level 2: Modified text of the story with main ideas highlighted and summary in margins. See page C-17
  •  Level 1: Sequence of events with main ideas from the text underneath graphics. See page C-18
Lesson 3: A New Look: Redecorating Our Bedroom Using a Budget
Personal Reflection: How I modified for ELL’s

**Text Modification:** In order to continue on thru the unit, students will continue reading about a young boy named Tom. The continuation of this story is important for the learning of the key vocabulary I want my students to learn. I modified the text in a few ways. Level 5 students received the story without modifications. (see pages C-9 & C-14) Level 4 students received the text, but the main ideas are highlighted. (see pages C-10 & C-15). Level 3 students received a modified version of the story. The main ideas are also summarized in simple language in the margins. (See pages C-11 and C-16) Level 2 students received the same text as Level 3 students, but the main ideas are highlighted. The main ideas are also summarized in the margin. (See pages C-12 and C-17) Level 1 students received a story map. Pieces of the text are listed underneath graphics that represent the main idea. (See pages C-13 and C-18)

**Chalk/white board use:** Definitions that are discussed will be written on the board. Ss will also make use of the board for their findings regarding budget constraints and expenses. Students will also list the trade offs that they discover on the white board. The board provides extra support for Ss who need visuals or who might need reinforcement to oral discussions.

**Group / Partner work:** This lesson is primarily student centered. ELL’s of lower ability will be paired with L’s of higher ability so that Ss can negotiate meaning with one another. Students are with a partner of a higher language ability when reading so as to provide scaffolding.

**Modeling:** Teacher provides modeling in various areas of the lesson. When discussing the expenses and budget constraint the teacher will model and point out what the problem is. The teacher provides group support in a one-on-one situation, allowing Ss to negotiate meaning and gain more understanding from the teacher.

**Overhead:** Both the story and the list of expenses are also designed as an overhead. The teacher should utilize the overhead for these activities to provide further reinforcement and also to maintain contact with the students while they’re working. The overhead also allows the teacher to point out important parts of the handout.
Tom's Expenses

2 lava lamps $ 45
one gallon of high-quality paint 25
2 soccer posters with frames 75
over-the-door basketball hoop 15
15 single rolls of wallpaper 540
bedspread 100
2 blinds for windows 90
one black light poster 10
one black light 20
black-light trash can 15

TOTAL EXPENSES = $ 935

Tom's BUDGET CONSTRAINT is $ 700.00

How much more money did Tom spend OVER his budget constraint?

Define in complete sentences:

_Budget constraint:_

_Expenses:_

C-1
Tom’s Expenses
Level 4

2 lava lamps $45.00
1 gallon of high-quality paint $25.00
2 soccer posters $75.00
1 over-the-door basketball hoop $15.00
15 rolls of wallpaper $540.00
1 bedspread $100.00
2 blinds for the window $90.00
1 black light poster $10.00
1 black light $20.00
1 trash can $15.00

Tom’s total EXPENSES: $935.00

Tom’s BUDGET CONSTRAINT is $700.00

How much more money did Tom spend OVER his BUDGET CONSTRAINT?

______________________________________________________________

Define on your own, using short phrases:

Budget Constraint: ____________________________________________

Expenses: ___________________________________________________
Tom’s Expenses
Levels 2 & 3

2 lamps $45.00
1 blanket $100.00
1 gallon of high-quality paint $25.00
2 blinds for window $90.00
2 posters $75.00
1 black poster $10.00
1 basketball hoop $15.00
1 light $20.00
15 rolls of wallpaper $540.00
1 garbage can $15.00

+ TOTAL Money spent (EXPENSES): ________________________

Tom’s BUDGET CONSTRAINT is $700.00

How much OVER his BUDGET CONSTRAINT ($700.00) did Tom spend? _________

*Use the phrases below to complete these sentences:
Budget Constraint is: _________________________
Expenses are: _________________________

How much money you spend on everything | How much money you have to spend
## Tom's Expenses

### Level 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 lamps</td>
<td>$45.00</td>
</tr>
<tr>
<td>1 gallon of high-quality paint</td>
<td>$25.00</td>
</tr>
<tr>
<td>2 posters</td>
<td>$75.00</td>
</tr>
<tr>
<td>1 basketball hoop</td>
<td>$15.00</td>
</tr>
<tr>
<td>15 rolls of wallpaper</td>
<td>$540.00</td>
</tr>
<tr>
<td>1 light</td>
<td>$20.00</td>
</tr>
<tr>
<td>2 blinds for window</td>
<td>$90.00</td>
</tr>
<tr>
<td>1 black poster</td>
<td>$10.00</td>
</tr>
<tr>
<td>1 garbage can</td>
<td>$15.00</td>
</tr>
</tbody>
</table>

**TOTAL Money spent (EXPENSES):**

Tom’s **BUDGET CONSTRAINT** (how much money Tom’s mom will spend) is $700.00

**How much OVER his BUDGET CONSTRAINT ($700.00) did Tom spend?**

**Use the phrases below to complete these sentences.**

**How much money you spend on everything you want and need are your**

**The amount of money you can ONLY spend is your**

<table>
<thead>
<tr>
<th>Budget constraint</th>
<th>expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What can Tom do?
(Level 5)

Tom EXCEEDED his BUDGET CONSTRAINT of $700. His EXPENSES are $935. What can Tom do so that he can still redecorate his bedroom, but only spend $700?

Tom has to make TRADE OFFS. That means that Tom needs to give up something that he wants to get. He can’t get everything; he needs to choose what he wants and what he doesn’t really need.
What can Tom do?
(Level 4)

Tom EXCEEDED his BUDGET CONSTRAINT of $700. His EXPENSES are $935. What can Tom do so that he can still redecorate his bedroom, but only spend $700?

Tom can __________________________.

Tom can __________________________.

Or, Tom can __________________________.

Tom has to make TRADE OFFS. That means that Tom needs to give up something that he wants to get. He can’t get everything; he needs to choose what he wants and what he doesn’t really need.
What can Tom do?
(Level 3)

Tom EXCEEDED his BUDGET CONSTRAINT of $700. His EXPENSES are $935. What can Tom do so that he can still redecorate his bedroom, but only spend $700?

Only buy 1 lava lamp  only buy 1 soccer poster  not get the basketball hoop  not get the black light

Tom has to make TRADE OFFS. That means that Tom needs to give up something that he wants to get. He can’t get everything; he needs to choose what he wants and what he doesn’t really need.
What can Tom do?
(Levels 1 & 2)

Tom went over his BUDGET CONSTRAINT of $700. His EXPENSES are $935. What can Tom do so that he can still redecorate his bedroom, but only spend $700?

Put a check mark next to the things Tom can do so that he only spends $700.00

_____ Only buy 1 lamp

_____ Only buy 1 poster

_____ Do not buy the basketball hoop

_____ Do not buy a blanket

Tom has to make TRADE OFFS. Tom needs to give up something that he wants. He can't get everything. Tom needs to choose what he wants and what he does not really need.
"Look, Mom," Tom said in a reasonable voice, "I'm perfectly willing to give up the blinds and the bedspread. After all, our apartment is on the second floor, so I don't need blinds. I hate to make my bed, so why have a bedspread?"

Sounding exasperated, Mom responded, "Tom, we need blinds or curtains on the windows. That's one of the landlord's rules, and I want the apartment to look nice. You may not like making your bed; however, I like it when your bed is made, so the bedspread is a must. Do you have other suggestions?"

Tom replied, "I could buy one lava lamp instead of two and one soccer poster and frame instead of two. I could wait and ask for the black light and black light poster for a birthday gift. I could do the same with the basketball hoop. I guess I have to have a trash can, right?" Tom's mother said yes. "Well then, that's all I can think of."

"Okay, Tom, how much would you save if you did that?" Tom's mom asked.

**QUESTIONS...answer in a complete sentence, please.**

How much money would Tom save if he made all of the changes? ____________________________________________

At first, what TRADE OFF is Tom willing to make?
__________________________________________________________

What does Tom's mom think about his first idea of a TRADE OFF?
__________________________________________________________
Tom and his trade offs
Level 4

"Look, Mom," Tom said in a reasonable voice, "I'm perfectly willing to give up the blinds and the bedspread. After all, our apartment is on the second floor, so I don't need blinds. I hate to make my bed, so why have a bedspread?"

Sounding exasperated, Mom responded, "Tom, we need blinds or curtains on the windows. That's one of the landlord's rules, and I want the apartment to look nice. You may not like making your bed; however, I like it when your bed is made, so the bedspread is a must. Do you have other suggestions?"

Tom replied, "I could buy one lava lamp instead of two and one soccer poster and frame instead of two. I could wait and ask for the black light and black light poster for a birthday gift. I could do the same with the basketball hoop. I guess I have to have a trash can, right?" Tom's mother said yes. "Well then, that's all I can think of."

"Okay, Tom, how much would you save if you did that?" Tom's mom asked.

QUESTIONS...answer with short phrases or one word answers, please.

How much money would Tom save if he made all of the changes? ________________

At first, what TRADE OFF is Tom willing to make?

____________________________

What does Tom's mom think about his first idea of a TRADE OFF?

____________________________
Tom and his trade offs
Level 3

"Mom," Tom said, "I’ll will give up the blinds and the bedspread. Our apartment is on the second floor, so I do not need blinds. I hate to make my bed, so I do not need a bedspread.

Mom responded, "Tom, we need blinds or curtains on the windows. That’s one of the landlord’s rules. I like when your bed is made, so you need a bedspread. Do you have other suggestions?"

Tom replied, "I could buy one lava lamp instead of two and one soccer poster and frame instead of two. I could ask for the black light and black light poster for a birthday gift. I could ask for the basketball hoop for a birthday gift too. I guess I need a trash can."

Tom’s mother said yes. "Well then, that’s all I can think of."

"Okay, Tom, how much would you save if you did not get everything?" Tom’s mom asked.

QUESTIONS...Match each question with the correct answer below.

How much money would Tom save if he made all of the changes? __________

At first, what TRADE OFF is Tom willing to make?

What does Tom’s mom think about his first idea of a TRADE OFF?

| $105.00 | Tom’s mom does not like Tom’s first idea. | Tom says he will not get the blinds and the bedspread. |
"Mom," Tom said, "I'm will give up the blinds and the bedspread. Our apartment is on the second floor, so I do not need blinds. I hate to make my bed, so I do not need a bedspread.

Mom responded, "Tom, we need blinds or curtains on the windows. That's one of the landlord's rules. I like when your bed is made, so you need a bedspread. Do you have other ideas?"

Tom replied, "I could buy one lava lamp instead of two and one soccer poster and frame instead of two. I could ask for the black light and black light poster for a birthday gift. I could ask for the basketball hoop for a birthday gift too. I guess I need a trash can." Tom’s mother said yes. "Well then, that's all I can think of."

"Okay, Tom, how much would you save if you did not get everything?" Tom’s mom asked.

**QUESTIONS...Match each question with the correct answer below.**

Tom would save _______________ dollars if he made the changes.

First, Tom says he will not get ___________________________ and ___________________________.

Tom’s mom ___________________________ his first idea of a TRADE OFF.

| $105.00 | Does not like | the blinds and the bedspread. |
Tom and his trade offs
Level 1

Tom said he will not get the blanket or the blinds.

Tom's mom said that Tom needs to get the blanket and the blinds.

Tom said he will only get 1 lamp and one soccer poster.

Tom said he will NOT get the black light. Tom said he will NOT get the black poster. Tom said he will NOT get the basketball hoop.

If Tom only bought 1 lamp and only 1 soccer poster and did not get the black light, black poster or the basketball hoop he would save _______ dollars.

These are Tom's TRADE OFFS.
"Mom, I figured it out. If I make all the changes we discussed, I can save $105, but that still isn't enough. Maybe I should just stick with the race cars," Tom said.

"Tom, I have a better idea. You know, you chose a designer wallpaper," she said.

"Yes, isn't it great? The designer's name is Tom, too," Tom said.

"Well, that's not such a good reason to buy the paper, and that wallpaper is much more expensive than some others. It would be a good idea if you were a smarter buyer. There are many other books containing wallpaper samples. Some might be just as nice but cost less. Why don't you spend a little more time looking? Perhaps you should think carefully about what's really important to you. Is the designer wallpaper more important than the other things you want for your room?"

Tom looked around for awhile and found different wallpaper that only cost $15 a roll not $36 a roll. Tom decided he would rather have less expensive wallpaper in order to have more of the other items he wanted.

What TRADE off is Tom willing to make now?

How much will the new wallpaper cost? He still needs 15 rolls, but, it only costs $15 a roll.

Tom's EXPENSES have changed. How can we figure out his new EXPENSES? (Use the old price list) See page C-1
Tom and more trade offs
Level 4

"Mom, I figured it out. If I make all the changes we discussed, I can save $105, but that still isn’t enough. Maybe I should just stick with the race cars," Tom said.

"Tom, I have a better idea. You know, you chose a designer wallpaper," she said.

"Yes, isn’t it great? The designer’s name is Tom, too," Tom said.

"Well, that’s not such a good reason to buy the paper, and that wallpaper is much more expensive than some others. It would be a good idea if you were a smarter buyer. There are many other books containing wallpaper samples. Some might be just as nice but cost less. Why don’t you spend a little more time looking? Perhaps you should think carefully about what’s really important to you. Is the designer wallpaper more important than the other things you want for you room?"

Tom looked around for awhile and found different wallpaper that only cost $15 a roll not $36 a roll. Tom decided he would rather have less expensive wallpaper in order to have more of the other items he wanted.

What TRADE off is Tom willing to make now?

How much will the new wallpaper cost? He still needs 15 rolls, but, it only costs $15 a roll. ____________

Tom’s EXPENSES have changed. How can we figure out his new EXPENSES? (Use the old price list) See page C-2
Tom and more trade offs
Level 3

"Mom, I figured it out. If I make all the changes, I can save $105, but that still is not enough. Maybe I should just stick with the race cars," Tom said.

"Tom, I have a better idea. You chose a very expensive wallpaper," she said.

"Yes, isn't it great? The designer's name is Tom, too," Tom said.

"Well, that is not a good reason to buy the paper, and that wallpaper is much more expensive than some others. There are many other books with wallpaper samples. Some are just as nice but cost less. I think you should spend some more time looking. You should think carefully about what is really important to you. Is the expensive wallpaper more important than the other things you want for your room?"

Tom looked around and found different wallpaper that only cost $15 a roll not $36 a roll. Tom decided he would rather have less expensive wallpaper in order to have more of the other items he wanted.

Tom is willing to TRADE OFF ________ for ______________________

| Cheaper wallpaper | more expensive wallpaper |

The new wallpaper will cost________. (He still needs 15 rolls, but, it only costs $15 a roll.)

Tom's EXPENSES have changed. What math can we use to find out his new EXPENSES? (Use the old price list) See page C-3
"Mom, I figured it out. If I make all the changes, I can save $105, but that still is not enough. Maybe I should just stick with the race cars," Tom said.

"Tom, I have a better idea. You chose a very expensive wallpaper," she said.

"Yes, isn’t it great? The designer’s name is Tom, too," Tom said.

“Well, that is not a good reason to buy the paper, and that wallpaper is much more expensive than some others. There are many other books with wallpaper samples. Some are just as nice but cost less. I think you should spend some more time looking. You should think carefully about what is really important to you. Is the expensive wallpaper more important than the other things you want for your room?”

Tom found different wallpaper that only cost $15 a roll not $36 a roll. Tom decided he would rather have less expensive wallpaper in order to have more of the other items he wanted.

Tom is willing to TRADE OFF __________ for ________________

| Cheaper wallpaper | more expensive wallpaper |

The new wallpaper will cost_________. (He still needs 15 rolls, but, it only costs $15 a roll.)

Tom’s EXPENSES have changed. What math can we use to find out his new EXPENSES? (Use the old price list) See page C-3
Tom and more trade offs
Level 1

1) If Tom only bought 1 lamp and only 1 soccer poster and did not get the black light, black poster or the basketball hoop he would save $105 dollars. That is not enough.

2) Tom found new wallpaper that only cost $15 for one roll. The old wallpaper cost $36 for one roll.

3) Tom will buy the new wallpaper for only $15 a roll. His EXPENSES changed. Now Tom can buy the other things he wants.

Tom TRADES OFF the expensive wallpaper for the cheaper wallpaper.

Tom buys 15 rolls of wallpaper. One roll of wallpaper costs $15. How much does the new wallpaper cost?

\[ (15 \text{ rolls} \times 15.00) \]
Checklists
FLA 518: Sheltered ELL Strategies Checklist

Write the page numbers and any other identifying features to identify those parts of your lessons that employ the following strategies.

<table>
<thead>
<tr>
<th>SHELTERED STRATEGIES</th>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Contextualize Lesson</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. A. Build and Activate Background Knowledge</td>
<td>p 11 (A)</td>
<td>p 10 (A)</td>
<td></td>
</tr>
<tr>
<td>I. B. Use extensive Visuals, Realia, Manipulatives, &amp; Gestures</td>
<td></td>
<td></td>
<td>p C1-C3</td>
</tr>
<tr>
<td>I. C. Model (Instructions, Processes)</td>
<td>p 5</td>
<td>p 6 letter A</td>
<td></td>
</tr>
<tr>
<td>I. D. Create Opps. To Negotiate Meaning/Check Understanding</td>
<td>p 10 A</td>
<td>11 B-11 C</td>
<td>p 11 letters B+C</td>
</tr>
</tbody>
</table>

| **II. Make Text Comprehensible** |          |          |          |
| II.A. Intentional Use of Graphic Organizers |          |          |          |
| II.B. Develop Vocabulary | p A6 | p B13 | pages C1-C8 |
| II.C. Modify Written Text | p A9 | p B117 | p 15 C10-C13
| | | | p 15 C14-C18 |

| **III. Make Talk Comprehensible** |          |          |          |
| III.A. Pace Teacher’s Speech | p 5 | p 7 letter C | p 6 letters B+C |
| III.B. Use of Listening Guides | A10-A13 |          |          |
| III.C. Use of Word Walls | p A10-A13 |          |          |
| III.D. Frame Main Ideas | p 3 letter C | p 11 letter B | p 11 letter C |

| **IV. Engage: Opportunities for Output** |          |          |          |
| IV.A. Use Teacher Questioning and Response Strategies | p 7 letter C | p 6 letter A | p 11 letter C |
| IV.B. Practice Instructional Conversations |          |          |          |

| **V. Engage at Appropriate Language Proficiency Levels** |          |          |          |
| V.A. Use questions appropriate for language proficiency levels in conversations, activities, and assessments | p 6 letter A | p 17 letter C | p 11 letter A |

| **VI. Give Students Voice** |          |          |          |
| VI.A. Challenge students to produce extended talk | A20-A24 |          |          |
| VI.B. Model Language for Oral and Written Production |          |          |          |
| VI.C. Use Group/Pr. Work to Elicit Student Talk; Students as Researchers | A20-A24 | p 11 letter B+C | p 11 letters B+C |
Danielle Ducharme
July 23, 2009

Unit: A New Look: Redecorating our bedroom using math!
Grammar and Functions Checklist

<table>
<thead>
<tr>
<th>Grammar</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indefinite articles</td>
<td>3</td>
</tr>
<tr>
<td>-ing verbs</td>
<td>3</td>
</tr>
<tr>
<td>Adjectives</td>
<td>2</td>
</tr>
<tr>
<td>Nouns</td>
<td>1,2</td>
</tr>
<tr>
<td>Verbs</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Past tense -ed verbs</td>
<td>2</td>
</tr>
<tr>
<td>Possessive pronouns</td>
<td>1</td>
</tr>
<tr>
<td>Use of transitions to show sequence</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functions</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe</td>
<td>1</td>
</tr>
<tr>
<td>Explain</td>
<td>1,2</td>
</tr>
<tr>
<td>Determine</td>
<td>2</td>
</tr>
<tr>
<td>Define</td>
<td>3</td>
</tr>
<tr>
<td>List</td>
<td>3</td>
</tr>
</tbody>
</table>
Original Lessons
Wallpaper Woes

Time Required
2 - 3 days

Get Ready

1. Ask students if they're happy with the way their rooms at home are decorated. (Answers will vary.) Discuss the following.
   a. If you like your room, what do you like? (color, wallpaper, furniture, posters, pictures)
   b. If you don't like your room, what would you change? (color, wallpaper, posters, pictures) Why? (paper is for younger kids, tired of the color or the wallpaper pattern, want posters and pictures related to new things)

2. Explain that they will learn about a middle school boy, Tom, who's unhappy with the way his room looks. Read the following story to the class.

   My room still looks EXACTLY the way it did when I was ten. Can you believe it? I just can't stand it any longer. So, over the weekend, I asked Mom if I could change my room. I told her that I wanted to rip down the race car wallpaper and put up something else. Mom said I could change my room, but I couldn't put up strange stuff like skull and crossbones wallpaper. She also said I would have to figure out how much wallpaper I needed before we could shop for wallpaper. I said, "That's easy. I need enough to cover all the walls. The person at the wallpaper store will know." Mom replied, "Tom, the person at the store needs some help. You have to measure the walls and have some idea about how much wallpaper you need before you ever go to the store. This is where all those important math skills you've learned at school will come in handy." Let's talk about what you need to know."

   Maybe this redecorating idea wasn't such a great one after all. Maybe I can just stick some posters over the race cars.

3. Discuss the following.
   a. Do you think Tom should give up on the wallpaper idea? (Answers will vary.)
   b. Have any of you ever helped someone in your family buy wallpaper? (Answers will vary.)
   c. What math skills will Tom need to buy wallpaper? (measurement skills, understanding of dimensions, addition, subtraction, multiplication, and division skills)
   d. If we wanted to buy wallpaper for the classroom, what dimensions would we need? (the height and width of the walls) Why? (These measurements allow us to determine the amount of wall space to be covered with wallpaper.)
Wallpaper Woes

4. Divide students into groups of 3 or 4, and distribute a yardstick or steel tape measure and a sheet of paper to each group. Draw the table below on the board, and ask a member of each group to draw the same table on the sheet of paper. Allow time for groups of students to measure the walls in the room and record the measurements.

<table>
<thead>
<tr>
<th>Wall</th>
<th>Height of Wall in Feet</th>
<th>Width of Wall in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Get Going

1. Have each group report its measurements. As each reports, record the measurements in the table on the board as in the sample table below.

<table>
<thead>
<tr>
<th>Wall</th>
<th>Heights of Wall in Feet</th>
<th>Widths of Wall in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8', 8'6&quot;, 8'3&quot;, 7'9&quot;, 8'</td>
<td>10', 10'6&quot;, 10', 10'3&quot;, 10'3&quot;</td>
</tr>
</tbody>
</table>

2. Point out any differences in measurements. Given differences, ask for a way to calculate a single height and width for each wall, given the data. Guide students to recognize that they can calculate an average height and width for each wall. Ask how to calculate the average height of the wall. (*Add all height measurements and divide by the number of groups.*) Allow time for students to compute the average heights. Then ask how to calculate the average width for each wall. (*Add all width measurements for each wall and divide by the number of groups.*) Have students compute the average widths.

3. Record averages on the board, and explain that when determining how much wallpaper to buy, experts recommend that people round to the next highest half foot or foot as needed. If necessary, round the averages calculated.

---

© Copyright 2008 by The Curators of the University of Missouri, a public corporation
Reproduction is permitted and encouraged
Graph It

1. Distribute rulers and graph paper. Have students draw a scale model of the room using the averages and a scale of 1" = 1'.
2. Have one group measure the windows, another measure the chalkboard, and another measure the doors, then record the measurements on the board. Tell students to use this information to complete the drawing.

Keep Going

1. Discuss the following.
   a. How can these measurements be used to determine the amount of wallpaper needed for the room? (by determining the area of wall space that must be covered)
   b. What is "area"? (the measure of the interior region of a two dimensional figure)
   c. What type of figure is the wall? (rectangle)
   d. How do we determine the area of a rectangle? (Answers will vary. Guide students to recall that they must multiply the length of the rectangle by the width.)
   e. What is the length of the front wall of the classroom? (Answer depends on the classroom.)
   f. What is the width of the front wall of the classroom? (Answer depends on the classroom.)
   g. Using your drawing, how can you determine the area of the front wall? (count the number of squares inside the rectangle)
   h. Why is area expressed in square units - in this case, square feet? (It is the sum of the squares inside a two dimensional figure.)
   i. Multiplying height by width, how can you determine the total wall area in the room? (Multiply the height of each wall by the width of each wall and add the four products.)

2. Have students think of another way to do this problem that might take less time. Guide them to recognize that they could first add the width of all four walls and then multiply that sum by the sum of the height of the four walls. Have them calculate in this way and compare answers. Of course, the answers will be the same.
3. Ask if they still have a problem to solve before they could purchase wallpaper.
   a. What is it? *(The measurement includes the doors, windows, and chalkboards that shouldn’t be covered with paper.)*
   b. How can the measurements be corrected? *(by subtracting the area of the doors, chalkboards, and windows from the total area)*
   c. Point out that each single roll of wallpaper contains 30 square feet of paper. How can the number of single rolls of wallpaper to buy to paper the walls in the classroom be determined? *(divide the area of the wall space by 30)*

4. Read the following scenario to the class.

   *My mom and I figured out the wall area of my room. Then we went shopping at a huge hardware store. It had everything - wallpaper, paint, lamps, blinds, rugs, picture, and posters.*

   *I found some great wallpaper for only $36 per single roll!*

   *I gave the store clerk the area that Mom and I calculated. She explained that I would need at least 15 single rolls of paper. I also found two posters, a basketball lamp, some great soccer posters, and paint for the baseboards in my room.*

   *My room was going to look fabulous, but my mom spoiled the whole thing with, you guessed it, MATH! First she asked, "Tom, if the wallpaper is $36 a roll and you need 15 rolls, how much will that cost?" I replied, "Oh, Mom. I don't know. Don't you have a calculator?"*

5. Pause and have students help Tom with this calculation.

   *(15 x $36 = $540)* Continue reading the story.

   *"Tom," my mom said anxiously, "that's $540 just for wallpaper. How much is the gallon of paint?" "Uh, $25," I answered. "And, you want pictures, posters, a lamp, a bedspread, and blinds?" I think you should know that there's a limit to what I will spend," Mom explained.*

   *Well, that ended my shopping spree. My mom told me that she was willing to spend a total of $700 on the project. She said that $700 was my budget constraint. How am I supposed to get everything I want? If I spend $540 for wallpaper, I'll only have, um . . . . Does anyone have a calculator?*

6. Pause and have someone help Tom with the calculation.

   *(700 - 540 = 160)*
7. Explain that Tom has a budget constraint of $700. A **budget constraint** is a limit to the amount that may be spent. Because of this constraint, Tom can't have everything he wants. He must limit his **expenses** to $700 or less. Explain that expenses are payments for goods and services.

8. Explain that Tom must make some choices. His mom suggested that first he should make a list of the expenses for his room. Display Visual 2-1 and explain that this is Tom’s list. Discuss the following:

   a. How much more are Tom's expected expenses than his budget constraint? ($935 - $700 = $235)

   b. Suggest some changes that Tom might make. *(only buy one lava lamp, only buy one soccer poster and frame, wait and ask for the black light and black light poster as a holiday gift, eliminate the basketball hoop)*

9. Point out that Tom must make some trade-offs. **Trade offs** involve giving up some of one thing to get more of something else. If Tom buys more expensive wallpaper, he must give up some of the other things that he wants. Continue the story.

   "Look, Mom," Tom said in a reasonable voice, "I'm perfectly willing to give up the blinds and the bedspread. After all, our apartment is on the second floor, so I don't need blinds. I hate to make my bed, so why have a bedspread?"

   Sounding exasperated, Mom responded, "Tom, we need blinds or curtains on the windows. That's one of the landlord's rules, and I want the apartment to look nice. You may not like making your bed; however, I like it when your bed is made, so the bedspread is a must. Do you have other suggestions?"

   Tom replied, "I could buy one lava lamp instead of two and one soccer poster and frame instead of two. I could wait and ask for the black light and black light poster for a holiday or birthday gift. I could do the same with the basketball hoop. I guess I have to have a trash can, right?" Tom's mother nodded. "Well then, that's all I can think of."

   "Okay, Tom, how much would you save if you did all that?" Tom's mom asked.

   "Gosh, Mom, are you sure you didn't bring a calculator?"
10. Pause and ask how much Tom would save with all those changes. ($22.50 by eliminating a lava lamp, $37.50 by eliminating one soccer poster and frame, $15 by eliminating the basketball hoop, and $30 by eliminating the black light and black light poster for a total of $105) Discuss the following.

a. At first, what trade off is Tom willing to make? (He is willing to give up the bedsprad and blinds in order to have the wallpaper.)

b. What does his mom think of this? (She isn't willing to make the same trade off.)

11. Continue the story.

"Mom, I figured it out. If I make all the changes we discussed, I can save $105, but that still isn't enough. Maybe I should just stick with the race cars," Tom said dejectedly.

"Tom, I have a better idea. You know, you chose a designer wallpaper," she said.

"Yes, isn't it great? The designer's name is Tom, too," Tom said.

"Well, that's not such a good reason to buy the paper, and that wallpaper is much more expensive than some others. Plus, that paper has a large pattern repeat. That's why you must buy 15 rolls of paper. You need more paper in order to match the pattern as the paper is hung. It would be a good idea if you were a wiser buyer. There are many other books containing wallpaper samples. Some might be just as nice but cost less. Why don't you spend a little more time looking? Perhaps you should think carefully about what's really important to you. Is the designer wallpaper more important than the other things you want for your room?"

12. Ask why Tom's mom was right. (Tom hadn't considered all available options.) Explain that after Tom looked for a while, he found wallpaper for only $15 a single roll and the pattern repeat was smaller, so he only needed 14 rolls. He decided he would rather have the less expensive wallpaper in order to have more of the other items he wanted. Discuss the following.

a. What trade off is Tom willing to make now? (He's willing to give up the designer wallpaper in order to have the other items he wants for his room.)

b. How much would the new wallpaper selection cost? (14 rolls x $15 = $210)
13. Display Visual 2-1 again, explaining that Tom's expenses have changed. Ask for alternative approaches to calculating a new total. Write student approaches in sentences on the board. Then have students convert the sentences as mathematical statements, using symbols and parentheses as needed.

Subtract $540 from $935 and add $210 to the difference.
($935 - $540) + $210 = $605

Add all numbers substituting $210 for $540.
(45 + 25 + 75 + 15 + 210 + 100 + 90 + 10 + 20 + 15) = $605

Subtract $210 from $540 and subtract the difference from $935.
$935 ($540 - $210) = $605

Graph It

Using a computer or pencil, paper, protractor or ruler, have students create a bar or circle graph showing the portion of Tom's decorating budget represented by each expenditure.

Wrap It Up

Review lesson content with the following questions.

1. What is area? (the measure, in square units, of the interior region of a two dimensional figure)

2. What's the formula for calculating the area of a rectangle?

   \( A = lw \)

3. Sue's parents told her that she could buy new clothes, but her budget constraint was $125. What does that mean? (Sue must limit the amount that she spends to $125 or less.)

4. What is an expense? (an amount spent to purchase goods or services)

   Give an example of an expense you had this week. (lunch, video rental, candy)

5. Trade offs involve giving up a little of one thing in order to get a little more of something else. If your parents said that you could have $5 more allowance a week for watching your younger brother after school on Fridays for one hour, what trade off are they asking you to make?

   (give up one hour of free time on Fridays in order to have $5 extra to spend/save)