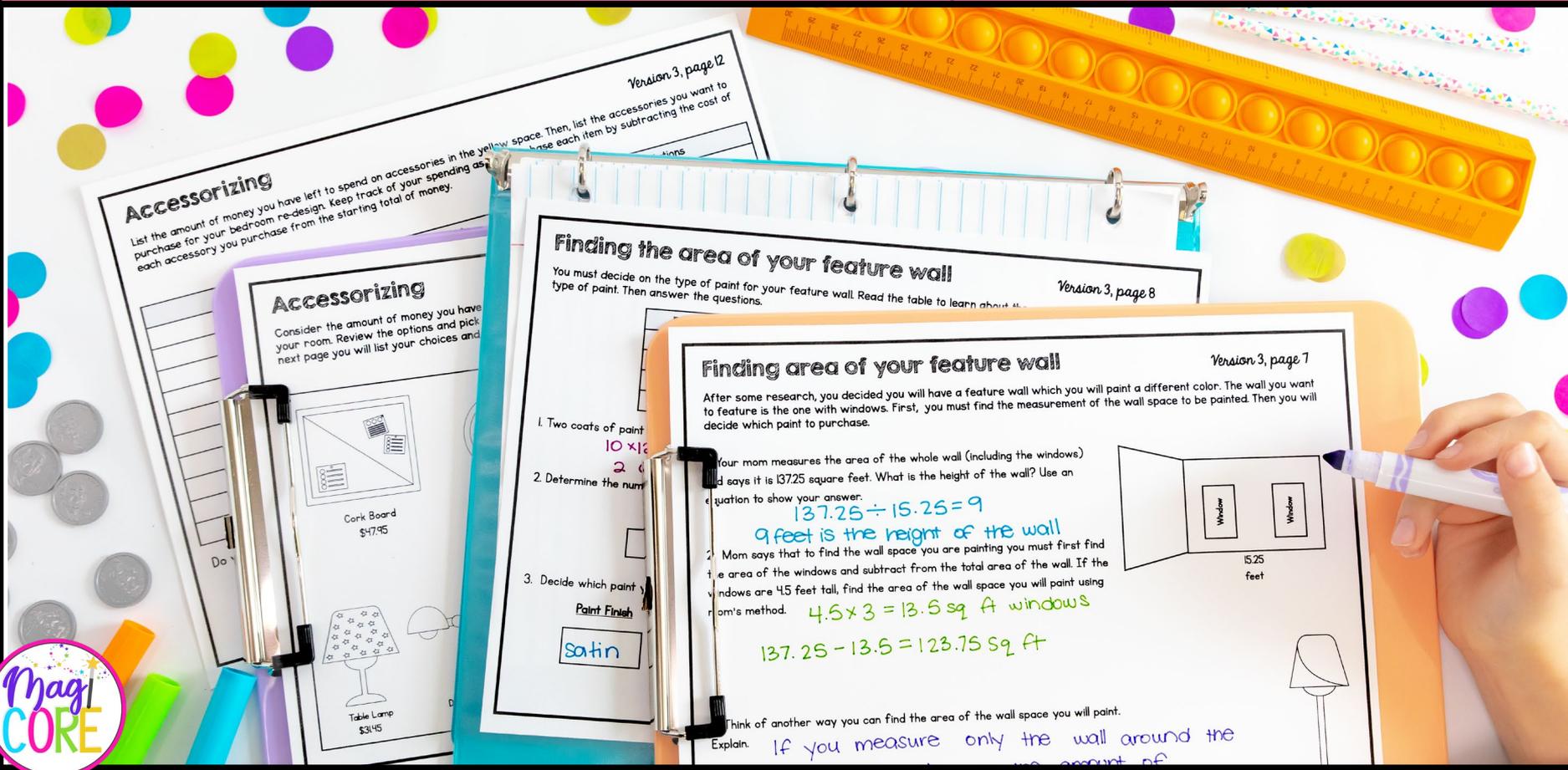


DESIGN A ROOM

Project Based Learning

5th Grade Print & Google Slides

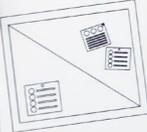


Accessorizing

List the amount of money you have left to spend on accessories in the yellow space. Then, list the accessories you want to purchase for your bedroom re-design. Keep track of your spending as you purchase each item by subtracting the cost of each accessory you purchase from the starting total of money.

Accessorizing

Consider the amount of money you have for your room. Review the options and pick the next page you will list your choices and



Cork Board
\$47.95

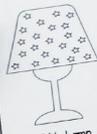


Table Lamp
\$34.45

Finding the area of your feature wall

You must decide on the type of paint for your feature wall. Read the table to learn about the type of paint. Then answer the questions.

- Two coats of paint
- Determine the number of windows
- Decide which paint finish

Paint Finish
satin

Finding area of your feature wall

After some research, you decided you will have a feature wall which you will paint a different color. The wall you want to feature is the one with windows. First, you must find the measurement of the wall space to be painted. Then you will decide which paint to purchase.

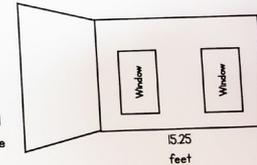
Your mom measures the area of the whole wall (including the windows) and says it is 137.25 square feet. What is the height of the wall? Use an equation to show your answer.

$$137.25 \div 15.25 = 9$$

9 feet is the height of the wall

Mom says that to find the wall space you are painting you must first find the area of the windows and subtract from the total area of the wall. If the windows are 4.5 feet tall, find the area of the wall space you will paint using mom's method.

$$4.5 \times 3 = 13.5 \text{ sq ft windows}$$
$$137.25 - 13.5 = 123.75 \text{ sq ft}$$



Think of another way you can find the area of the wall space you will paint.

Explain. If you measure only the wall around the windows...



Cost evaluation

As the interior designer of this project, you must be sure you are staying within budget. Knowing how much money you have spent will allow you to continue planning for your bedroom re-design. Answer the questions below to be sure you are still within your budget before you begin purchasing accessories.

Version 3, page 10

If you purchase all your choices for furnishings and paint, how much money will you be spending? Complete the table.

2 Calculate how much

3 Your father as answers.

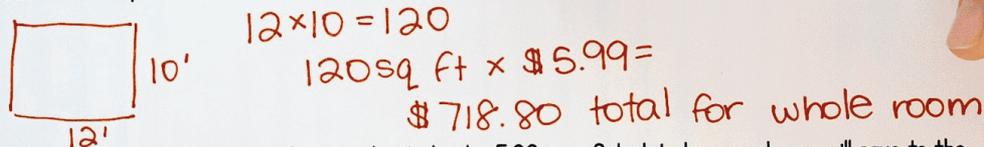
Buying wall-to-wall carpeting - Challenge I

Your grandmother said she will give money to purchase new wall-to-wall carpeting. Your task is to read the table below and calculate how much it will cost for each type of carpeting. This will help you decide which carpeting you will purchase for your bedroom.

1. Calculate the area of your bedroom floor including the closet. How many square feet of carpeting do you need to cover the floor? Show with an equation. $12\text{ft} \times 10\text{ft} = 120\text{ sq ft}$

Type of carpeting	Berber	Loop	Plush	Textured
Cost per square foot	\$3.49	\$4.97	\$5.99	\$6.75
Total cost to carpet bedroom	\$418.80	\$696.40	\$718.80	

2. Use an area model to show your calculation for the cost of one type of carpeting.



3. The carpet store is offering a 10% discount if you order today by 5:00 p.m.. Calculate how much you will save to the nearest hundredth for each type of carpet. Show how you solved.

Berber	Loop	Plush	Textured
$418.80 - 10\%$ $418.80 \times .01$ $418.80 - 4.19 =$ $\$4.19$ savings	$696.40 - 10\%$ $696.40 \times .01$ $= 6.96$ $\$6.96$ savings	$718.80 - 10\%$ $718.80 \times .01$ $= 7.19$ $\$7.19$ savings	$810.00 - 10\%$ $810.00 \times .01$ $= 8.10$ $\$8.10$ savings



Buying wall-to-wall carpeting - Challenge I

Your grandmother said she will give money to purchase new wall-to-wall carpeting. Your task is to read the table below and calculate how much it will cost for each type of carpeting. This will help you decide which carpeting you will purchase for your bedroom.

1. Calculate the area of your bedroom floor including the closet. How many square feet of carpeting do you need to cover the floor? Show with an equation.

$$12\text{ft} \times 10\text{ft} = 120\text{ sq ft}$$

Type of carpeting	Berber
Cost per square foot	
Total cost to carpet	

Finding area of your feature wall

Version 3, page 7

After some research, you decided you will have a feature wall which you will paint a different color. The wall you want to feature is the one with windows. First, you must find the measurement of the wall space to be painted. Then you will decide which paint to purchase.

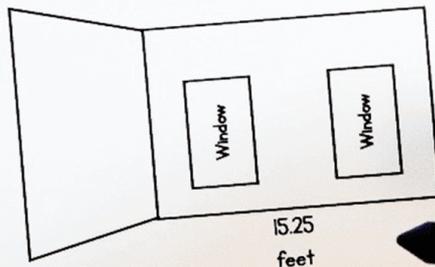
Your mom measures the area of the whole wall (including the windows) and says it is 137.25 square feet. What is the height of the wall? Use an equation to show your answer.

$$137.25 \div 15.25 = 9$$

9 feet is the height of the wall

Mom says that to find the wall space you are painting you must first find the area of the windows and subtract from the total area of the wall. If the windows are 4.5 feet tall, find the area of the wall space you will paint using mom's method.

$$4.5 \times 3 = 13.5\text{ sq ft windows}$$
$$137.25 - 13.5 = 123.75\text{ sq ft}$$



Think of another way you can find the area of the wall space you will paint.

16. you measure only the wall around the

Furnishing your bedroom

Your parents have given you a budget of \$1,800 to furnish your bedroom. You must decide which pieces of furniture to purchase. There are options for your bed, desk and bureau. You must select one piece from each group. You must by either the bookcase or the rug. Review the furniture options, the measurements and the prices below. Drag the checkmark to the items you want to purchase.

beds



Bed option 1
3' wide by 6' long
\$255.50



Bed option 2
5' 6" wide by 6' long
\$364.99

bureau



Bureau option 1
2' 6" wide by 2' deep
\$265.97



Bureau option 2
5' 6" wide by 18" deep
\$310.75



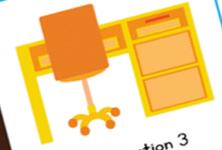
Bureau option 3
3' 6" wide by 30" deep
\$295.01



Desk option 1
3' 6" wide by 2' deep
\$198.25



Desk option 2
4' 6" wide by 18" deep
\$277.50



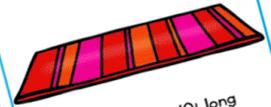
Desk option 3
4' wide by 15" deep
\$212.09

bookcase



3' wide by 2' deep
\$185.32

rug



8' 6" wide by 10' long
\$225.84

For the Teacher

Design, Create, Dream is a Project Based Learning packet that will provide your students a variety of engaging and fun math challenges using the theme of redecorating a bedroom.

The following standards are addressed:

- 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10
- 5.NBT.A.4 Use place value understanding to round decimals to any place.
- 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.B.6 Find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisor, using strategies based on place value, properties of operations, and/or relationship between multiplication and division.
- 5.NBT.B.7 Perform all operations with decimals to hundredths, using concrete models, drawings, and strategies based on place value, properties of operations, and/or the relationship between add./sub., relate to a written method and explain reasoning.
- 5.NF.B.4.B Multiply fractional side length to find areas of rectangles and represent fraction products as rectangular areas.
- 5.MD.A.1 Convert among different sized standard measurement units within a given measurement system. Use in solving multi-step real world problems.
- 5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit. Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Directions:

1. Decide if your class will complete the project as a whole group, in small groups or independently.
2. Copy packets and provide students with materials necessary to complete the packet.
3. Students should complete the project over several days.
4. Preview the activity with your students.
5. Challenge activities can be assigned or can be optional.
6. Students will complete the self-evaluation reflection rubric.
7. Allow students an opportunity to share their completed projects.

Design, Create, Dream

Your parents have agreed that it is time to redecorate your bedroom. They are allowing you to take a big part in the design and the work it will take to transform your bedroom into a super exciting space just for you!

Here are your tasks:

- Read through the entire packet before beginning.
- Read the informational slide about the work of interior designers.
- Work within a budget to furnish, paint and accessorize your room.
- Compare size and pricing for furniture.
- Place furnishings in the room using a scaled floorplan.
- Read and answer measurement and data word problems.
- Use data from a line plot to solve measurement problems.
- (Optional) Complete the challenge pages.
- Complete the self-reflection and evaluation rubric.

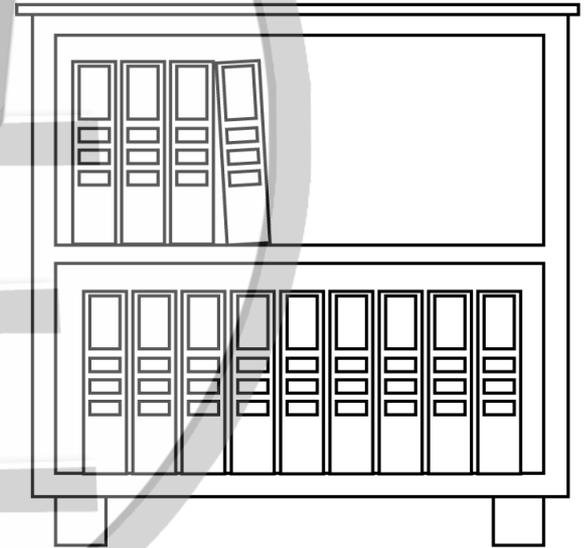
Design, Create, Dream

Name: _____

Have you ever heard of an interior designer? It is someone who plans, coordinates, and manages design projects inside homes or commercial buildings such as restaurants and doctors' offices. Interior designers go to school to learn how to work with clients and to best utilize different interior spaces. Once hired for a job, they work with clients to create and carry out a design plan. Clients share their preferences for style and needs for the use of the space. Then, the interior designer manages the job from start to finish.

For this task you are the interior designer assigned to redecorate your bedroom. You will begin by studying the measurements of the space. Your parents have given you a budget of \$1,800.00 to spend on furnishings, paint and accessories. You will be responsible for making decisions about purchases and furniture placement in your bedroom. You will also calculate cost for painting a feature wall. Finally, you will select accessories for your bedroom while staying within the budget you have been given.

So, put on your design hat and get started on your creative adventure!



Finding area and perimeter of the footprint

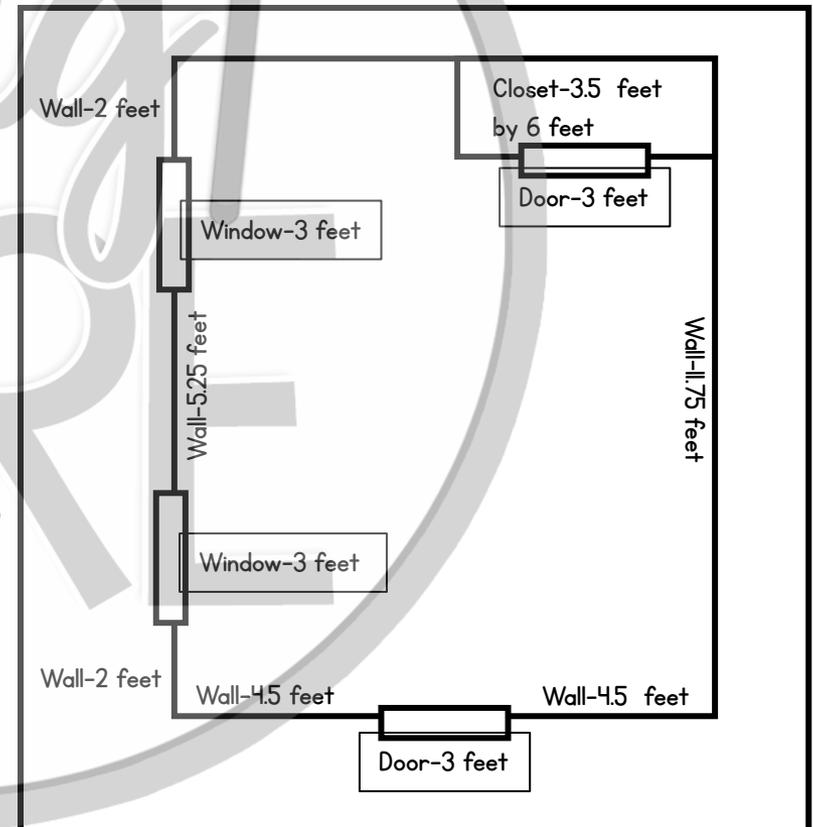
Version 3, page 1

Your first task is to determine the size and layout of the footprint of your bedroom. The footprint refers to the space of your room as seen from a bird's eye view (looking down into your room). Knowing the area and perimeter will help you create a plan for furniture and carpet placement. Use this information and the diagram below to answer the questions.

1. What are the outside dimensions of the room? Show how you know the length and the width are correct.

2. Determine the total square footage of the bedroom floor including the closet. Solve using the algorithm.

3. What is the perimeter of your room? Use the outside walls so that it includes the closet. Solve two different ways.



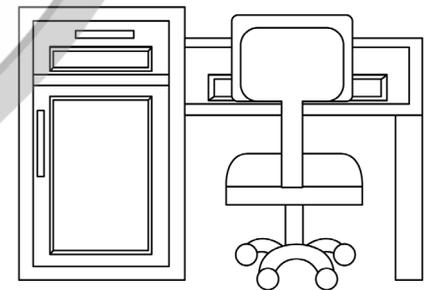
Furnishing your bedroom

Version 3, page 4

Let's see if you have enough money to purchase the furnishings you picked out. Complete the table below and calculate the total cost. You must be sure you have money left to purchase paint and accessories.

Furnishings	Option2	Cost	Running Calculations
Bed			
Desk			
Bureau			
Bookcase	N/A		
Rug	N/A		
Total Cost for Furnishings			
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			

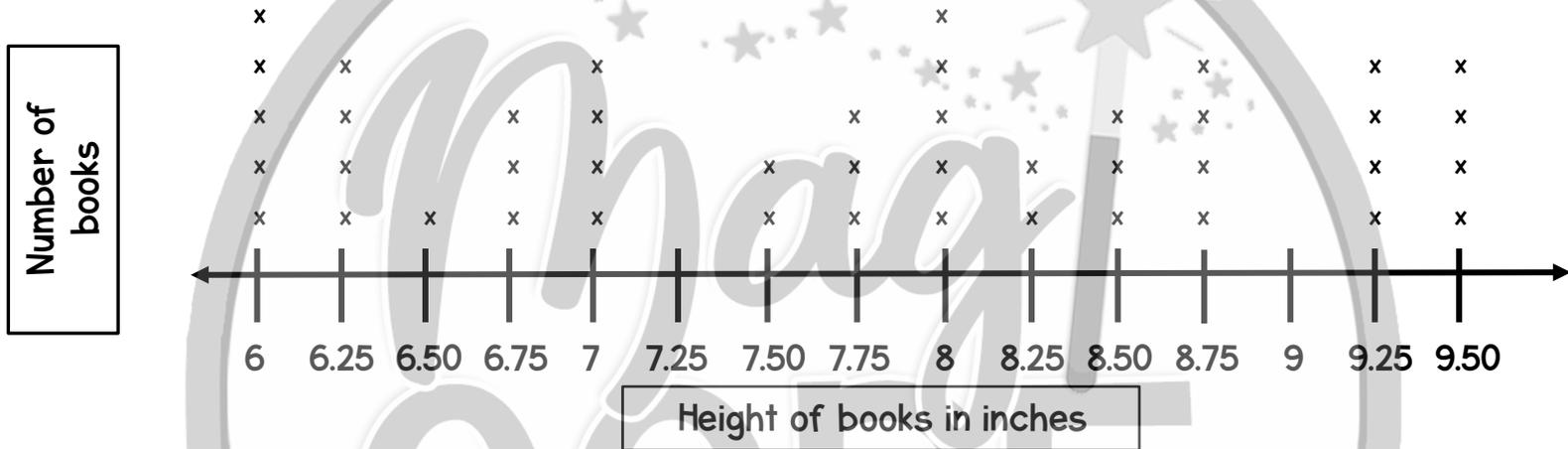
Calculate how much money you have left to spend on paint and accessories.



Bookshelf Word Problems

Version 3, page 6

It is time to arrange your books on your new bookshelf. You have three shelves to place all 44 books of your book collection. The maximum number of books you can place on a shelf is 16. The bottom shelf is 10 inches tall, the middle shelf is 8.75 inches tall, and the top shelf is 7.5 inches tall. Read the data on the line plot which shows the size of your books. Then, answer the questions below.



- Using the information above, describe how will you arrange your books on the bookshelf. Include which size books you will place on each shelf. Drawing a sketch can help you prove your answer.
- Your grandmother buys you 4 new books for your birthday. Two of the books are 7.5 inches tall, one is 8.25 inches tall and one is 9 inches tall. Add these books to the line plot. Explain where you will put the new books on your shelves. Describe if adding these three books will impact how you have already arranged the two shelves.

Finding the area of your feature wall

Version 3, page 8

You must decide on the type of paint for your feature wall. Read the table to learn about the cost and coverage of each type of paint. Then answer the questions.

Paint Finish	Cost per gallon	One gallon will cover
Glossy	\$32.33	90 square feet
Sparkle	\$35.97	65 square feet
Flat	\$27.60	225.50 square feet
Satin	\$29.49	195 square feet

1. Two coats of paint is recommended for the best coverage. How many square feet will you plan for in your design?
2. Determine the number of gallons needed to cover your wall with 2 coats for each type of paint. Complete the table.

	Glossy	Sparkle	Flat	Satin
Number of gallons				

3. Decide which paint you will use. How much will it cost you to purchase enough paint for the feature wall?.

<u>Paint Finish</u>	<u>Number of gallons</u>	<u>Cost per gallon</u>	<u>Total cost of paint</u>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Cost evaluation

Version 3, page 10

As the interior designer of this project, you must be sure you are staying within budget. Knowing how much money you have spent will allow you to continue planning for your bedroom re-design. Answer the questions below to be sure you are still within your budget before you begin purchasing accessories.

1. If you purchase all your choices for furnishings and paint, how much money will you be spending? Complete the table..

Total Cost for furnishings	
Total cost for paint	
Total cost	

2. Calculate how much money you have left to purchase accessories.

3. Your father asks you to round the cost of your furnishings to the nearest dollar. Complete the table to display your answers.

Furnishing	Cost	Rounded to nearest dollar
Bed		
Desk		
Bureau		
Bookcase		
Rug		

Buying wall-to-wall carpeting - Challenge 2

In Challenge 1 you found the cost for each type of carpeting. Your grandmother is willing to spend up to \$1,200.00 for your carpeting. Write the total costs in the table to help you decide which one you will purchase for your bedroom.

Type of carpeting	Berber	Loop	Plush	Textured
Cost per square foot	\$3.49	\$4.97	\$5.99	\$6.75
Total cost to carpet bedroom				

1. Which carpets do you have enough money to purchase? Explain how you know.
2. How much change will your grandmother receive from each of the types of carpeting you can afford?
3. When you go to the store to purchase carpeting, you learn that the textured carpeting is discounted by 20 cents per square foot. Do you have enough money to purchase the textured carpeting? Explain.
4. You decide to purchase the textured carpeting. Will you have any change to give to your grandmother? Show with an equation.

Design, Create, Dream

Name: _____

Self Reflection Rubric: Highlight or shade one box per row on the rubric that expresses how you rate yourself on this Project Based Learning Activity.

I felt very confident about the math in this project.	I felt pretty good about my ability to complete the math in this project.	I felt a lot of the math in this project was too hard for me to do alone.
I understood all of the math and did not need help to complete the problems.	I understand most of the math but needed a little help to solve some of the problems.	I understood some of the math but needed help to complete most of the problems.
I easily used many strategies to solve the math problems efficiently.	I needed some help to use the best strategies for solving the math problems.	I had trouble understanding the best way to solve many of the math problems.
I feel I am ready for a harder math project.	I feel I would like to spend more time practicing similar math problems.	I feel I need assistance to work on similar math problems

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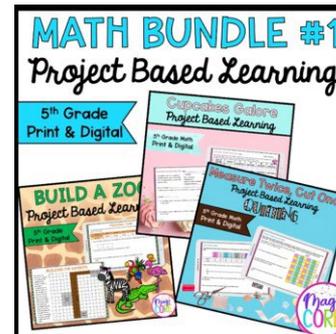


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