

# Bedroom Diorama Project

5th Grade

Hello 5A/5B Parents/Guardians,

Over the next few weeks, we will be embarking upon a Math unit involving measurement. Students will be learning about the following areas of measurement: customary measurement, metric measurement, angles, perimeter, area, volume, changing linear units, capacity, weight, and mass. This is a very exciting unit as many of these measurements have everyday applications students can use! The culminating activity for this unit on measurement is a diorama. Students will be asked to make various measurements from their bedroom, convert those measurements to a given scale, and build a diorama of their bedrooms. Please assist your student while taking these measurements for the safety of your child and because these measurements will serve as the foundation for this project. We have already previewed this project in class and students are very excited to start on this project. Listed below are the steps we will take to complete this project. Each assignment correlates with work we will be doing in class and is aligned to the Common Core Standards. Thank you for your help and participation in your child's learning!

Sincerely,

Mr. Knight

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## Steps

1. Draw a bedroom floor plan
2. Obtain perimeter measurements
3. Obtain area measurements
4. Obtain volume measurements
5. Obtain angle measurements
6. Construct diorama

## Materials

- Shoe box
- Tape measure
- Customary/Metric ruler
- Crayons
- Markers
- Construction paper
- Scissors
- Glue

\*\*Materials might be added as necessary!

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## Draw a Bedroom Floor Plan

1) Neatly draw a floor plan of your bedroom. Do your best estimating as you draw. Please include at least five of the following objects in your drawing:

- 4 walls
- Chair
- Door
- Closets
- Windows
- Any important bedroom furniture
- Bed
- One interesting item of your choice
- Dresser
- Desk

**IMPORTANT:** Be sure to include a compass rose and a legend. See the example below to complete this step.

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## Obtain Perimeter Measurements

**Directions:** With the help of a parent/guardian, obtain the perimeter measurements for your bedroom. Using a ruler or tape measure, determine the length of each wall to the nearest eighth inch. Record your measurements on your Bedroom Floor Plan sketch and in the spaces below.

**HINT:** Based on the shape of your room, you may not need to measure every wall.

Perimeter = Add the length of each wall

**Length of wall 1:** \_\_\_\_\_ **Length of wall 2:** \_\_\_\_\_

**Length of wall 3:** \_\_\_\_\_ **Length of wall 4:** \_\_\_\_\_

**Total Perimeter of Bedroom:** \_\_\_\_\_

*See example below:*

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## Obtain Area Measurements and Other Measurements

**Directions:** Determine the area of your bedroom by measuring the length and width of your floor to the nearest eighth inch. Also, using a customary ruler or tape measure, measure and record the length and width of at least two of the items below to the nearest eighth inch to find the area of each item:

- Floor
- Door
- Closet door(s)
- Window(s)

$$\text{Area} = \text{Length} \times \text{Width}$$

$$\text{Floor} = (\text{Length}) \underline{\hspace{2cm}} \times (\text{Width}) \underline{\hspace{2cm}} = (\text{Area}) \underline{\hspace{2cm}}$$

$$\text{Door} = (\text{Length}) \underline{\hspace{2cm}} \times (\text{Width}) \underline{\hspace{2cm}} = (\text{Area}) \underline{\hspace{2cm}}$$

$$\text{Closet Door(s)} = (\text{Length}) \underline{\hspace{2cm}} \times (\text{Width}) \underline{\hspace{2cm}} = (\text{Area}) \underline{\hspace{2cm}}$$

$$\text{Window(s)} = (\text{Length}) \underline{\hspace{2cm}} \times (\text{Width}) \underline{\hspace{2cm}} = (\text{Area}) \underline{\hspace{2cm}}$$

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## Obtain Volume Measurements

**Directions:** Determine the volume of your bedroom by measuring the height of your walls. With the help of a parent/guardian, measure the distance from your floor to your ceiling to the nearest eighth of an inch. Also, measure and record the length, width, and height of at least three of the objects below to the nearest eighth of an inch:

- *Bed*

- *Dresser*

- *Desk*

- *Bedroom furniture*

- *Chair*

- *One interesting item*

$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$
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### **A) Bedroom**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

Bedroom Volume = \_\_\_\_\_

### **B) Bed**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

Bed Volume = \_\_\_\_\_

### **C) Dresser**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

Dresser Volume = \_\_\_\_\_

### **D) Desk**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

Desk Volume = \_\_\_\_\_

### **E) Chair**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

Chair Volume = \_\_\_\_\_

### **F) Bedroom Furniture Volume**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

Bedroom Furniture Volume = \_\_\_\_\_

### **G) One Interesting Item**

(Length) \_\_\_\_\_ x (Width) \_\_\_\_\_ x (Height) \_\_\_\_\_

One Interesting Item Volume = \_\_\_\_\_

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## Obtain Angle Measurements

**Directions:** Identify at least four right angles found in your bedroom. Also, identify at least one item in your bedroom with an obtuse angle and at least one item in your room with an acute angle. Use a protractor to determine the degree of the angle. Record you measurements below:

**NOTE:** Be creative when identifying acute and obtuse angles. These angles can be found on a poster, drawing, toy, wallpaper design, etc.

**Right angle 1:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Right angle 2:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Right angle 3:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Right angle 4:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Right angle 5:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Acute angle 1:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Acute angle 2:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Obtuse angle 1:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

**Obtuse angle 2:**

Description of Item - \_\_\_\_\_ Angle Degree - \_\_\_\_\_

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## Conversions

**Directions:** Now we will take the customary measurements you have gathered from your bedroom and convert those measurements to metric units. Follow the steps below to create your own conversion scale. Use a separate piece of paper to show your work. Label each step on the separate paper. Write your answers in the spaces below.

1) In inches, write the measurement of the longest wall in your bedroom

\_\_\_\_\_ **EXAMPLE: 8 ft. 8 inches = (96 + 8) = 104 inches**

2) In inches, write the measurement of the longest side of your display box

\_\_\_\_\_ **EXAMPLE: 1 ft. 4 inches = (12 + 4) = 16 inches**

3) Divide the number of inches of your wall by the number of inches of your display box

\_\_\_\_\_ **EXAMPLE: 104 ÷ 16 = 6 ½ inches**

4) Round your total to the nearest inch

\_\_\_\_\_ **EXAMPLE: 6 ½ inches = 7 inches**

5) Write your answer as a ratio from bedroom to display

\_\_\_\_\_ **EXAMPLE: 7 inches = 7:1**

**Great! Now we know the conversion scale. We know that the number of inches from Step 4 is equal to 1 inch on your display.**

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**Let's keep going! We want to use metric measurements since our display box is smaller and we can be more precise with metric measurements.**

$$1 \text{ inch} = 2.54 \text{ centimeters}$$

6) Multiply the total from step four by 2.54 to find your conversion scale in centimeters

\_\_\_\_\_ *EXAMPLE:  $7 \times 2.54 = 17.78 \text{ cm}$*

7) Round your answer to the nearest centimeter

\_\_\_\_\_ *EXAMPLE:  $17.78 \text{ cm} = 18 \text{ cm}$*

8) Write your answer as a ratio from bedroom to display

\_\_\_\_\_ *EXAMPLE:  $18 \text{ cm} = 18:1$*

**Excellent! Now we know that the number of centimeters from Step 7 is equal to 1 centimeter on your display box. You will now use either conversion system to construct your display box.**

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## Diorama Construction

Now it's time to build your room! Using a shoebox, construct your room based on the measurements you have gathered. Be sure to include the following items in your shoebox:

- be sure that your diorama resembles your bedroom
- draw and label at least four different bedroom objects
- include at least one 3-D object from your room (i.e., build your bed, dresser, desk, TV, etc.)
- include at least three different colors in your diorama (i.e., your floor walls and bed should be the same color as they are in your room)

**BE SURE YOUR PROJECT IS NEAT!!**

**Use detail and be creative. Have fun!!**

**\*\*\*EXTRA CREDIT CHANCE: include pictures of your bedroom to go along with your diorama in order to show the accuracy of your display!**