

Title: Moving Daze**Brief Overview:**

In this unit students will work independently as they plan a new bedroom. They will calculate, arrange, and justify their new room.

Links to NCTM Standards:

- **Mathematics as Problem Solving**
Students will demonstrate ability to solve practical problems using manipulatives. They will determine what furniture they will eliminate or keep in their new smaller bedroom.
- **Mathematics as Communication**
Students will communicate mathematical justifications for their selections through use of writing skills.
- **Mathematics as Reasoning**
Students will justify selections of furniture and final arrangements.
- **Mathematical Connections**
Students will apply math skills to solve real-life problems.
- **Computation and Estimation**
Students will compute a series of areas and estimate the area of floor spaces.
- **Measurement and Geometry**
Students will determine areas to select best fit of furniture from a large area to a smaller area, utilizing spatial sense.

Grade/Level:

Grade 6

Duration/Length:

Moving Daze will require approximately three 50 minute class periods.

Prerequisite Knowledge:

Students should have working knowledge of the following:

- Estimation
- Area
- Addition, subtraction, and multiplication of decimals

Objectives:

Students will be able to:

- apply ability to determine area of rectangular regions.
- create manipulatives to design a room.

- design a functional floor plan.
- score well by following directions.
- justify selections.
- use logic to problem solve.

Materials/Resources/Printed Materials:

- Worksheets, Floor Plan, Grids
- Scissors
- Envelope
- Tape
- Grids: 4 per student

Development/Procedures:

- Introduce purchase of new house with the dilemma of a smaller room.
- Work independently determining the area of a room and furniture. (Activity 1)
- Share creative solutions in groups or class.
- Work independently. (Activity 2)
- Rank personal importance of furniture (Activities 2 and 3).
- Cut out appropriately measured furniture.
- Design finished products, problem solving along the way.
- Complete self assessment.
- Display final product.

Performance Assessment:

Assessment is based on the rubric which is included.

Extension/Follow Up:

- Re-evaluate furniture ranking justifying changes.
- Select extended problems to solve.

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Moving Daze I

Your family has just purchased a new house. You have a fenced in yard with a pool and basketball court. The living areas of your new house are much larger, however, your bedroom is smaller. Your goal is to reevaluate and rearrange your existing furniture.

Activity 1

- Here is a list of your existing furniture with dimensions:

Twin bed	6' x 4'	Chest of Drawers	4' x 2'
Dresser	5' x 2'	Game Chest	3' x 1.5'
TV	2' x 1'	Computer Desk	5' x 3'
Stereo	4' x 2'	Floor Lamp	1' x 1'
Hamper	2' x .5'	Air Hockey Table	3' x 5'
Chair	2' x 2'	End Tables (2)	1' x 1.5' (each)

- Look at your attached floor plan. What are the dimensions of your new room?

Length = _____ Width = _____

- What is the area of your new room? Area = _____

- Before you continue you **must** verify your answers.

- How could you determine if all your furniture will fit into your new bedroom?

- Find the area of each piece of furniture.

Twin bed	_____	Chest of Drawers	_____
Dresser	_____	Game Chest	_____
TV	_____	Computer Desk	_____
Stereo	_____	Floor Lamp	_____
Hamper	_____	Air Hockey Table	_____
Chair	_____	End Tables (2)	_____ (both)

• What is the *total* area of the furniture? Total Area= _____

• What is the area of your new room? Area= _____

• Will your existing furniture fit mathematically into your new room?
(circle one) Y N

• Will your existing furniture fit practically into your room? (circle one) Y N

• State a problem that may occur and list several possible solutions.

Moving Daze 1 Answer Sheet

Your family has just purchased a new house. You have a fenced in yard with a pool and basketball court. The living areas of your new house are much larger, however, your bedroom is smaller. Your goal is to reevaluate and rearrange your existing furniture.

Activity 1

- Here is a list of your existing furniture with dimensions:

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Chair	2' x 2'	End Tables (2)	1' x 1.5' (each)

- Look at your attached floor plan. What are the dimensions of your new room?

Length = 12 ft.

Width = 9 ft.

- What is the area of your new room? Area = 108 sq. ft.
- How could you determine if all your furniture will fit into your new bedroom?
Calculate the area of all pieces of furniture; place furniture in

new room; etc.

- Find the area of each piece of furniture.

Twin bed	<u>24 sq. ft.</u>	Chest of Drawers	<u>8 sq.ft.</u>
Dresser	<u>10 sq.ft.</u>	Game Chest	<u>4.5 sq.ft.</u>
TV	<u>2 sq.ft.</u>	Computer Desk	<u>15 sq.ft.</u>
Stereo	<u>8 sq.ft.</u>	Floor Lamp	<u>1 sq.ft.</u>
Hamper	<u>1 sq.ft.</u>	Air Hockey Table	<u>15 sq.ft.</u>
Chair	<u>4 sq.ft.</u>	End Tables (2)	<u>3 sq.ft. (both)</u>

- What is the *total* area of the furniture? Total Area= 95.5 sq.ft.

- What is the *total* area of the furniture? Total Area= 95.5 sq.ft.

Work Area

- What is the area of your new room? Area= 108 sq.ft.
- Will your existing furniture fit mathematically into your new room?
(circle one) **Y** **N**
- Will your existing furniture fit practically into your room? (circle one) **Y** **N**
- State a problem that may occur and list several possible solutions.

Problems	Solutions
1) no walking space	1) remove some furniture
2) door cannot open/close	2) remove some furniture
3) drawers can't open	3) see above
4) can't reach bed	4) see above
5) other reasonable responses	

Activity 2 Answer (Moving Daze II)

The area of the double bed is 30 sq.ft.

Moving Daze II

Activity 2

As you complete each part of this activity, place a check in the box on the left.

- Which items of furniture are most important to you? Rank your furniture from greatest importance (1) to least importance (12).

Twin bed _____ Chest of Drawers _____

Dresser _____ Game Chest _____

TV _____ Computer Desk _____

Stereo _____ Floor Lamp _____

Hamper _____ Air Hockey Table _____

Chair _____ End Tables (2) _____ (both)

- You've been complaining to your parents about your "baby-sized" bed. They are buying new bedroom furniture and offer their double bed to you. Its dimensions are 5' x 6'. If you decide to keep your old bed, skip to the next bulleted direction.

If you decide to adopt the new bed, complete the following:

The area of the new bed is _____. Use this information for your bed from now on.

- Using the two available grid sheets, cut out and label each of the thirteen pieces of furniture. Keep in mind that the scale is 1 ft. = 2 cm. (Hint: As you cut out each furniture piece, put it into the envelope so you don't accidentally throw it away.)
- You are now ready to make some decisions. Your parents inform you that you **MUST** have the following in your bedroom:
 - Bed
 - Dresser and/or Chest of Drawers
 - Hamper

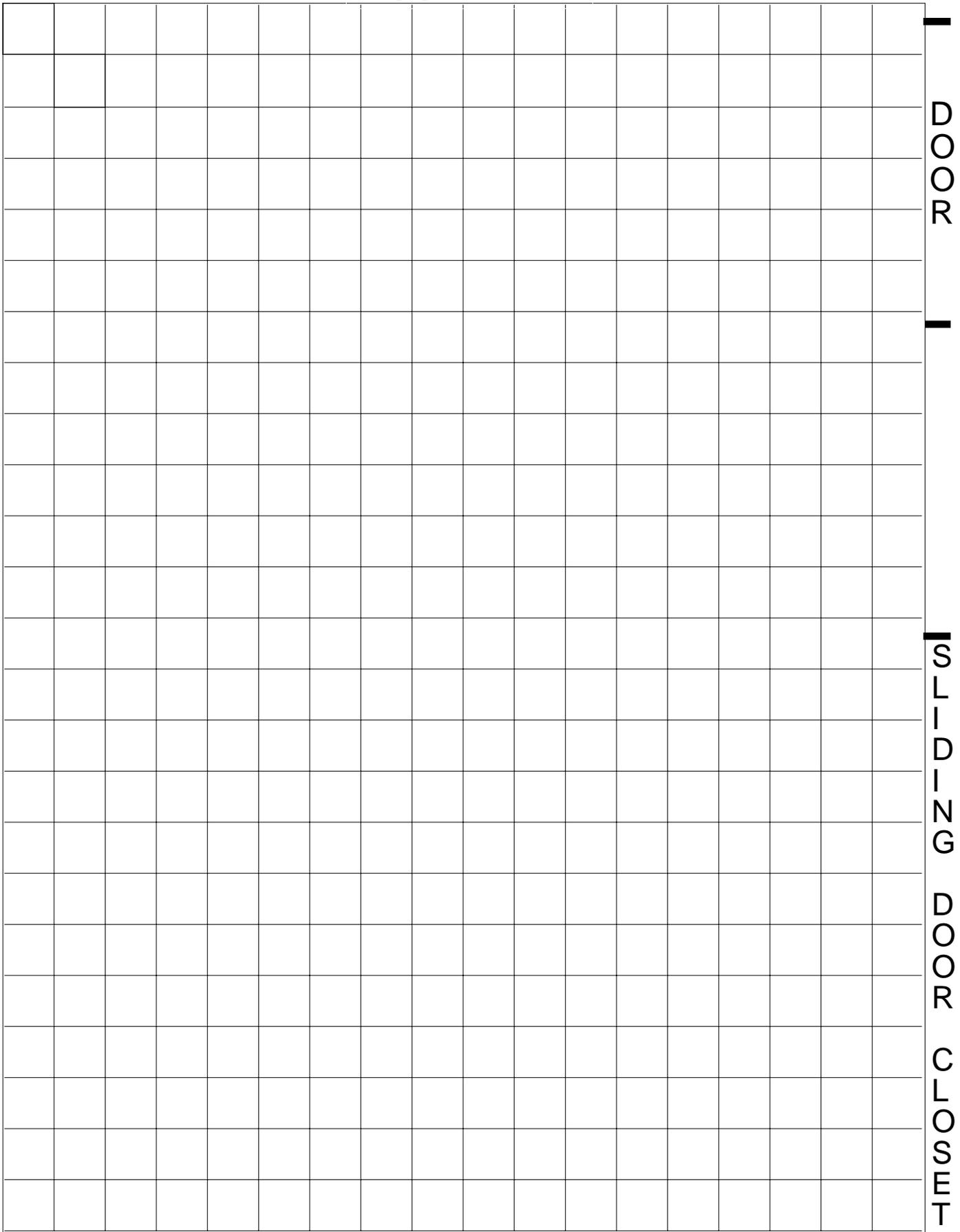
- The remaining choices are yours to make. Look back at your priority list. Consider the things you thought important. Now, use your furniture and begin to design your room by placing your “furniture” on your FLOOR PLAN. Do not tape furniture yet.

- After arranging your floor plan, evaluate your own work using this self-assessment.

SELF-ASSESSMENT OF FLOOR PLAN	
I have:	Check when completed
Kept a bed, dresser, and hamper.	
Labeled all furniture.	
Labeled all measurements.	
Allowed bedroom door to open and close.	
Kept 2 ft. walkways in all appropriate places.	

- When you have checked **all** the above, attach furniture securely to floor plan.

FLOOR PLAN



DOOR

WINDOWS

WINDOW

SCALE: 1 ft = 2 cm

Moving Daze III

Activity 3

- Did any of the furniture that you have kept for your room *not* take up floor space? Explain how this may be possible.

Look at your new FLOOR PLAN to complete all of the following activities.

- How would you rank your furniture now?

Bed	_____	Chest of Drawers	_____
Dresser	_____	Game Chest	_____
TV	_____	Computer Desk	_____
Stereo	_____	Floor Lamp	_____
Hamper	_____	Air Hockey Table	_____
Chair	_____	End Tables (2)	_____ (both)

- Compare this ranking to your original. What change(s) did you make? Be sure to state reasons for making the change(s).

Moving Daze III Answer Sheet

Activity 3

- Did any of the furniture that you have kept for your room *not* take up floor space? Explain how this may be possible.

The TV can be placed on other furniture; the desk chair can be

placed under the desk. Accept other reasonable answer such as

hamper in the closet.

Look at your new FLOOR PLAN to complete all of the following activities.

- How would you rank your furniture now? **Answers will vary.**

Bed	_____	Chest of Drawers	_____
Dresser	_____	Game Chest	_____
TV	_____	Computer Desk	_____
Stereo	_____	Floor Lamp	_____
Hamper	_____	Air Hockey Table	_____
Chair	_____	End Tables (2)	_____ (both)

- Compare this ranking to your original. What change(s) did you make? Be sure to state reasons for making the change(s).

Reasons should be supportive of changes.

Extension Activities

Choose two of the three following tasks. If you complete all you will receive a bonus.

Task A• Estimate the remaining floor space area of your new bedroom. _____
How did you arrive at your estimate?

What is the actual area of the floor space? _____

Task B• Your cousin, Chris, is going to spend the night at your house. Chris must sleep in your room. Chris has a 5' x 3' sleeping bag. Where will the two of you sleep? You must both have at least a 3' x 5' sleeping area unless you chose the double bed. Explain how this could be done in your bedroom.

Task C• Design your DREAM ROOM.

Rules:

1. Use only two grid sheets.
2. Scale: 2 cm = 1 ft.
3. Label all furniture.

Extension Activities Answer Sheet

Choose two of the three following tasks. If you complete all you will receive a bonus.

Task A• Estimate the remaining floor space area of your new bedroom. **Vary!**

How did you arrive at your estimate?

Students can perceive rectangular regions and rough out a

total. Students can estimate the area of the furniture they are

using and subtract from the area of the room.

What is the actual area of the floor space? **Answers will vary.**

Task B• Your cousin, Chris, is going to spend the night at your house. Chris must sleep in your room. Chris has a 5' x 3' sleeping bag. Where will the two of you sleep? You must both have at least a 3' x 5' sleeping area unless you chose the double bed. Explain how this could be done in your bedroom.

Possible solutions: If the student has a double bed, cousins

can share the bed. If there is appropriate floor space, Chris

can use the sleeping bag. Furniture can be temporarily moved

to create space. Accept any other reasonable answer.

Moving Daze Scoring Rubric

- | | |
|----------|--|
| 3 Points | <ul style="list-style-type: none">• Satisfies self-assessment completely• Neatness is evident |
| 2 Points | <ul style="list-style-type: none">• Satisfies most of self-assessment• Reasonably neat |
| 1 Point | <ul style="list-style-type: none">• Satisfies little of the self-assessment• Neatness is questionable |

* If a student receives 3 points and completes Task A , B, and C, the student will receive 4 points.