Bedroom Blueprint

Students use modeling to create a bedroom blueprint to use for designing a new room.
They also manage their budget to identify what furniture they will include.

STANDARDS
Mathematics
- Select, apply, and translate among mathematical representations to solve problems.
- Select, apply, and translate among mathematical representations to solve problems.
- Use representations to model and interpret physical, social, and mathematical phenomena.

Social and Emotional Learning
- Learners will be able to effectively communicate clearly, listen well, and cooperate with others.

Computer Science
- Organize and present collected data visually to highlight relationships and support a claim.
- Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
- Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.

DETAILS

SEL Integration: Computational Thinking Integration: Students build models to represent data and elp them solve problems.

Technology option: Use spreadsheets to organize and manage data, multimedia software to model the classroom online, and word processing programs to respond to reflection questions.

PLAN
Warm Up
- Have students share a few examples of modeling they use or see in their everyday lives. If needed, provide a few examples for students (maps, menus, homework planner, etc.).
- Have students will work in groups of four or five to create a list of examples of modeling that students find in the classroom.
- Have each group share the number of examples they found and one unique example (if any).
- (Optional) Make the task a contest to determine who can come up with the most examples of modeling in the allotted time.

Activity
In this activity, the student takes on the role of an architect.
- Present the task of creating their ideal bedroom after winning the Kids Design Challenge Contest.
- Provide their bedroom dimensions, requirements, and budget, and the student uses a supplied list of items and a blueprint square to create a blueprint of their new room.
- Have them create a data model by modifying (or creating) a spreadsheet of the bedroom costs.

To begin, introduce the task by reading aloud the scenario as follows:

You have just won the Kids Design Challenge Contest! You get the opportunity to design and create your dream bedroom!

You have up to $1,000 to spend and 144 square feet to put it in, but you must follow all of the following requirements:
- Your bedroom must be 12 feet by 12 feet.
- The fire code requires that you have:
    - a door that can open
    - at least 2 emergency exits (windows and/or doors)
    - a path at least 3 feet wide (1 inch in the model) to door
- You must have a bed in your room.
- You must have a desk to do your homework.
- You must stay within your budget.

(Bonus) You may decide to share your room. If you do, you will have an additional $300 to spend on your room. However, you must follow these additional requirements:
- You may only choose a bunk or a trundle bed for your bed.
- In addition to the closet, you will need extra storage for clothing in your room.

Address the requirements and brainstorm possible solutions for any items that students might find challenging.

Show the Bedroom Furniture Costs List (this can be printed ahead of time if there is not access to computers for the class) and explain to your students that they will first create a data model that will help them keep track of their budget by modifying the spreadsheet.

Bedroom Blueprint

Students use modeling to create a bedroom blueprint to use for designing a new room. They also manage their budget to identify what furniture they will include.

Activity Cont.
Provide the students the Bedroom Blueprint Worksheet. Explain that they will use the model to figure out what they will have in their room by cutting out various items to try them out in the space. Tell them not to glue or tape anything down until they are completely done and have made sure they meet all of the requirements.

The models your students pick might be quite simple (just organized data) or complex (using formulas to calculate the cost as items are selected). Both will get the job done. You may want to discuss efficiency and effectiveness of models chosen as an extension to this activity later.

Have students cut out the items on the worksheet they would like in their to try out different layouts of their bedroom. Remind students to utilize their data model to dictate what is included in the blueprint.

When students have made sure that they have met all of the requirements, it is recommended that students secure the items to their blueprint with tape or glue. The students can scan, take a digital photo, or submit the blueprint.

Wrap Up
- Ask students to discuss the various types of modeling they used when responding to Bedroom Blueprint.
- Discuss with students how modeling can be used to solve problems.

Extension
- Have students write or type an explanation for what they included in their blueprint.
- Have the students identify things they would want to have in their bedroom that are not on the list and have them research the cost and dimensions of those items to be considered for their room.
- For enrichment purposes, increase the requirements for what should be included in the blueprint.
- Have students present their blueprints to the class.

Bedroom Furniture Costs List

Bedroom Furniture	Cost
Full bed	$250.00
Twin bed	$200.00
Loft bed with desk	$450.00
Hammock bed	$150.00
Sofa sleeper	$400.00
Dresser (wide)	$325.00
Dresser (tall)	$250.00
Nightstand	$100.00
Nightstand w/ lamp	$150.00
Bookcase	$100.00
Desk	$400.00
Desk chair	$35.00
Recliner chair	$160.00
Storage bench	$75.00
Floor lamp	$50.00
Aquarium w/ stand	$100.00
Standing mirror	$75.00
Standing bird cage	$80.00
Bean bag chair	$70.00
L-shaped bunk and dresser	$700.00
trundle bed	$300.00
twin bunk beds	$200.00
Large bunk beds	$300.00
TV w/ stand	$500.00
Corner desk	$700.00
TV	$400.00

Learning.com

Bedroom Blueprint Worksheet

1. Use the following pages to cut out things for your bedroom.
2. Organize them in the square below to meet all of the requirements.
3. When you have met all of the requirements, attach the items with glue or tape.
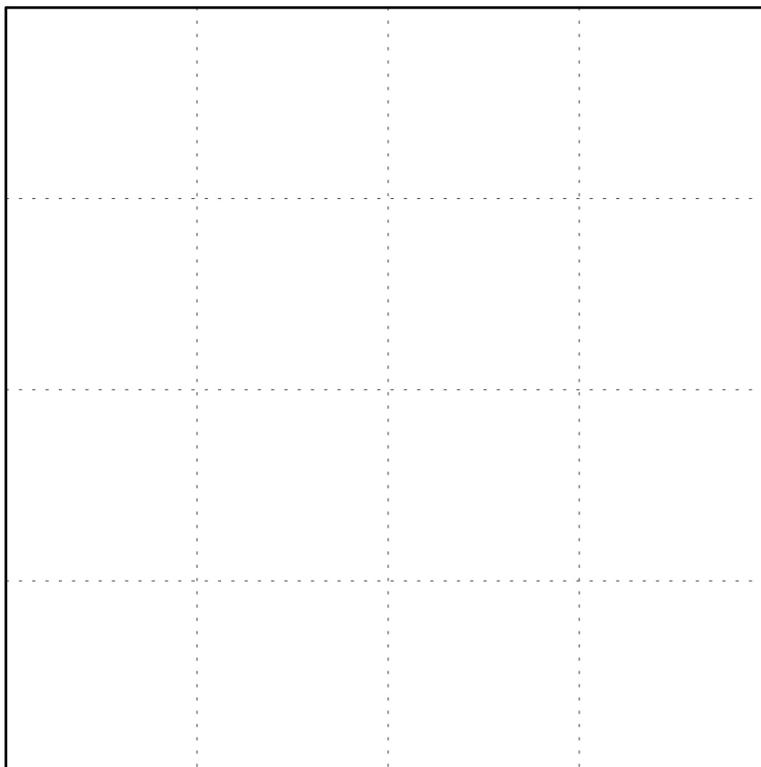
Requirements

You have up to $1,000 to spend and 144 square feet to put it in but you must follow all of the following requirements:
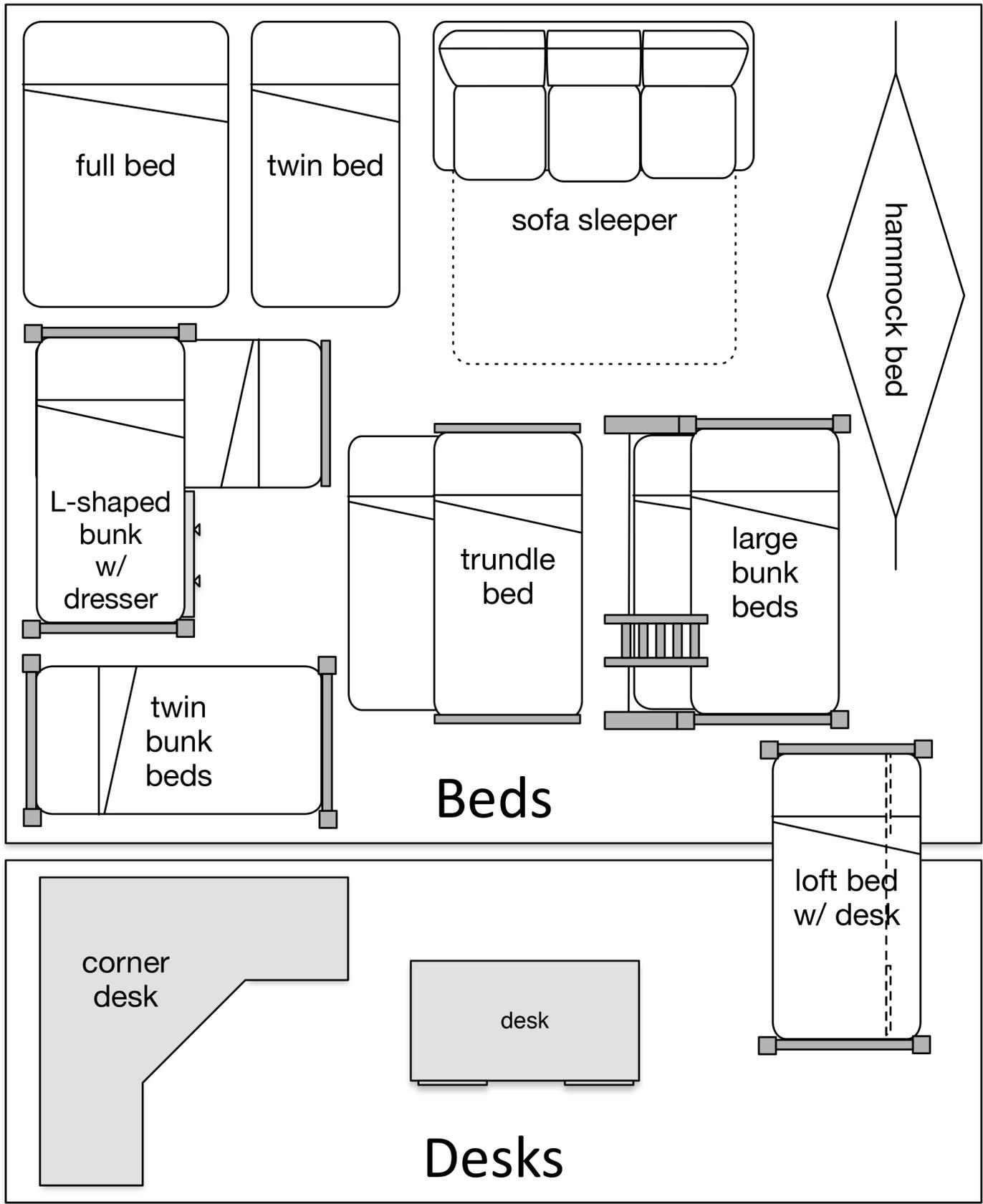
- Your bedroom must be 12 feet by 12 feet.
- The fire code requires that you have: a door that can open at least 2 emergency exits (windows and/or doors) a path at least 3 feet wide (1 inch in the model) to door
- You must have a bed in your room.
- You must stay within your budget ($1,000).
- You must have a place to do your homework.
- Your bedroom dimensions are 12 feet by 12 feet.

Shared Room Bonus

You may decide to share your room. If you do, you get an additional $300 to spend on your room. However, you must follow these additional requirements:

- You may only choose a bunk or a trundle bed for your bed.
- In addiPon to the closet, you will need extra storage for clothing in your room.

1 inch : 3 feet

full bed

twin bed

sofa sleeper

hammock bed

L-shaped bunk w/ dresser

trundle bed

large bunk beds

twin bunk beds

Beds

loft bed w/ desk

corner desk

desk

Desks

windows   closet   doys

L-shaped bunk w/ dresser

storage bench

tall dresser

wide dresser

Extra Clothing Storage

desk chair

TV w/ stand

TV

floor lamp

bean bag chair

recliner chair

bookcase

nightstand w/ lamp

nightstand

aquarium w/ stand

bird cage

mirror

Optional Furniture