

# Week 4: Build a Tiny House

Complete the following tasks each afternoon. Estimated time to complete 1.5



<u>Monday</u> July 6	<u>Tuesday</u> July 7	<u>Wednesday</u> July 8	<u>Thursday</u> July 9
<ul style="list-style-type: none"><li>● Start Up</li><li>● Rough Draft</li></ul>	<ul style="list-style-type: none"><li>● Build Day</li></ul>	<ul style="list-style-type: none"><li>● Home Specifications</li><li>● Calculations</li></ul>	<ul style="list-style-type: none"><li>● Interior Design</li></ul>

Join our Summer Program Google Classroom using Join Code in your OSD Google Acct.: **3Isaes3**

**Objective: I will be able to design and create a 3D tiny house using geometry, perimeter, and area.**

**Assessment:**

- Send a picture of completed tiny house to your teacher (text or email)
- Explain your project during your Monday phone call with your teacher
- Share what you did with your classmates during Thursday's Google Meeting

Project Based Learning  
**Area, Perimeter, & Geometry**



**BUILD A  
TINY HOUSE**



# *Monday*

Rough Draft



# BEFORE YOU BEGIN...

## WHAT IS A TINY HOUSE?

Most people will say that a tiny house is a home with less than 400 square feet of space. Four hundred might sound like a lot, but it is probably only half the size of most classrooms.

Many times, tiny houses are built on wheels. This means they are mobile and can be moved to different locations. A lot of tiny house owners like this because they can live in different areas or even in someone's backyard (as long as it's big enough).

## WHO LIVES IN TINY HOUSES?

Anyone can live in a tiny house. It doesn't matter if it is a single person or a family of five. A tiny house is just like any other home, except it's much smaller.

## WHY LIVE IN A TINY HOUSE?

1. It is much cheaper than buying a larger home. Many people don't want to have large mortgages or monthly payments, so a tiny home fits their needs best.
2. Many owners don't want a lot of space. A small home is just perfect for what they need.
3. It can be an adventure! It's new, it's fun, and people like the challenge of living small.

# BUILD A TINY HOUSE

If you've been watching TV or reading magazines, chances are you have seen a tiny house. These little homes are popping up everywhere! People love them. They cost less than regular homes and they can be moved around. There's even TV shows where buyers pick a tiny home that will fit their needs the best.

Your city council has been paying attention to the amazing things happening in your classroom. They want to use those skills to build and design a set of tiny houses.

You are being asked to create a tiny house that will be showed off at the Tri-City Realtor Convention. If these houses are a hit, they might choose to build them in town!

This means you'll be responsible for designing and building the perfect tiny house. It will include the layout, picking furniture, and using real-world math skills to finish this project.

Are you ready to build?

Let's go see your To-Do List...



## TINY HOUSE TO-DO LIST

<b>FIRST:</b>	<b>DIRECTIONS</b>	Read ALL the directions in TINY HOUSE PARTS. VERY IMPORTANT! >>>> Refer back to them as much as you need.
<b>SECOND:</b>	<b>ROUGH DRAFT</b>	Create a rough draft of your tiny house and include all items on the requirements list.
<b>THIRD:</b>	<b>FINAL VERSION</b>	Create a final version of the tiny house. There are 4 pages for the Base, Walls, and Roof. Check off each item from the requirement list.
<b>FOURTH:</b>	<b>SPEC HOME 1</b>	Record the area, perimeter, and geometric shape of each item from the requirement list.
<b>FIFTH:</b>	<b>SPEC HOME 2</b>	Record the area and perimeter of the major sections of the house (base, walls, roof/ceiling).
<b>SIXTH:</b>	<b>BUILD THE HOUSE</b>	Cut out each of the four sections of the house and fit them together.
<b>SEVENTH:</b>	<b>EXTERIOR</b>	Continue your design and decorate the outside of your house.
<b>EIGHTH:</b>	<b>REFLECTION</b>	Answer questions about the house design and reflect on your creation.
<b>NINTH:</b>	<b>BUILDING FURNITURE</b>	OPTIONAL: Create 3D nets of the furnishings in your house. There is a page included or you may use graph paper included.
<b>TENTH:</b>	<b>HOUSING PROBLEMS</b>	OPTIONAL: Create area and perimeter word problems for your house and have other students solve them.

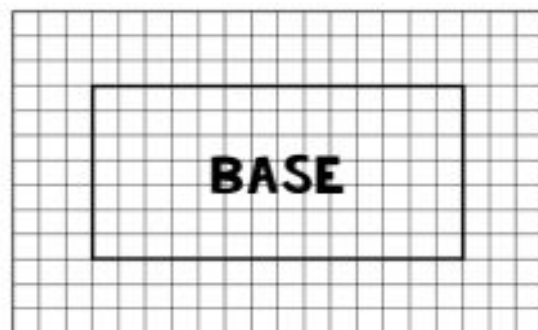
# TINY HOUSE PARTS

There are four major parts of the house that you will build and design.

## THE BASE

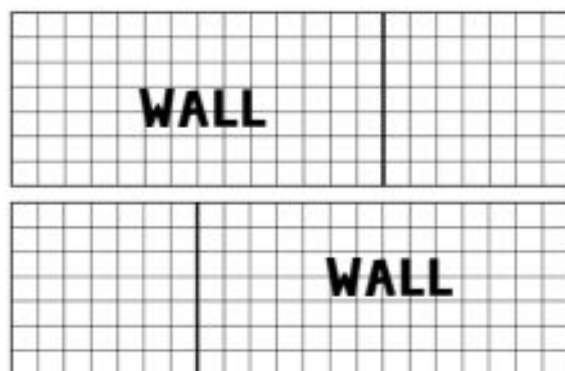
This is where you create the floor plan of the house.

This is a central part of creating the house.



## THE WALL, PIECE 1

Each WALL section contains two walls. They are folded to create house corners.



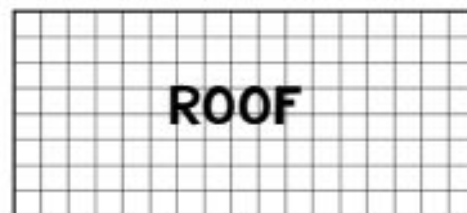
## THE WALL, PIECE 2

They can be cut out to create a rectangle that fits exactly around the base of the house.

## THE ROOF

The final part of the house.

You will be designing the ceiling (fans, lights, vents).



Each of the MAJOR PARTS will be on separate pieces of paper. They can be cut out and placed together to form a tiny house in the shape of a rectangular prism.



# TINY HOUSE PARTS

## Things To Know

### REQUIREMENTS LIST

Your house will have a list of items that must be included.

This will be a list of items for the floor plan and the walls. You will decide where to put everything!



### AREA & PERIMETER

As you create the layout of the house, you will need to find the area and perimeter of items from the requirement list.

Units will be the measurement used for perimeter and area.

Example:

- Perimeter is 24 units
- Area is 26 square units  
(or units squared).

### BE PREPARED!

Your house must make sense and fit together.  
You will want to make sure the layout makes sense.

### GEOMETRY DESIGN

Use your geometry skills to find the best solution to fitting all items into the house.

All houses are filled with geometry in real life. Use those ideas to help you make the best choices.

Math is everywhere!

# TINY HOUSE PARTS

More important things to know.

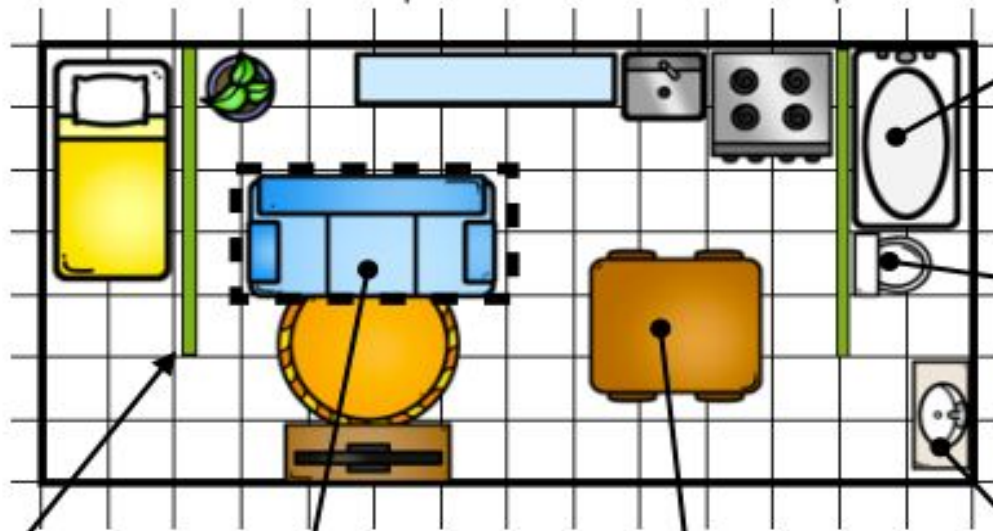
After you have created the layout, you will have to find the area and perimeter of items in the house. Not all items will be exactly perfect, so estimate as close as you can.

You will design the base using a bird's eye view. Imagine looking straight down as you add in the furniture and lay it all out.



You can add your own walls too!

This is an example of a BASE floor plan.



## BATHTUB

AREA: 6 square units  
PERIMETER: 10 units

## TOILET

AREA: 1 square unit  
PERIMETER: 4 units

## SINK

AREA: 2 square units  
PERIMETER: 6 units

## COUCH

AREA: 8 square units  
PERIMETER: 12 units

## TABLE

AREA: 9 square units  
PERIMETER: 12 units

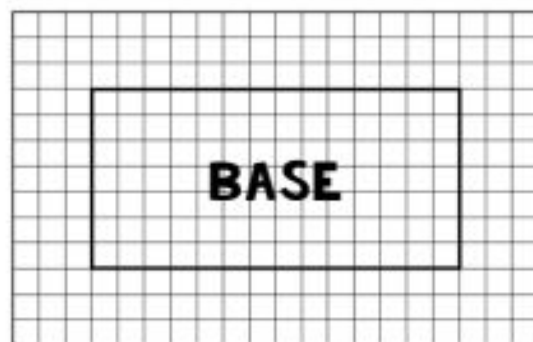
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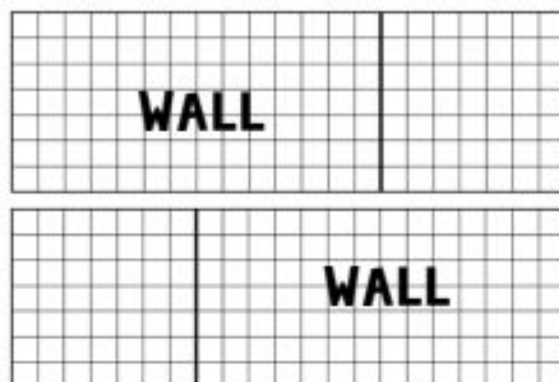
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This is a central part of creating the house.



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Each WALL section contains two walls. They are folded to create house corners.



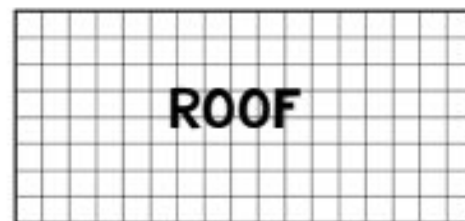
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They can be cut out to create a rectangle that fits exactly around the base of the house.

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# TINY HOUSE PARTS

More important things to know.

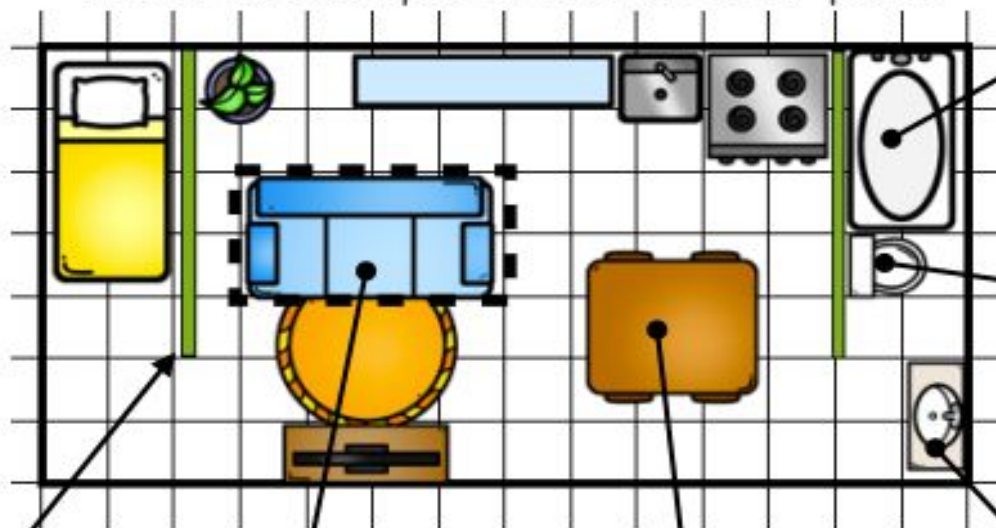
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You will design the base using a bird's eye view. Imagine looking straight down as you add in the furniture and lay it all out.



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This is an example of a BASE floor plan.



**COUCH**

AREA: 8 square units  
PERIMETER: 12 units

**TABLE**

AREA: 9 square units  
PERIMETER: 12 units

**BATHTUB**

AREA: 6 square units  
PERIMETER: 10 units

**TOILET**

AREA: 1 square unit  
PERIMETER: 4 units

**SINK**

AREA: 2 square units  
PERIMETER: 6 units

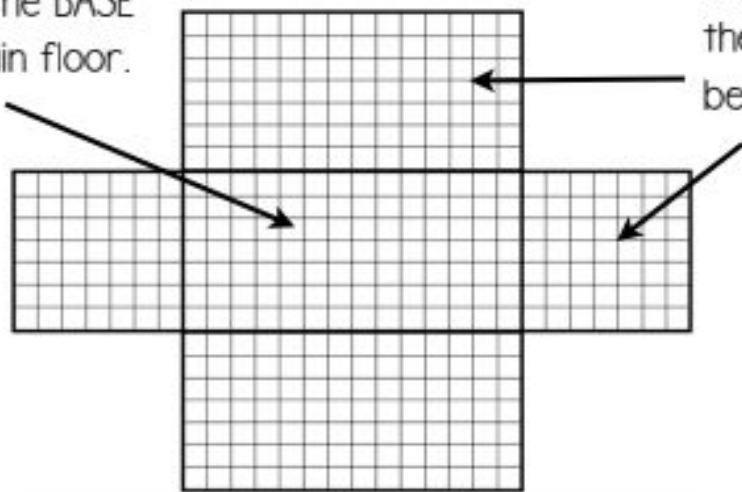


# ROUGH DRAFT: INSTRUCTIONS

On the following page you will create a rough draft of the house.

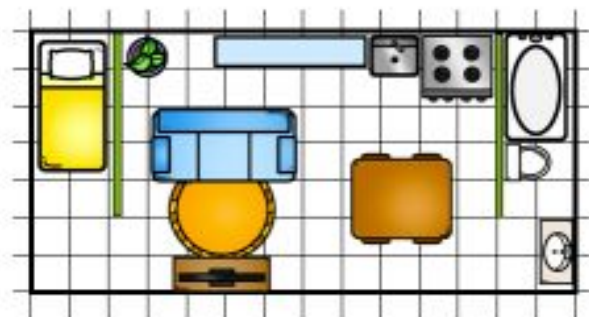
This rough draft will be used as a blueprint and will include all items from the Requirement List. The Requirement List will be included on the page. Check off each item once you have included it.

This is the BASE and main floor.



The house looks like the four walls have been laid down.

A finished wall or base could look like this. Design carefully!



As seen on the previous page.



As you design the layout, you may have to turn your paper so your drawings match up.

Include all the furnishing in your house. **ADD YOUR OWN IDEAS TOO!**  
Make it your house!



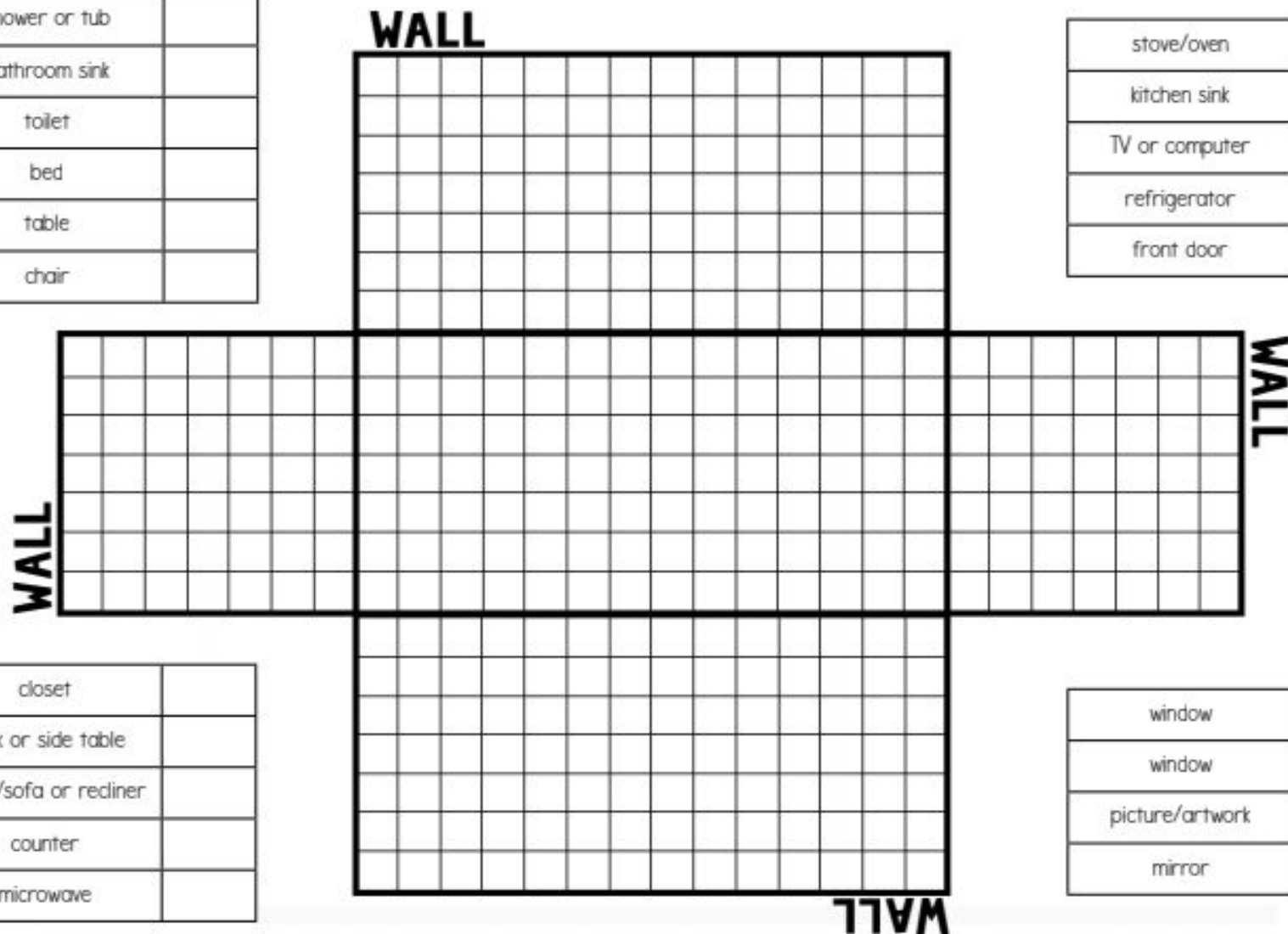
Refer back to the directions and look at the examples to help you out.

# ROUGH DRAFT: BLUEPRINTS

Create your rough draft of the tiny house. Check off each item after you add it to your house.

shower or tub	
bathroom sink	
toilet	
bed	
table	
chair	

stove/oven	
kitchen sink	
TV or computer	
refrigerator	
front door	



closet	
desk or side table	
couch/sofa or recliner	
counter	
microwave	

window	
window	
picture/artwork	
mirror	

# *Tuesday*

Build Day



# FINAL VERSION: REQUIREMENT LISTS

Listed below are all the furnishing elements that must be included inside your tiny house.  
Check off each item once it has been added in your house design.

ITEM	COMPLETED
shower or tub	
bathroom sink	
toilet	
bed	
table	
chair	
closet	
desk or side table	
couch/sofa or recliner	
counter	
microwave	

ITEM	COMPLETED
stove/oven	
kitchen sink	
TV or computer	
refrigerator	
front door	
window	
window	
light	
light	
picture/artwork	
mirror	



# MAKING A TINY HOUSE

**ROOF**



**WALL**



**WALL**

**BASE**



Cut out each of the FOUR major parts once you have fully finished designing them.

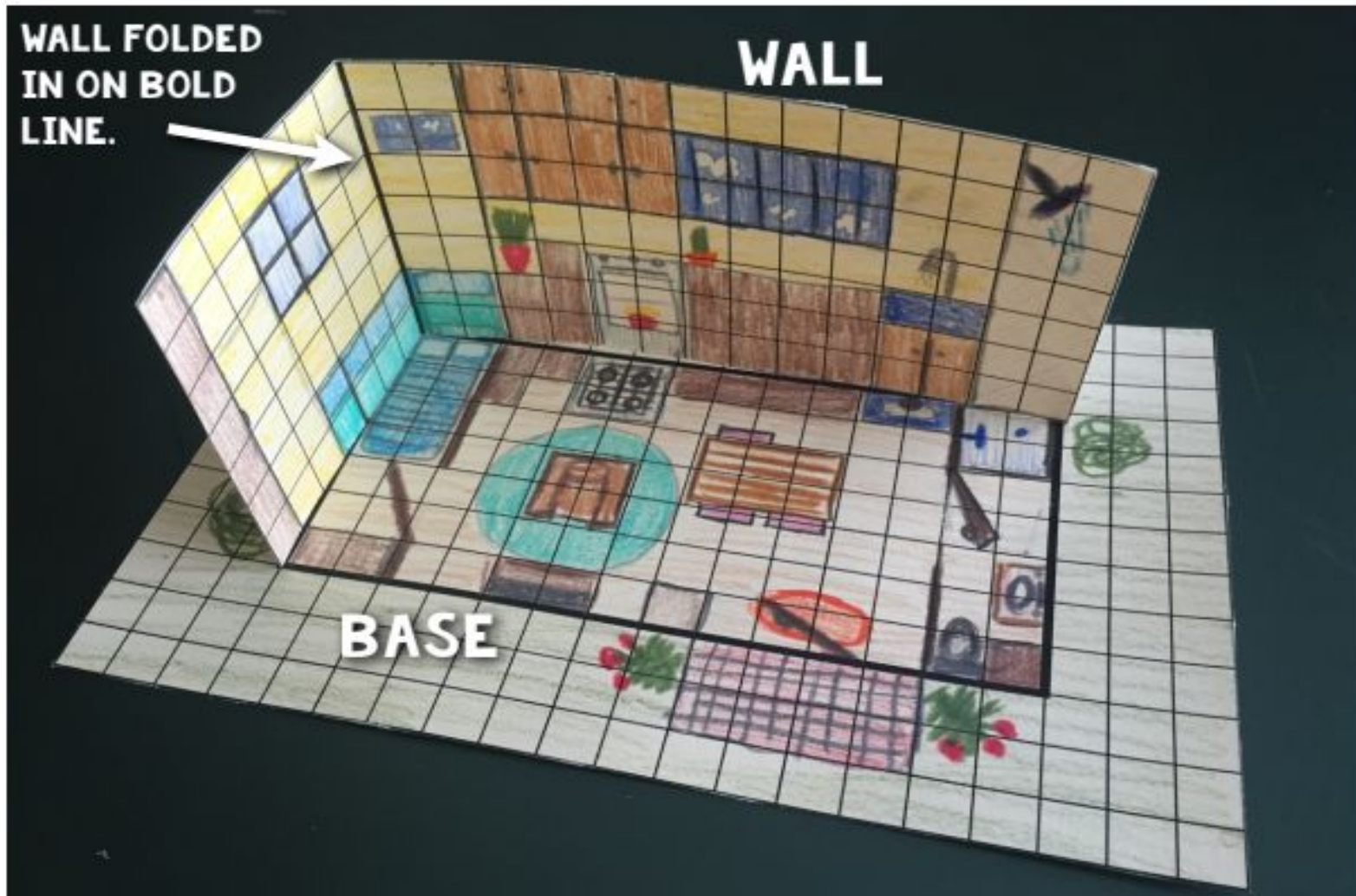


# MAKING A TINY HOUSE



Make sure all the pieces line up with each other.  
You won't need to add the roof until the end.

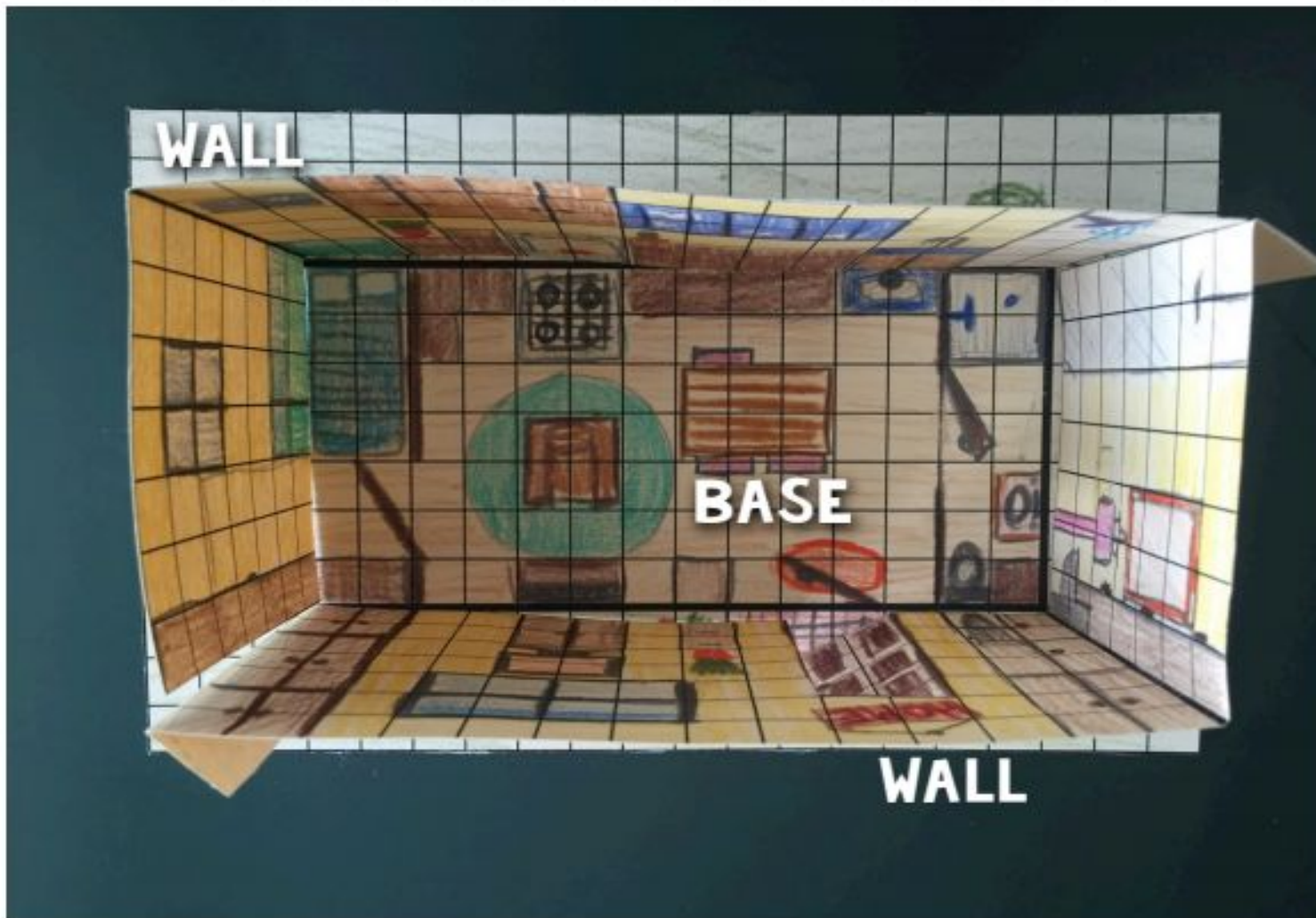
# MAKING A TINY HOUSE



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# MAKING A TINY HOUSE



Overhead view of the house pieces placed together.

# MAKING A TINY HOUSE



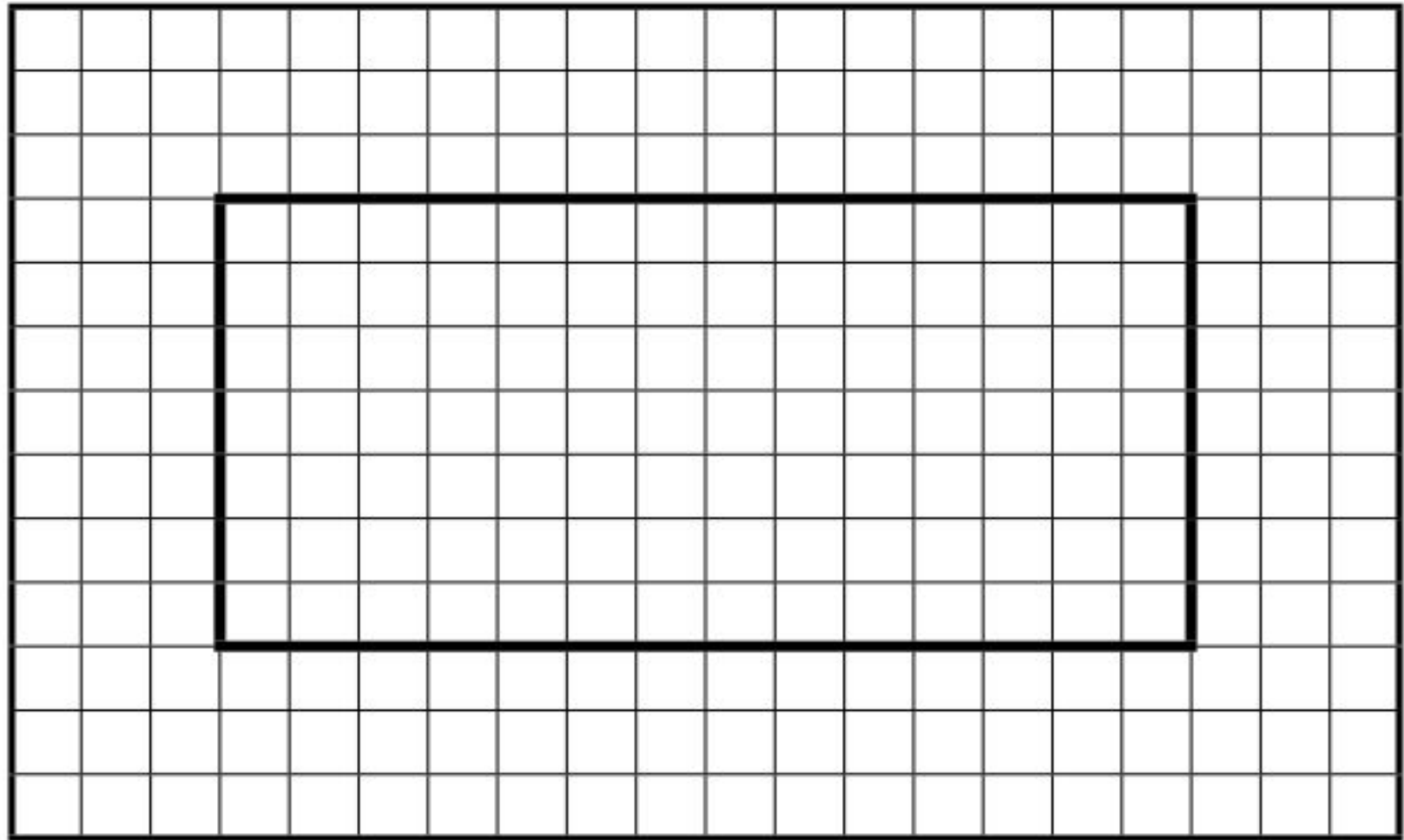
Designing the outside of the house brings the entire project together.  
Crayons and colored pencils are your best choices!



# FINAL VERSION: BASE FLOOR PLAN



Convert your rough draft to the final version of the house.



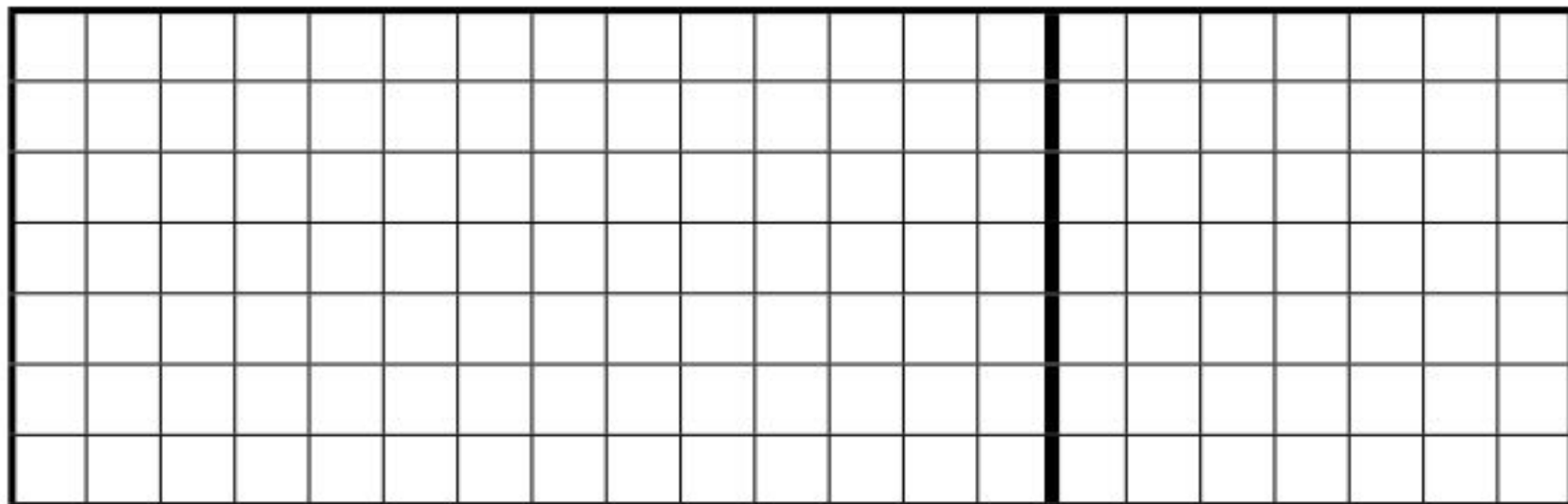
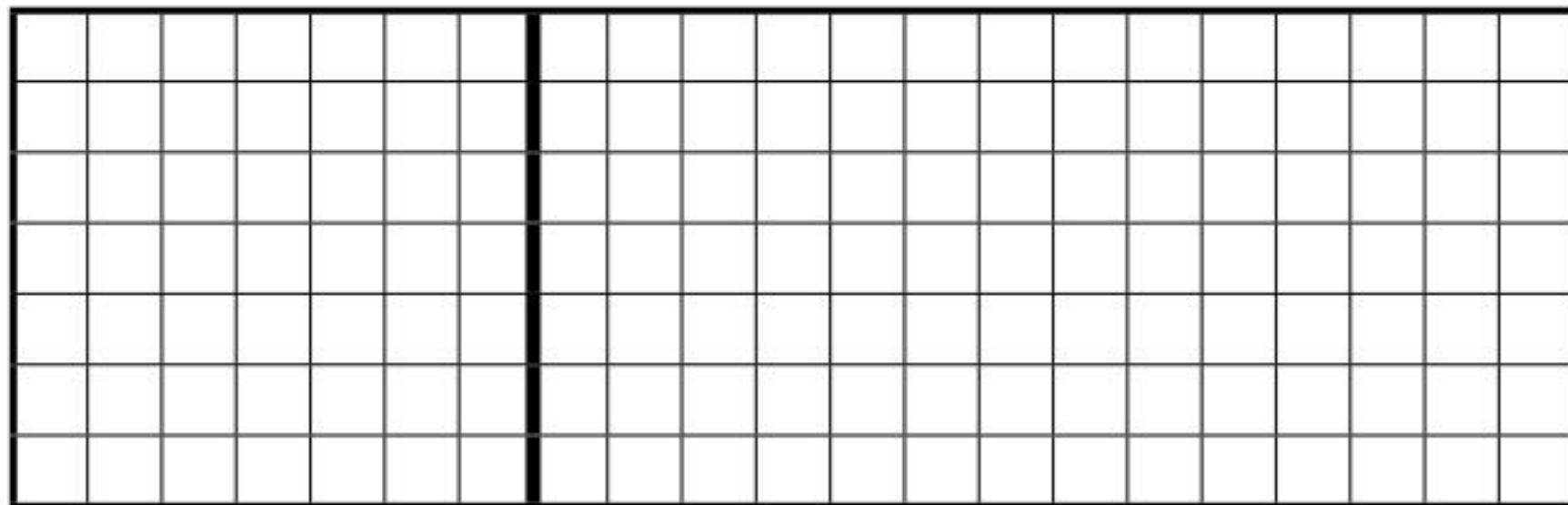
You may also design the surrounding area, which would be considered the yard.





## FINAL VERSION: WALLS

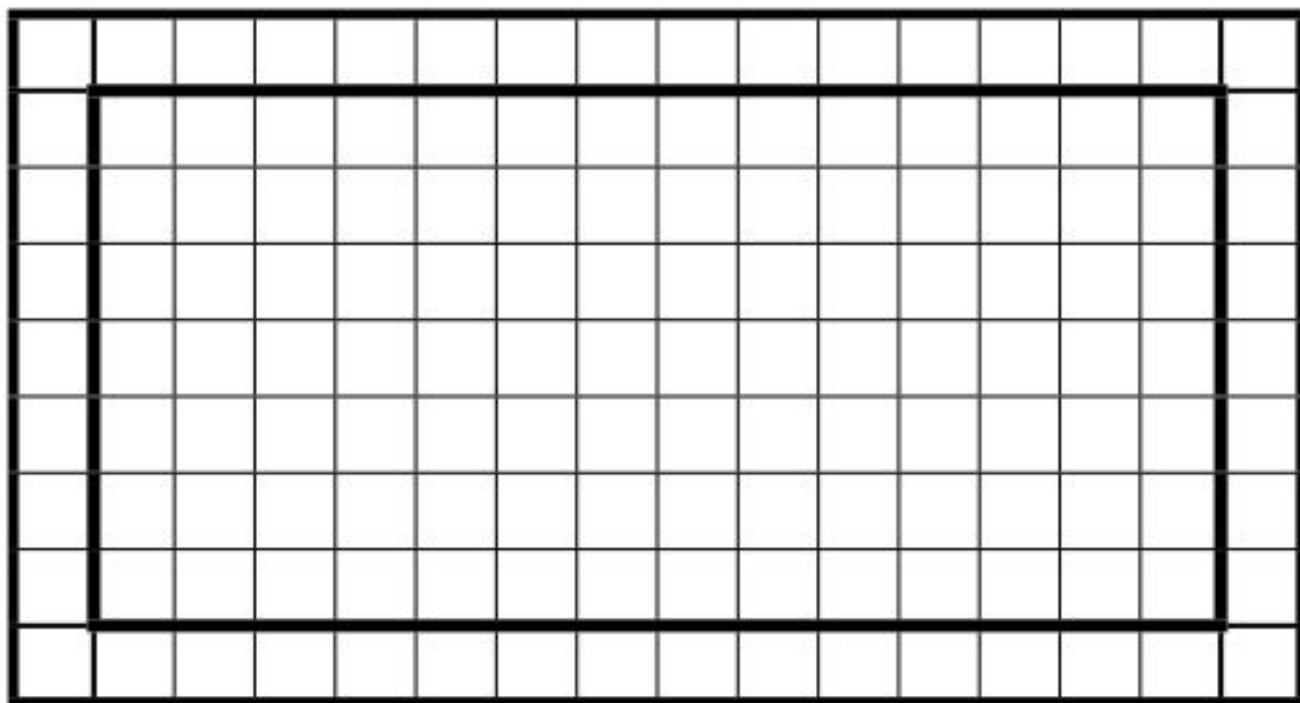
The inside walls of your tiny house are where you will add furnishings, create doors, windows, and finish out the design.





## FINAL VERSION: ROOF & CEILING

Include any remaining items on the roof and ceiling.  
Add other items you think would go on a house ceiling.



The dark outline is inside your house.  
There is a single row that will hang over  
the side. You could add lighting or other  
home decorations to it.





# *Wednesday*

## Home Specifications



# SPEC HOME

Find the AREA and PERIMETER of each REQUIRED item in your house.  
Fill in the information below.

ITEM	PERIMETER	AREA
shower or tub		
bathroom sink		
toilet		
bed		
table		
chair		
closet		
desk or side table		
couch/sofa or recliner		
counter		
microwave		

ITEM	PERIMETER	AREA
stove/oven		
kitchen sink		
TV or computer		
refrigerator		
front door		
window		
window		
light		
light		
picture/artwork		
mirror		

# SPEC HOME

Find the AREA and PERIMETER of the base, four walls, and roof/ceiling.

ITEM	PERIMETER	AREA
House Base		
Wall One		
Wall Two		
Wall Three		
Wall Four		
Roof		

ITEM	PERIMETER	AREA
Yard		



# *Thursday*

Interior Design





# EXTERIOR DESIGN



Awesome!  
You designed your house and the inside looks great!  
But--you need to decorate the outside.  
Make it look like a REAL house!

## BE CAREFUL with your coloring!

- ONLY USE crayons or colored pencils.
- Markers could bleed through and ruin the inside--no leaky house!
- Look at some pictures of houses to see what the outsides look like.

## WINDOWS and DOORS

- If you are up to the challenge, try cutting out where you have windows.
- Be patient and work slow. Doors are easier, but windows take time.

## OUTDOOR SIDING

- Decide what kind of exterior you want for your house:  
wood, stucco, log cabin, or something else.
- Color it or add designs...just be creative.



# BUILDING FURNITURE

It's time to build your furniture by creating three dimensional shapes.  
Use two provided graphing sheets with furniture included or create your own.

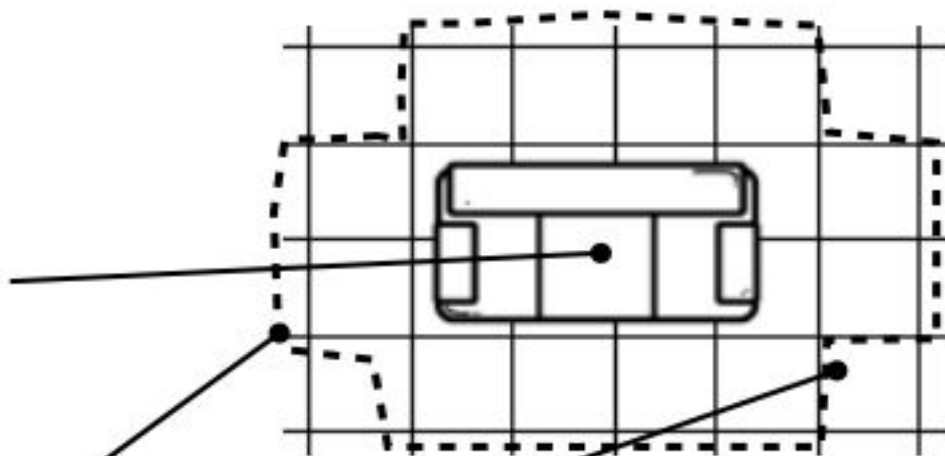
**FIRST:** Make sure your furniture size matches what you created in your house.

**SECOND:** 3D (three dimensional) means you'll have to design on all the sides. Minecraft and LEGOS are good examples.

**THIRD:** Don't cut out the net until you are sure you have enough. Map out what you need.

**FOURTH:** Tape your shapes together. You can try glue, but it might not work as well.

**FIFTH:** DON'T get discouraged! This is a very difficult element of design. It will take you a while to master it...but you can do it!



For this couch, I would cut out on my dotted line and tape the 4 sides together.

**WALLS:** If you created walls--add those!

**DON'T TAPE OR GLUE ANYTHING TO YOUR HOUSE.  
UNLESS YOUR TEACHER SAYS YOU CAN!**

# MAKING A TINY HOUSE



Make sure you furnish your house with 3D objects.

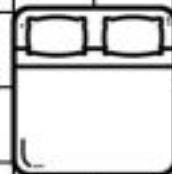
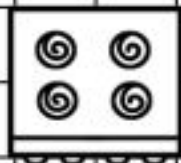
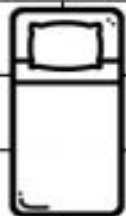
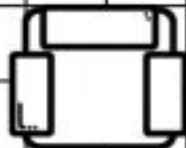
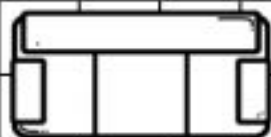
There are cutouts included, but you can create many on your own.

It takes practice and patience, but your ideas are unlimited.

Mail box, bunk beds, flag pole, chimney, A/C, fence, walls, stool, washer/dryer, holiday lights hanging off the house...so many ideas!



# THREE-DIMENSIONAL PIECES

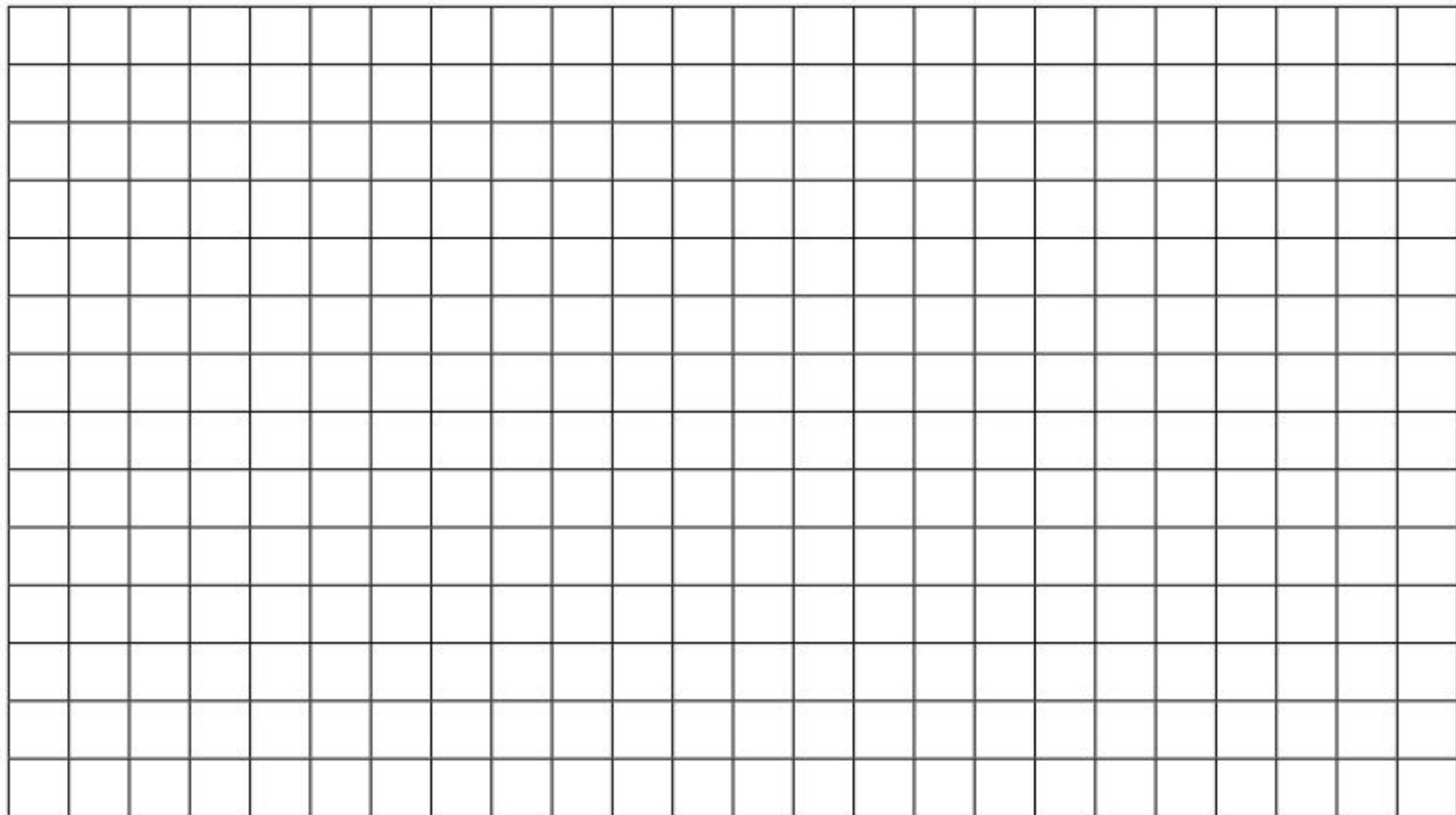






## THREE-DIMENSIONAL PIECES

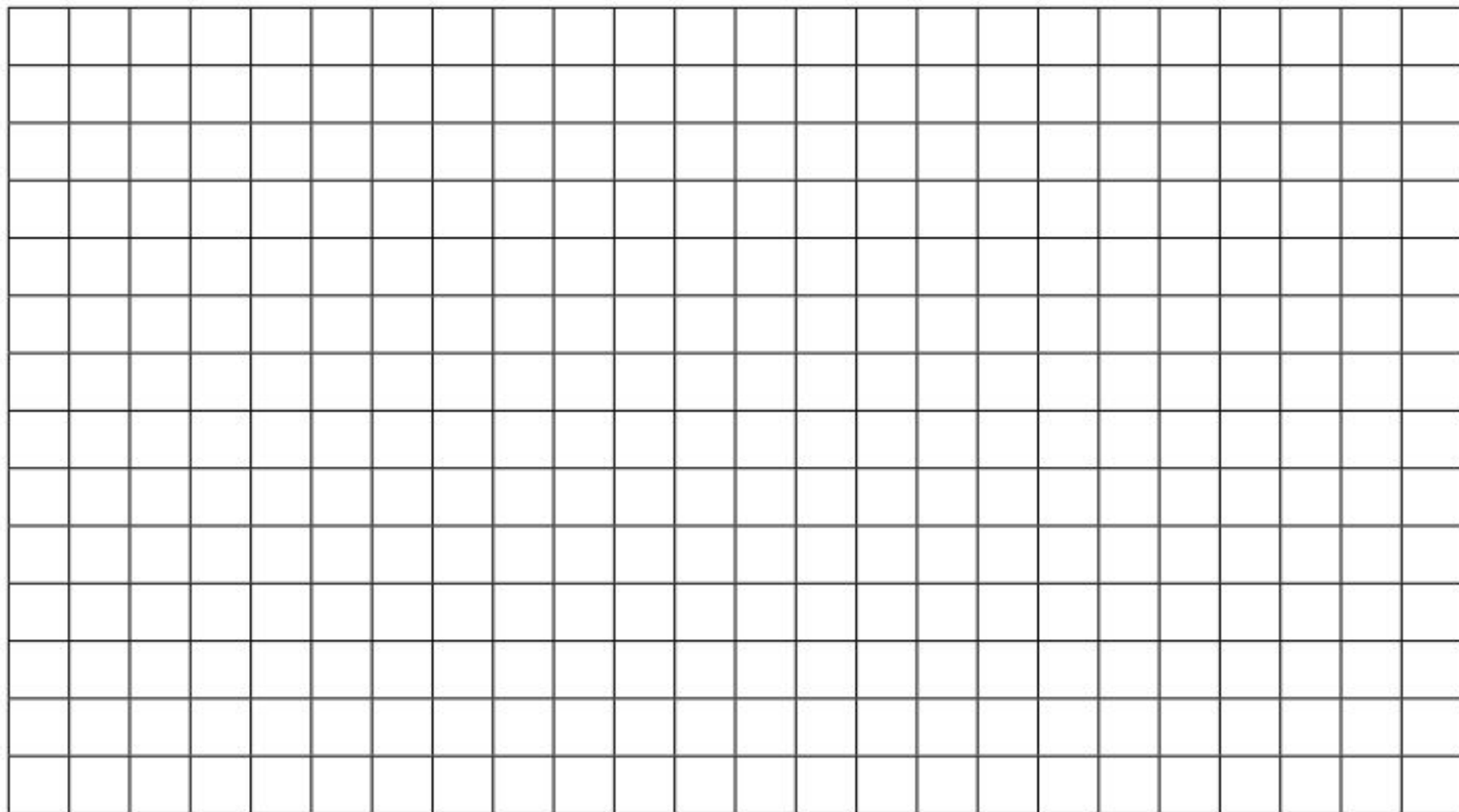
Use this graph paper to create your own three-dimensional furniture for the house.





## THREE-DIMENSIONAL PIECES

Use this graph paper to create your own three-dimensional furniture for the house.







NAME

# STUDENT REFLECTION

I CAN...	YES	NEEDS MORE WORK
I completed steps 1-8 on the To-Do List.		
I can find the area of an object.		
I can find the perimeter of an object		
I can find the area and perimeter of an object I create.		
I can connect area, perimeter, and geometry to real-world situations.		
I can use problem-solving techniques to complete this activity.		
I can use collaboration techniques to complete this activity.		

**THE MOST CHALLENGING PART OF THIS PROJECT WAS...**

**MY FAVORITE PART OF THIS PROJECT WAS...**

**ONE THING THAT REALLY SURPRISED ME WAS...**

**SOMETHING I LEARNED FROM A CLASSMATE WAS...**