

Week 2 Schedule: Geometrocity



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

<u>Monday</u> June 22	<u>Tuesday</u> June 23	<u>Wednesday</u> June 24	<u>Thursday</u> June 25
<ul style="list-style-type: none">● Start-Up● Teacher check in	<ul style="list-style-type: none">● Permits	<ul style="list-style-type: none">● Design & Build	<ul style="list-style-type: none">● Construction
Pages 5-15	Pages 17-22	Pages 24-37	Pages 39-45

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

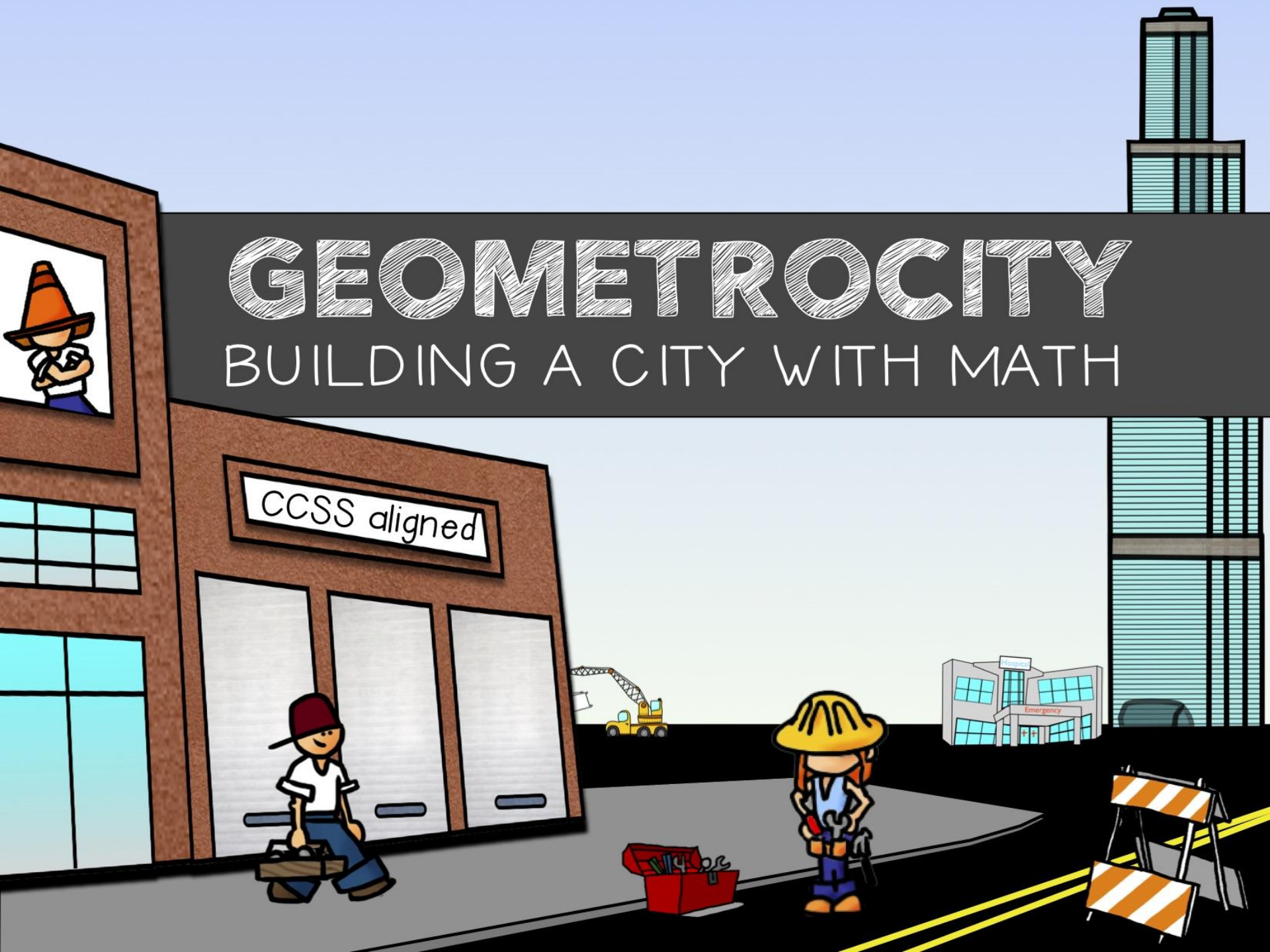
Objective: I will be able to use geometry skills to create my own math city.

Assessment:

- ☐ Send a picture of completed city to your teacher (text or email)
- ☐ Explain your project during your Monday phone call with your teacher
- ☐ Show your finished city to your classmates during Thursday's Google Meeting

GEOMETROCITY

BUILDING A CITY WITH MATH





Monday

Start-Up



GEOMETROCITY: A City Made of Math

The objective of this project is to create a city from scratch by using learned geometry skills and concepts such as:

- Plane Geometry
- Solid Geometry
- Polygon
- Angles
- Symbols
- Coordinates
- Area & Perimeter
- 2D Shapes
- 3D Shapes
- Transformations
- And More

**This project can be completed independently or as a group (your teacher will make that decision).

You are encouraged to be CREATIVE and use your IMAGINATION with this city. Use your classmates, the Internet, and other resources to make sound decisions. Look at maps, pictures, videos, and collaborate with others to build your ideal city.

As you move through this project there will be certain requirements that must be met, too, but they will be stated clearly for you to see.

Many of the math concepts are used daily in real-world situations such as architecture and design. It is important you recognize the real-world applications of lessons learned in school.

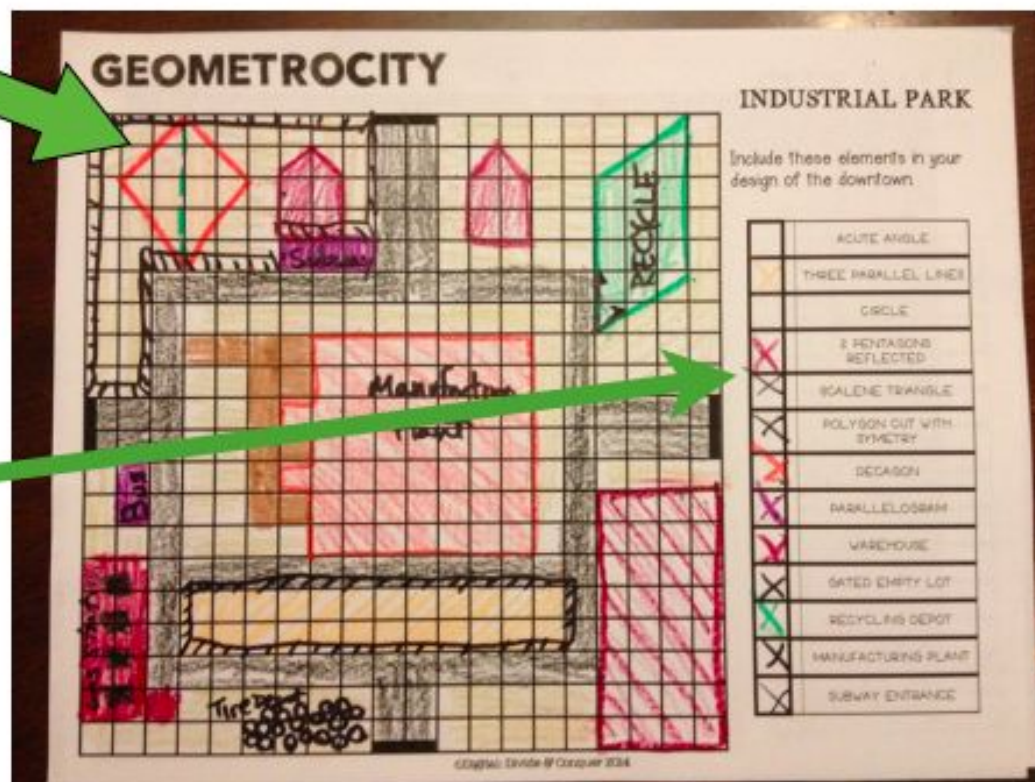
You'll be demonstrating your skills within geometry to create a city made of math, Geometrocity.



GEOMETROCITY: A City Made of Math

During the design phase, students will create the city on sections that look like this.

As long as users follow the checklist on the right side of the page they, may design it however they would like.



Labeling, coloring, and details are extremely important. The more you have the better your city will look.

Try and use as many geometry elements as you build each section.

GEOMETROCITY: A City Made of Math

These finished sections of PHASE TWO have been cut out. Notice how they can match up anyway because the roads match up.

It is important to always have roads at each point. That way you can move your city around or you can match it up with a classmates.



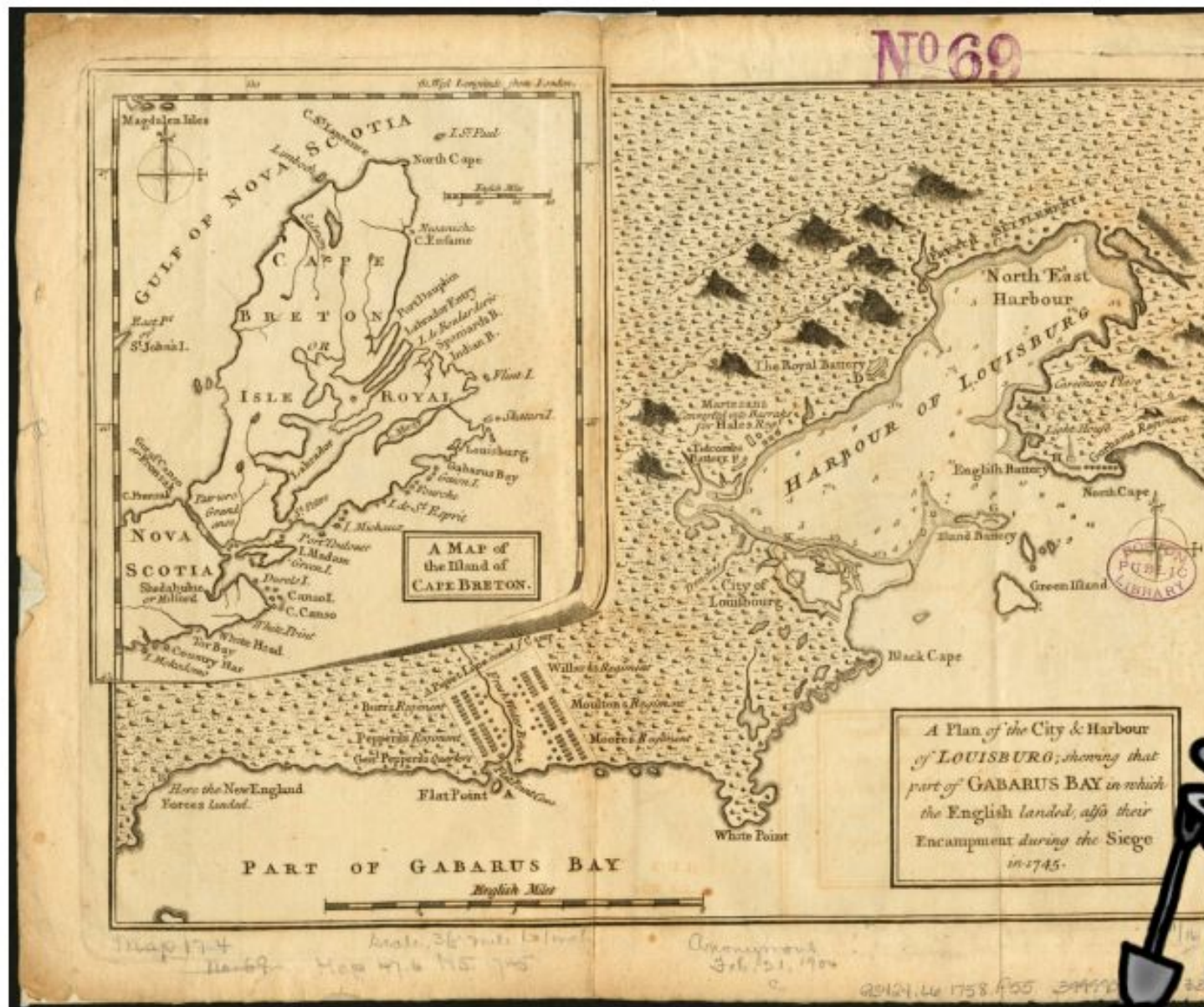
Mapping Skills

On this page and the next you will see two different types of map. One is old and one is more recent.

- How are maps different from each other?
- How are maps the same as all the other?
- What do different maps focus on?

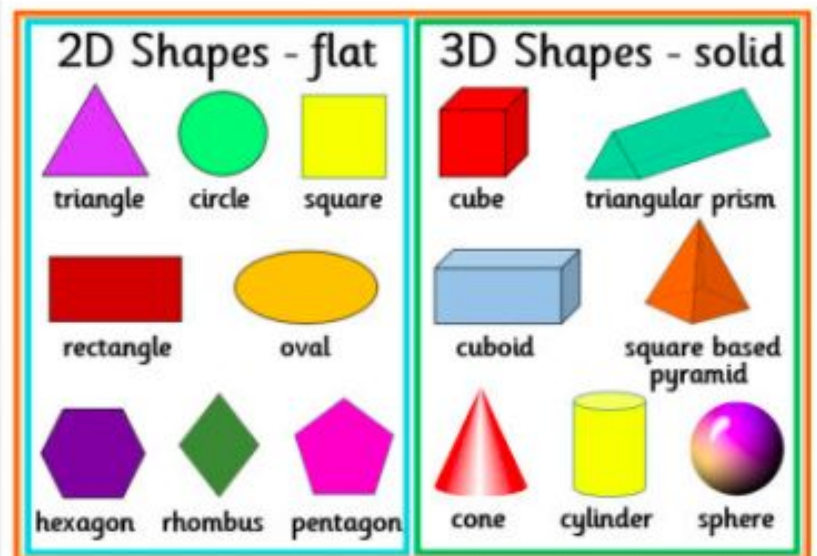
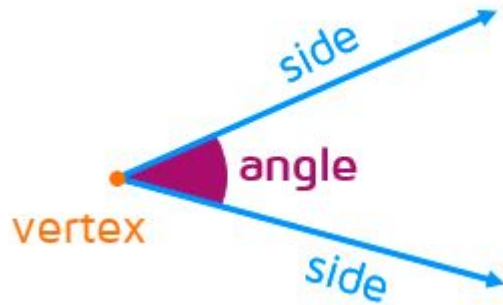


GEOMETROCITY: Mapping Skills

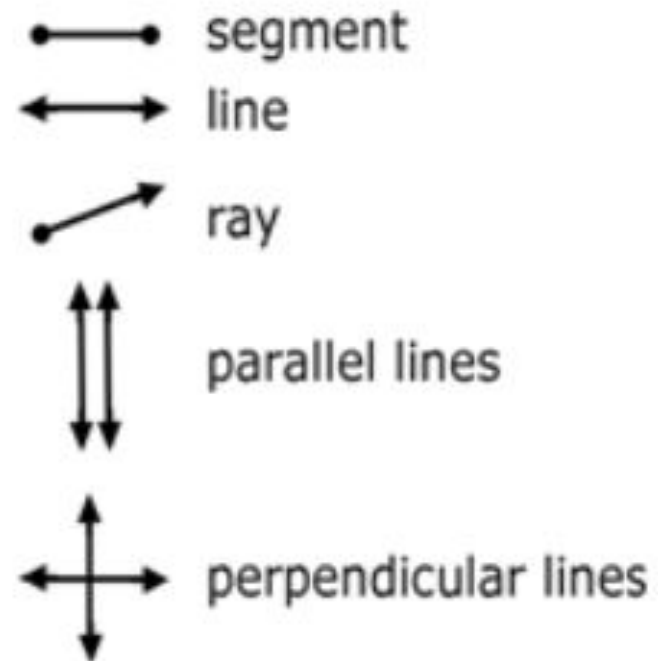


WORK IN PROGRESS



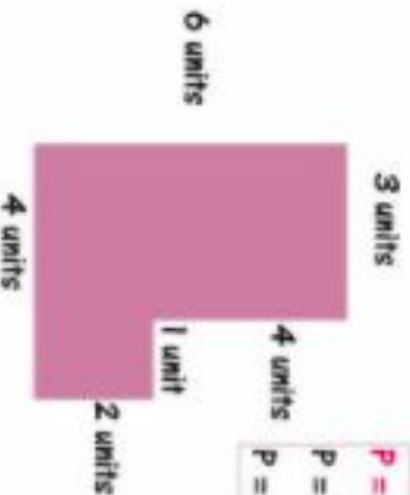
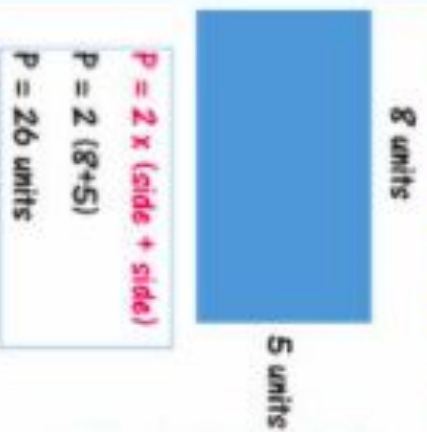


Right angle	
Acute angle	
Obtuse angle	
Straight angle	



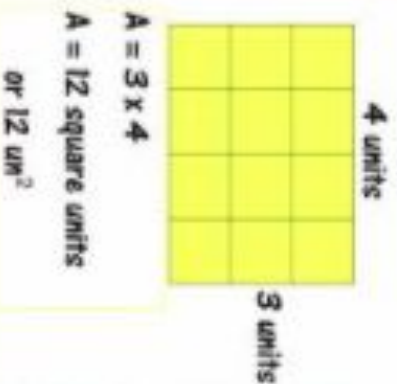
Area & Perimeter

Perimeter (P): The distance around the outside of a shape



$P = \text{Sum of all sides}$
 $P = 3+4+1+2+4+6$
 $P = 20 \text{ units}$

Area (A): The number of square units inside a shape. $A = \text{length} \times \text{width}$



To find the area of an irregular shape: Isolate rectangles, find the area of each, then find the total.

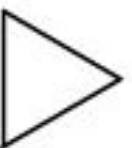




Circle
A perfectly round shape.



Right-angled Triangle
A triangle with a right angle.



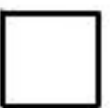
Equilateral Triangle
A triangle with three equal sides.



Isosceles Triangle
A triangle with two equal sides.



Scalene triangle
A triangle with three uneven sides.



Square
A quadrilateral with four equal sides and four right angles.



Rectangle
A quadrilateral with two pairs of parallel, equal sides and four right angles.



Rhombus
A parallelogram with four equal sides. Opposite angles are also equal.



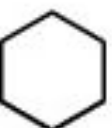
Parallelogram
A four sided shape in which opposite sides are parallel and equal. Opposite angle are also equal.



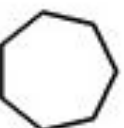
Trapezoid
A four sided shape in which two sides are parallel.



Pentagon
A shape with five sides.



Hexagon
A shape with six sides.



Heptagon
A shape with seven sides.



Octagon
A shape with eight sides.



Nonagon
A shape with nine sides.



Decagon
A shape with ten sides.

GEOMETROCITY

To: (your name here)

From: City Council of Geometrocity

Congratulations! You have been chosen to design a new city for us. There were thousands of applicants, but we chose you! We think that your knowledge and skills are just what is needed to create this new city.

Your job is to create a city filled with math concepts: geometry, to be more specific. Many people don't know this but all cities, towns, and buildings are created with math skills as a foundation. This city will be no different and it will be important for you to showcase your geometrical skills to make this a successful place.

You are the architect. You will determine whether this city succeeds or becomes bogged down in city politics and never develops. As lead architect, you will be tasked with creating city infrastructure such as buildings, roads, parks, and more. Along the way, you will have specific design elements that must be incorporated with each portion of the city.

This entire project can be completed individually or you may work with a team. The city council feels comfortable that you'll make the correct decision.

We look forward to seeing your work.

Sincerely,
City Council



GEOMETROCITY

“Welcome to the city that you’re going to create!”

“You’ll notice that this page is kind of blank, just like our city. Take a couple of minutes and brainstorm words that describe cities. Write them everywhere on this page. I’ll begin.”



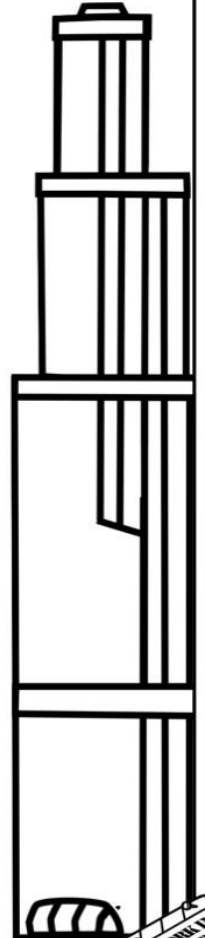
ROADS

electricity

BUILDINGS

condos

workers



Building Schedule



This project will be broken up into **THREE** phases.
PERMITS, DESIGN, & CONSTRUCTION

You will need to work through the phases in the order they appear so that you may finish the project correctly. Failure to do so will result in the termination of your contract to build Geometrocity.

PHASE ONE: PERMITS

Mr. Mayor and the City Commissioner have a set of tasks for you to complete to prove you understand geometry enough to build their city. If you pass you'll get the permits to begin building. Let's hope you know your geometry.

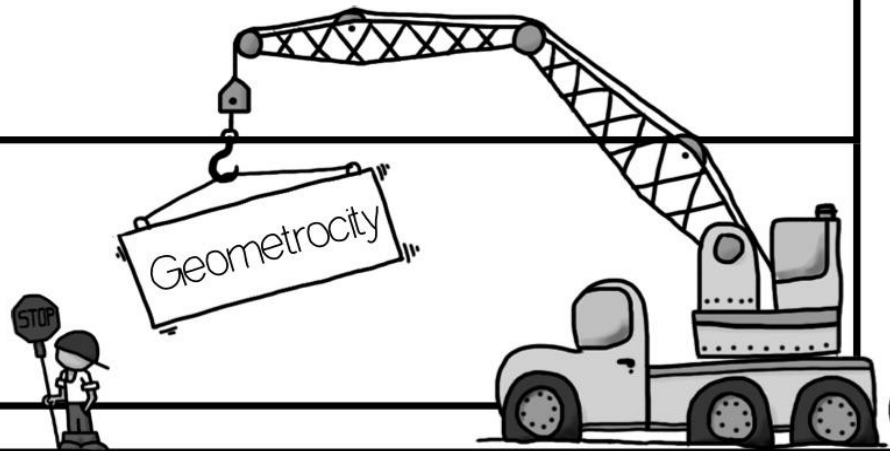
PHASE TWO: DESIGN & BUILD

You and your team begin to build the city. There are nine different sections of the city. In each section there are rules and requirements you must follow. Before you begin working on Phase Two you will read a tutorial to assist you.



PHASE THREE: CONSTRUCTION

It's time to put your city together.
Cutting, gluing, and assembling is your job.
*All the sections from PHASE TWO will begin and merge together and a city will rise.





Tuesday

Permits



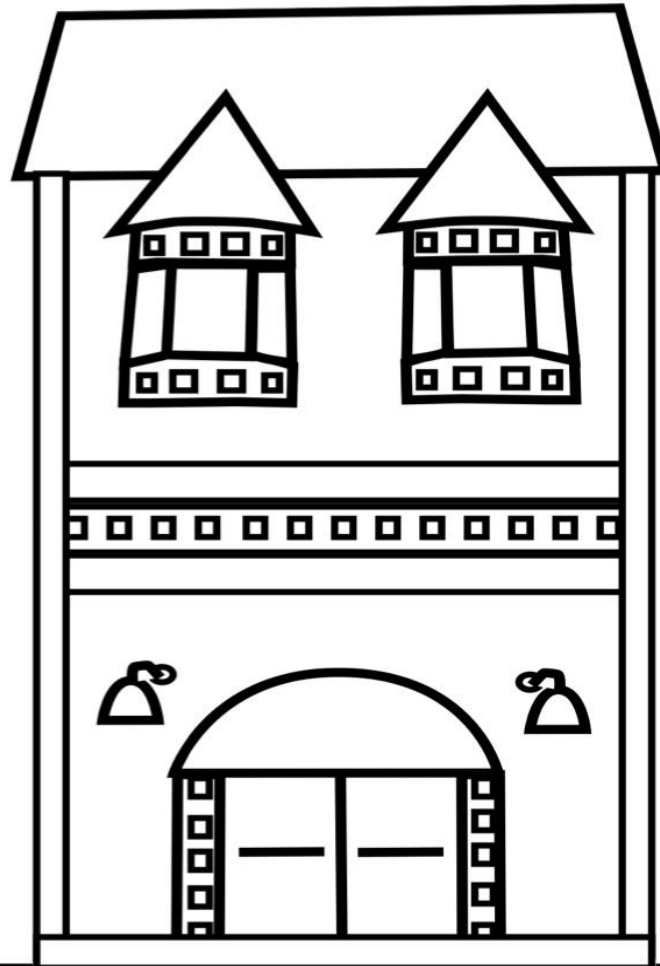
PHASE ONE: PERMITS



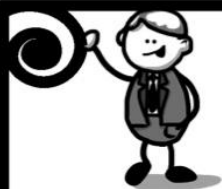
Mr. Mayor has asked that you pass a geometry quiz before you begin building. He wants to make sure you're qualified to build his city.

DIRECTIONS:

On the building below identify **10** geometric terms that you see and write them in the blanks. Draw a line and circle or outline to prove your answer.



PHASE ONE: PERMITS



Mr. Mayor is all about the politics, so you're not done yet. Now he wants you to define the geometry terms listed below and draw a picture of each one.

square

definition

vertex

definition

line

definition

hexagon

definition

draw

draw

draw

draw

polygon

definition

quadrilateral

definition

area

definition

perimeter

definition

draw

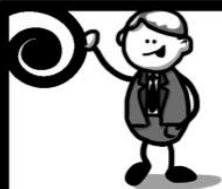
draw

draw

draw



PHASE ONE: PERMITS



Mr. Mayor is all about the politics, so you're not done yet. Now he wants you to define the geometry terms listed below and draw a picture of each one.

line segment

definition

draw

ray

definition

draw

pentagon

definition

draw

angle

definition

draw

acute

definition

draw

obtuse

definition

draw

parallel

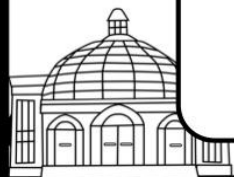
definition

draw

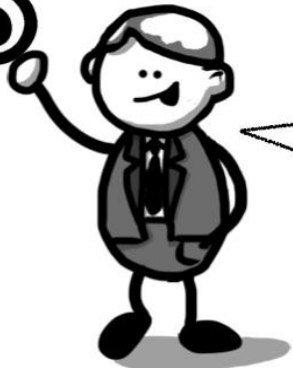
rectangle

definition

draw

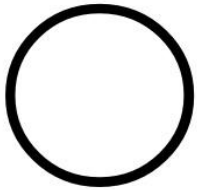


PHASE ONE: PERMITS

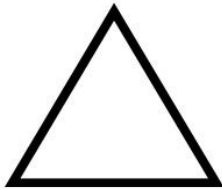


WOW!
Nice work! Now the
City Commissioner wants
to test your skills.

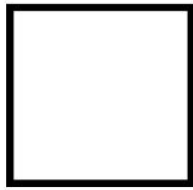
That's right Mr. Mayor!
You've got to pass my tests. I want
you to identify each item you see
below. Write the names in the
blank below each one.



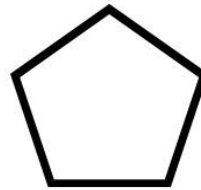
name



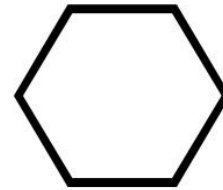
name



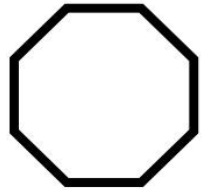
name



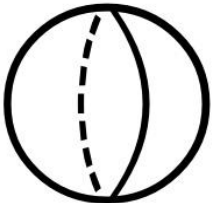
name



name



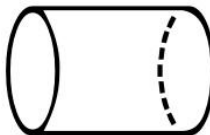
name



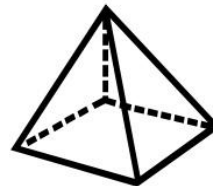
name



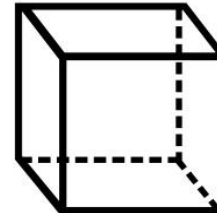
name



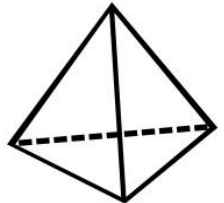
name



name



name



name

PHASE ONE: PERMITS

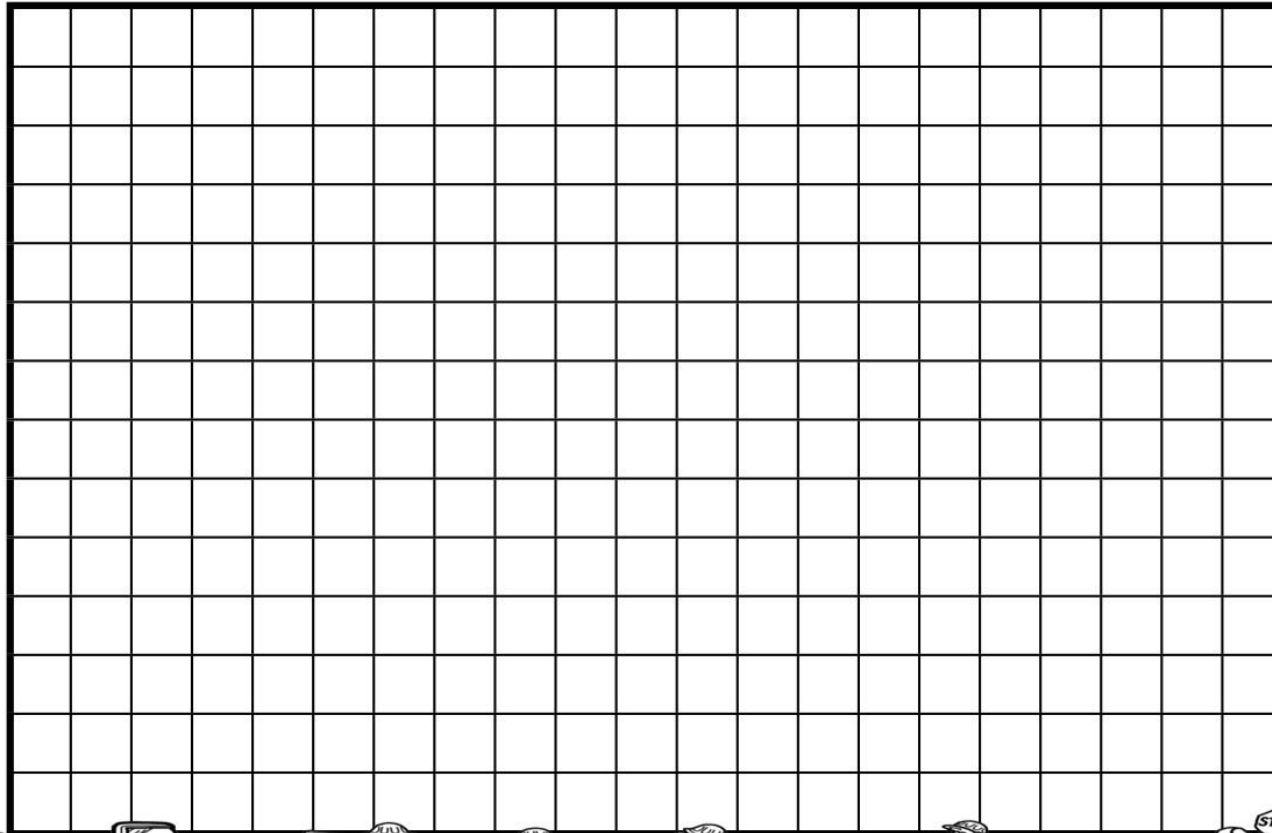
Your knowledge is impressive. I've got one last test for you.



I want you to draw a map of your school. That's right! Draw your School!

DIRECTIONS:

In the area below draw an overhead (aerial) view of your school. Label the locations on the listed below. You may add as much detail or design elements as you want.



PLAYGROUND



LIBRARY



GYM



CLASSROOM



OFFICE



HALLWAY



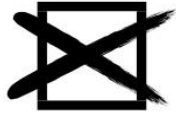
CAFETERIA



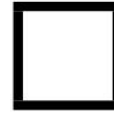
YOU PICK

PHASE ONE: PERMITS

Your building permits have been:



APPROVED



DENIED



Congratulations! All permits have been approved and you are ready to begin.

Before you begin working on PHASE TWO: DESIGN take a couple of minutes and think of your top 3 favorite places in the city or town you live in. Then write your choices below AND tell why you like them so much.

1

2

3





Wednesday

Design & Build



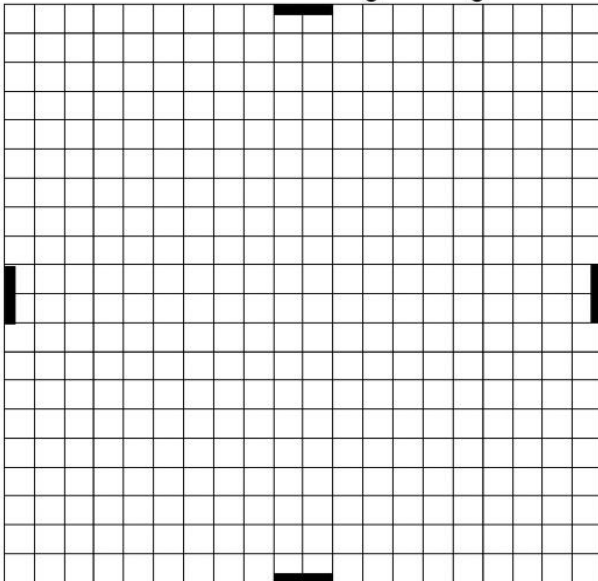
PHASE TWO: DESIGN & BUILD

On the next few pages you'll build your city using these sections:

- Downtown
- Suburbs
- Public Works
- City Living
- Park District



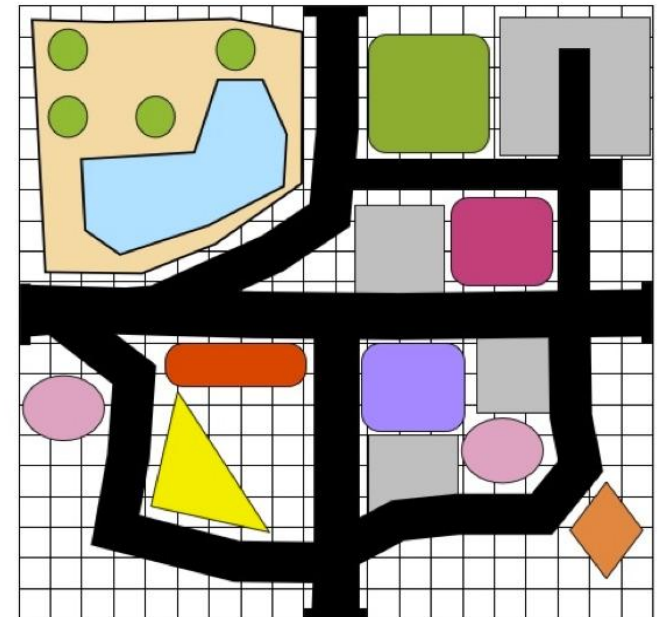
Each section looks like this at the beginning.



Your job is to fill this section using the listed requirements and your creativity to build Geometrocity.

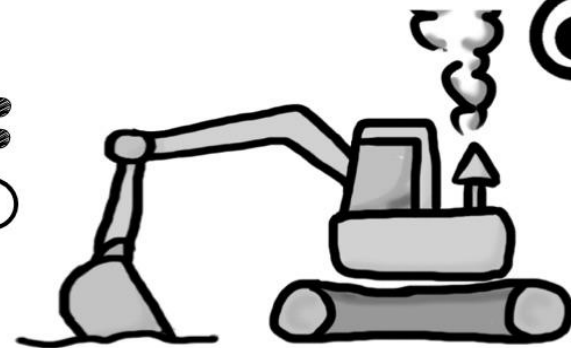


You get to make it look like this.





PHASE TWO: DESIGN & BUILD



CHECKLIST

Over the next few pages on the right side of the paper will be a checklist. You must include all of these elements into each of the sections.

You'll notice that the first 7-9 items are geometry and the last few are areas within a city. You may combine some of these elements together if you want.

Check off each one when you complete it to help you stay organized.

You are encouraged to add many more elements to each section to create a thriving city.

<input type="checkbox"/>	2 SQUARES
<input type="checkbox"/>	PENTAGON
<input type="checkbox"/>	4 POINTS
<input type="checkbox"/>	RECTANGLE
<input type="checkbox"/>	RIGHT TRIANGLE
<input checked="" type="checkbox"/>	ELLIPSE
<input type="checkbox"/>	OBTUSE ANGLE
<input type="checkbox"/>	PARALLEL LINES
<input checked="" type="checkbox"/>	ROTATION
<input checked="" type="checkbox"/>	PARKING GARAGE
<input type="checkbox"/>	SKYSCRAPER
<input type="checkbox"/>	HOTEL
<input type="checkbox"/>	RESTAURANT

LABELING

You should label your geometry answers as best as possible through highlighting with markers, colored pencils, pens, or crayons.

Try and make the geometry pop out, but also blend in at the same time. This can be a difficult skill, but with practice you'll accomplish it.

DO TRY and label buildings, roads, parks, and other aspects of the city.

You will have to write neat and small. TAKE YOUR TIME! Make it take just as long as real road construction.

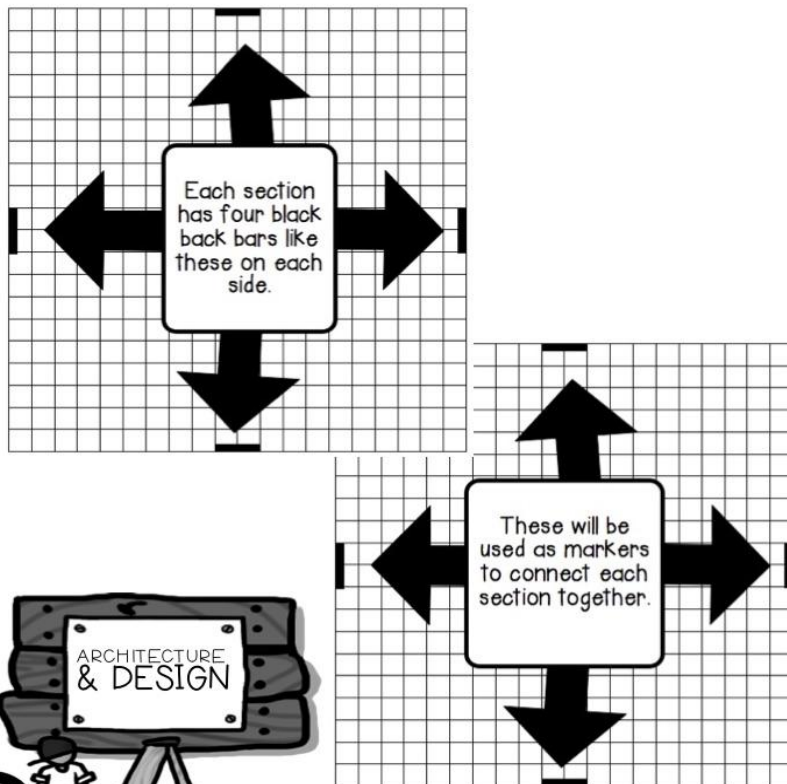
GOOD LUCK!



PHASE TWO: DESIGN & BUILD

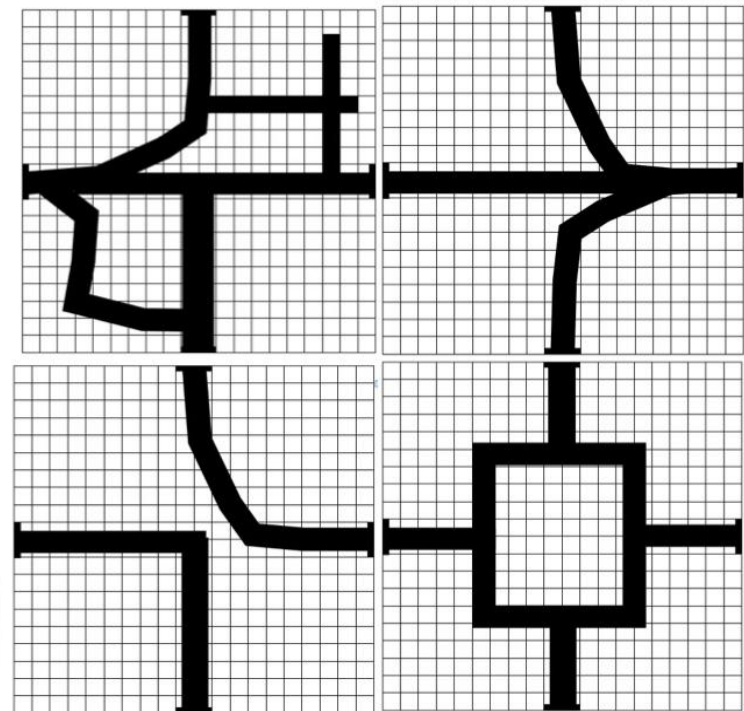
Each section has four black bars on each side. Look at the images below for reference.

****You MUST** have roads coming in and out at each black bar per section. You may add more roads in each inside each section.



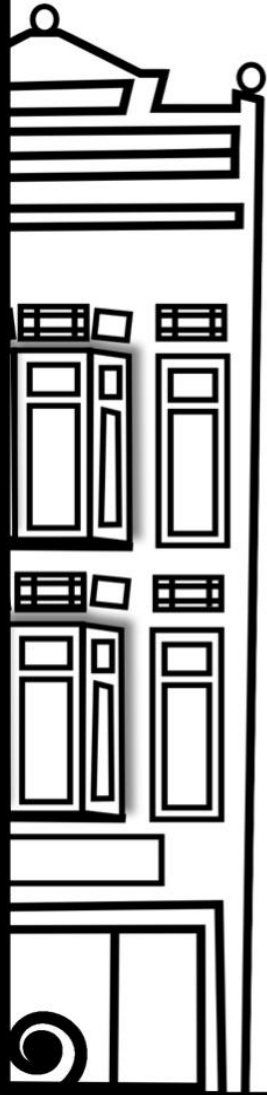
The roads must begin and exit on those spots so you may piece it together when you are all finished.

See how all the roads can connect below.



PHASE TWO: DESIGN & BUILD

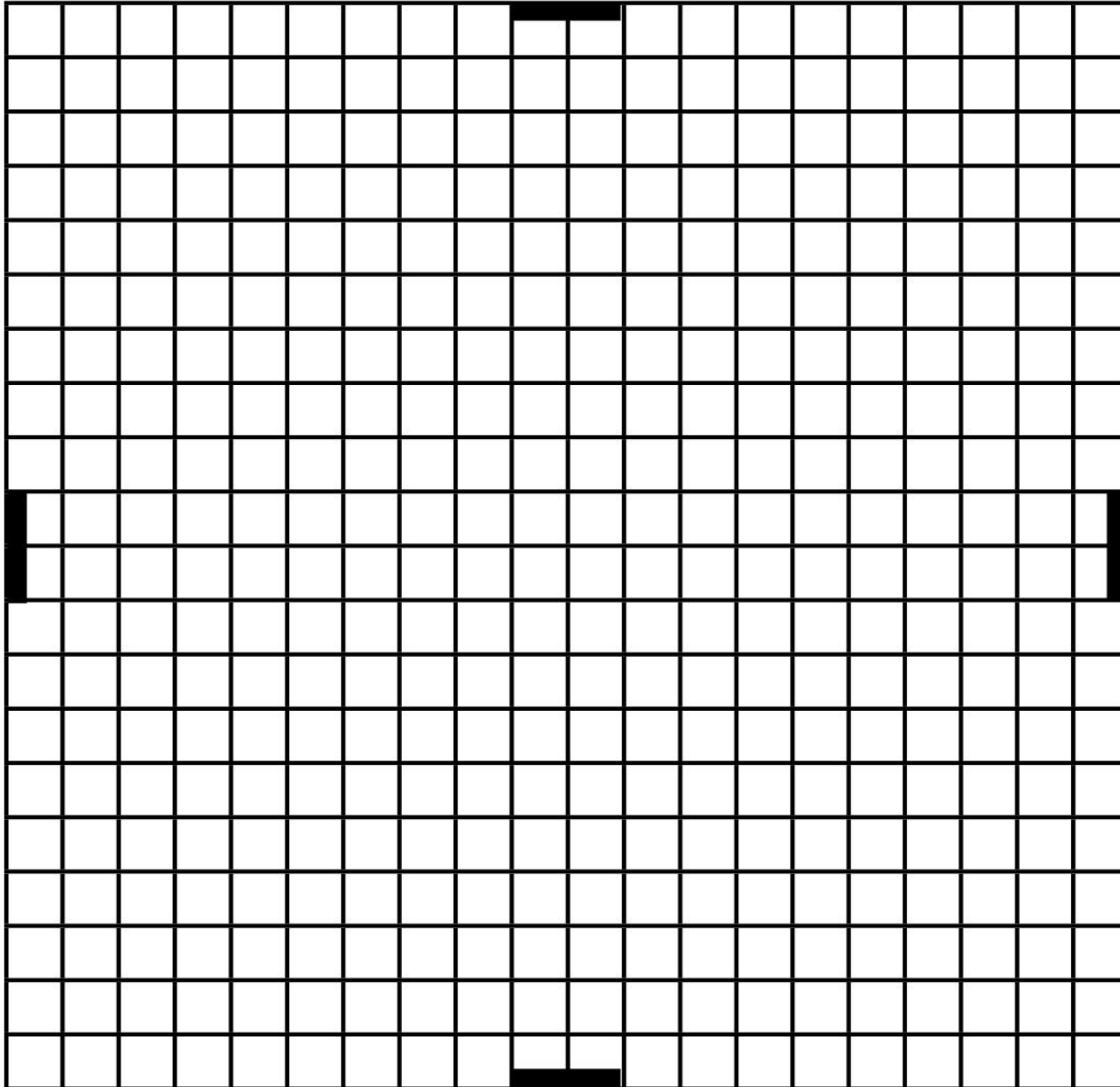
Use this list of places to assist you in building your city.



apartment	house	condo	street
block	road	highway	intersection
duplex	bungalow	terrace	garage
cathedral	church	temple	office
store	pharmacy	restaurant	fast food
diner	station	police station	first station
skyscraper	tower	building	town hall
library	museum	theater	bakery
coffee shop	mall	shopping center	drive-in
dry cleaners	laundromat	department store	county building
courthouse	nursing home	hospital	jail
prison	park	gas station	bowling alley
school	daycare	airport	bank
barber shop	book store	beach	snack shop
gym	arena	stadium	concert venue
college	salon	toy store	arcade



GEOMETROCITY

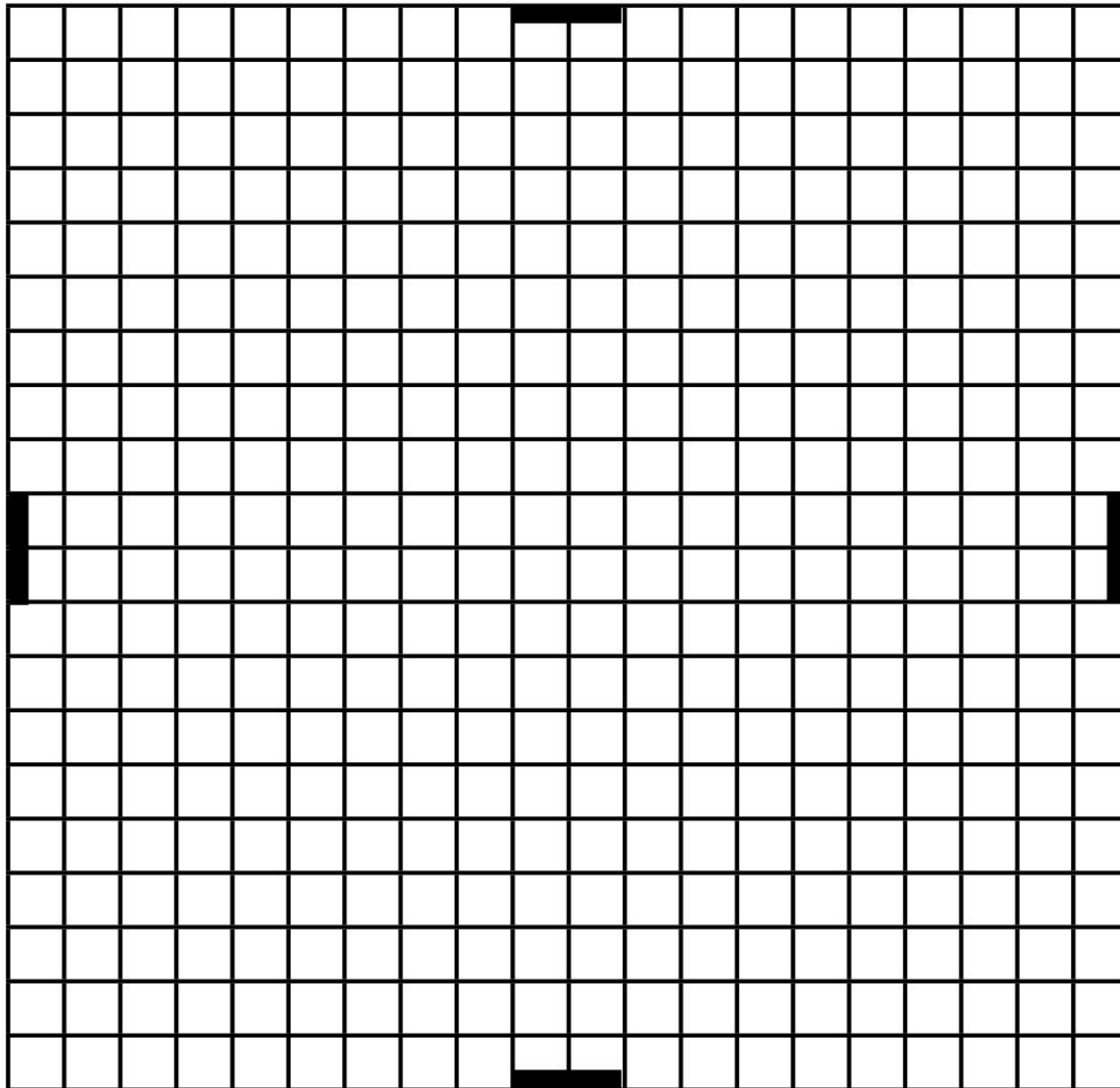


DOWNTOWN

Include these elements in your design of downtown.

	2 SQUARES
	PENTAGON
	4 POINTS
	RECTANGLE
	RIGHT TRIANGLE
	ELLIPSE
	OBTUSE ANGLE
	PARALLEL LINES
	ROTATION
	PARKING GARAGE
	SKYSCRAPER
	HOTEL
	RESTAURANT

GEOMETROCITY

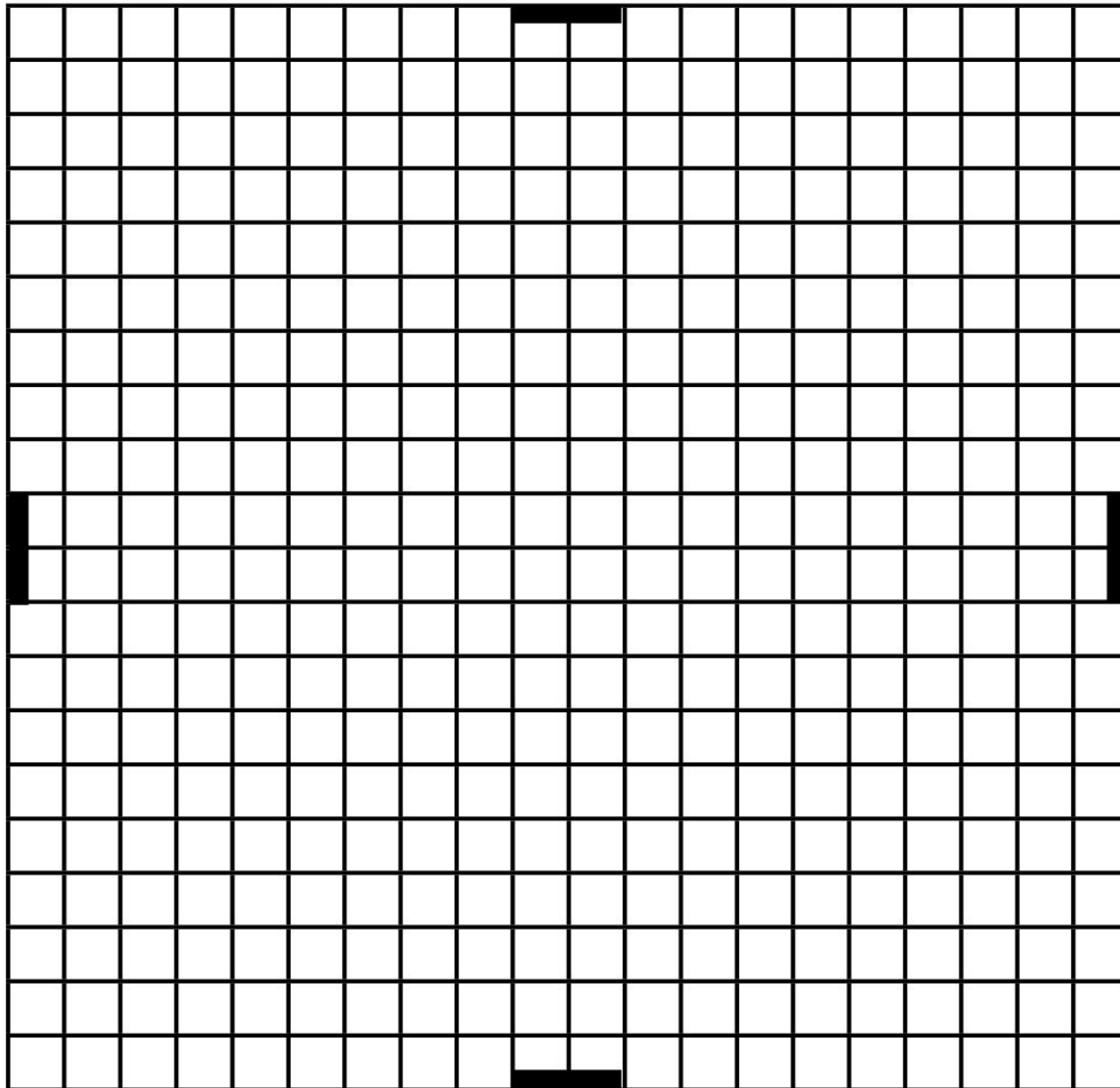


SUBURBS

Include these elements in your design of the suburbs.

	4 RECTANGLES
	5 SQUARES
	SCALED TRIANGLE
	LINE SEGMENT
	RHOMBUS
	TRAPEZOID
	INTERSECTING LINES
	OBTUSE ANGLE
	CHURCH
	SCHOOL
	GAS STATION
	PHARMACY
	PARK

GEOMETROCITY

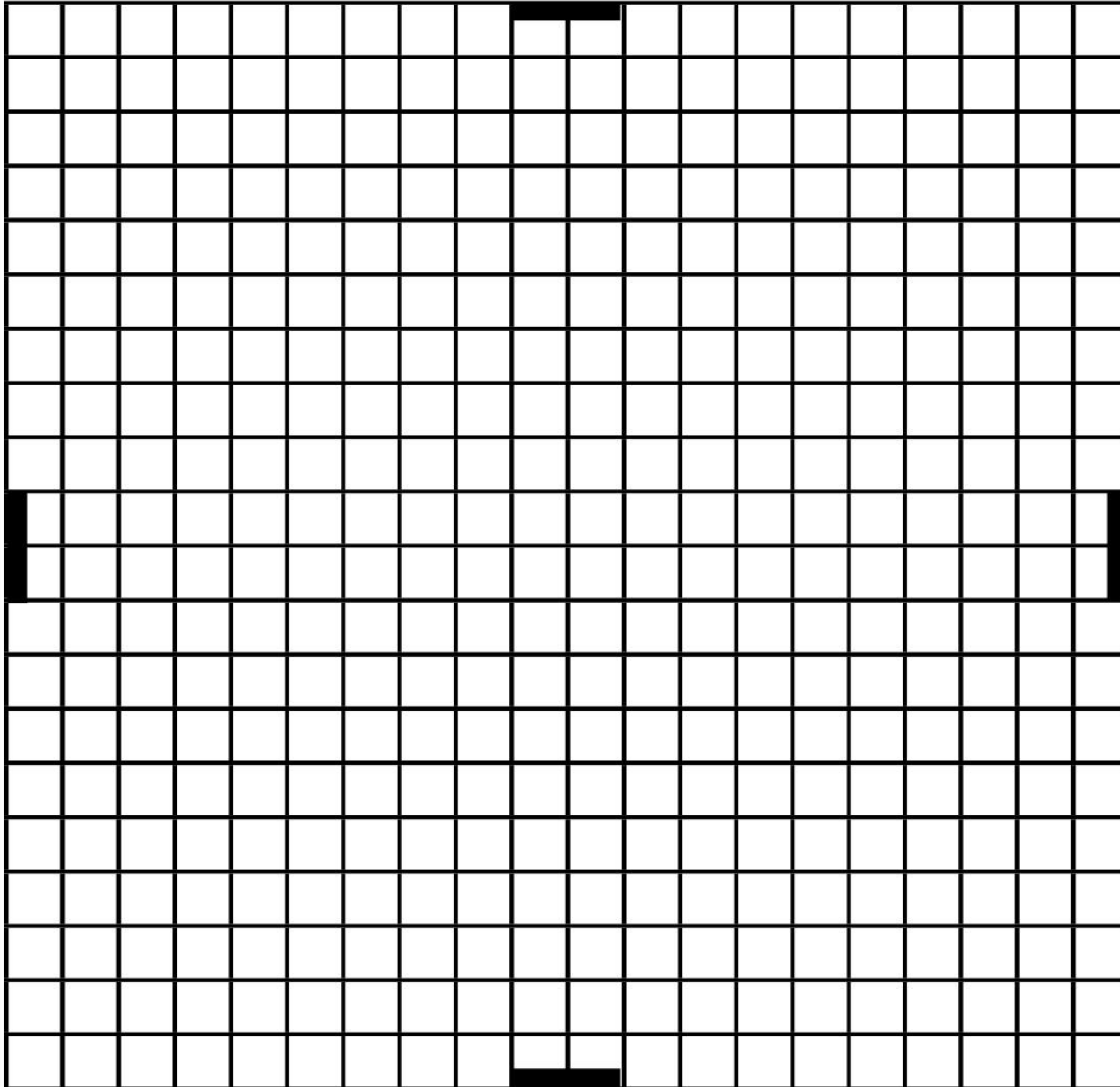


PUBLIC WORKS

Include these elements in your design of the public works.

	THREE TRIANGLES
	LINE OF SYMMETRY THROUGH A POLYGON
	PENTAGON TOUCHING A RECTANGLE
	2 EQUILATERAL TRIANGLES
	OCTAGON
	INTERSECTING LINES
	OBTUSE ANGLE
	POLICE STATION
	FIRE HOUSE
	CITY WATER
	TRAIN STATION
	SEWAGE TREATMENT FACILITY
	POST OFFICE

GEOMETROCITY

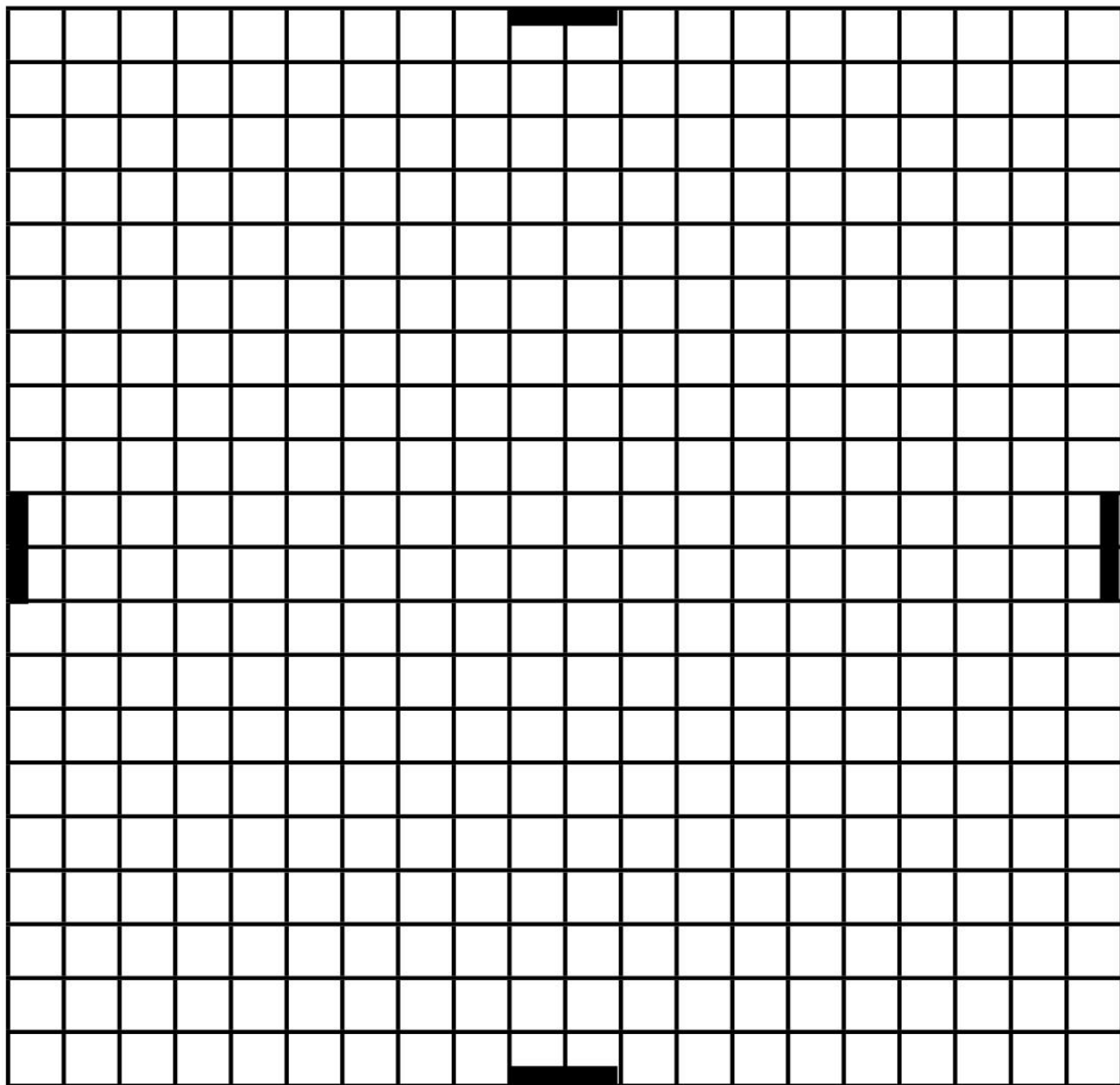


PARK DISTRICT

Include these elements in your design of the park district.

	RHOMBUS
	ARC
	CIRCLE
	ACUTE ANGLE
	HEXAGON
	PERPENDICULAR LINES
	ISOSCELES TRIANGLE
	VERTEX
	BASEBALL FIELD
	PARK
	FOREST PRESERVE
	PARK
	POND

GEOMETROCITY



CITY LIVING

Include these elements in your design of city living.

	TRAPEZOID
	LINE INTERSECTING TWO PARALLEL LINES
	HALF-CIRCLE
	STRAIGHT ANGLE
	POLYGON
	4 POINTS
	TWO RAYS WITH THE SAME ENDPOINT
	LINE SEGMENT
	3 APARTMENT BUILDING
	LAUNDRY MAT
	DOG PARK
	GROCERY STORE
	FAST FOOD EATERY



Thursday

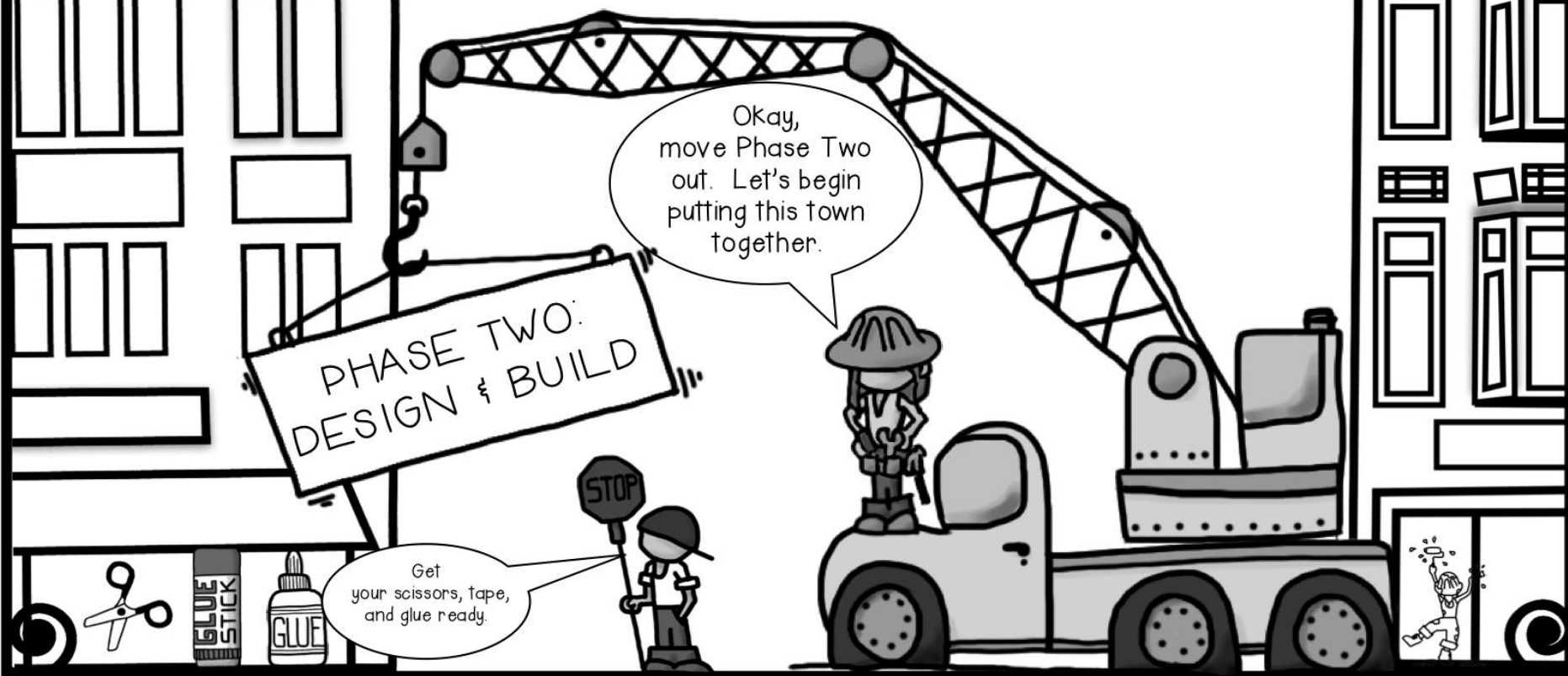
Construction



PHASE THREE: CONSTRUCTION

Phase Two is complete. Great work—but you're not finished. It's time for Phase Three, the construction of Geometrocitly!

You will cut out the sections of the city and piece them all together. The number of sections you have depends on how much you've finished. On the next page, there is a tutorial for your construction.



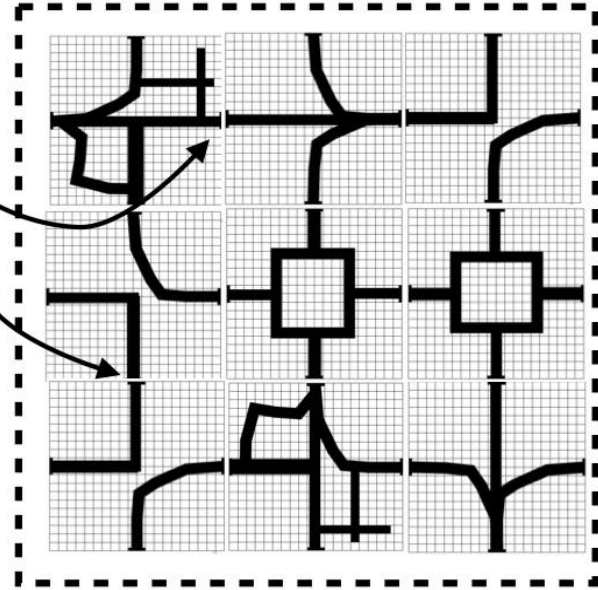
PHASE THREE: CONSTRUCTION

CITY PLANNING LAYOUT

Did you notice how all the roads match up with each other? You can move all the sections around AND they will always match up. Even if you rotate the sections, everything still fits together.

Planning your layout requires time and thought. Builders can't just put something anywhere they want. There needs to be reasons why they chose it this way.

After you decide the layout of the city explain your reasons to the mayor and commissioner in the space below and/or on the following page.



CITY PLANNING REASONING

PHASE THREE: CONSTRUCTION

ADD YOUR CITY PIECES BELOW

PHASE THREE: CONSTRUCTION

ADD YOUR CITY PIECES BELOW

PHASE THREE: CONSTRUCTION

ADD YOUR CITY PIECES BELOW

PHASE THREE: CONSTRUCTION

CITY PLANNING REASONING

SELF ASSESSMENT

Now that you've finished Geometrocity, let's assess how well you think you did with the project. Answer each question by circling the numbers that fits best.

I know the geometry terms.	every single one	most of them	needed help with a couple	more practice needed
I was able to follow the directions.	all the time	most of the time	asked a friend	asked the teacher
Geometry is	great	good	okay	boring
What was the most difficult part of this project?				
I included many details in my work.		YES	NO	
I did my best work.	excellent	good	fair	needs improvement
All my work is legible and neat	excellent	good	fair	needs improvement
My ideas were	awesome	good	average	I could do better
If I could add more to this project it would be to...				