



IT'S ALL IN THE DETAILS

Now that you have all of your lots sketched out, let's talk details. Grass needs to be grown, fences need to go up, and sidewalks must be built.

A SPACE CASE

You are debating how much leftover space should be used for what. On the page "Houses for Many More" you should have discovered how much space was left in your row of houses after your lot was built. Use that information to help you.



The perimeter of your row of houses will be lined with one large fence. There will be NO fences around each individual home, only around the entire row of houses.

PERIMETER OF FENCE (IN UNITS): _____

Each horizontal piece of fencing is 6 units long (on your graph paper) and is nailed to a post. Figure out how many sections you will need AND how many posts you will need. You can trim a section to fit, but it still counts as one section you need to purchase. It may be helpful to draw the fence and posts on the graph paper where you designed your row of houses.

NUMBER OF SECTIONS NEEDED: _____

NUMBER OF POSTS NEEDED: _____



You decide to put grass on the rest of the open space surrounding all of your lots.

AREA OF OPEN GRASS AREA(IN UNITS): _____

Each patch of grass measures two units by one unit. Find out how many patches of grass you will need to cover the entire open space. It may be helpful to draw the grass on the graph paper.

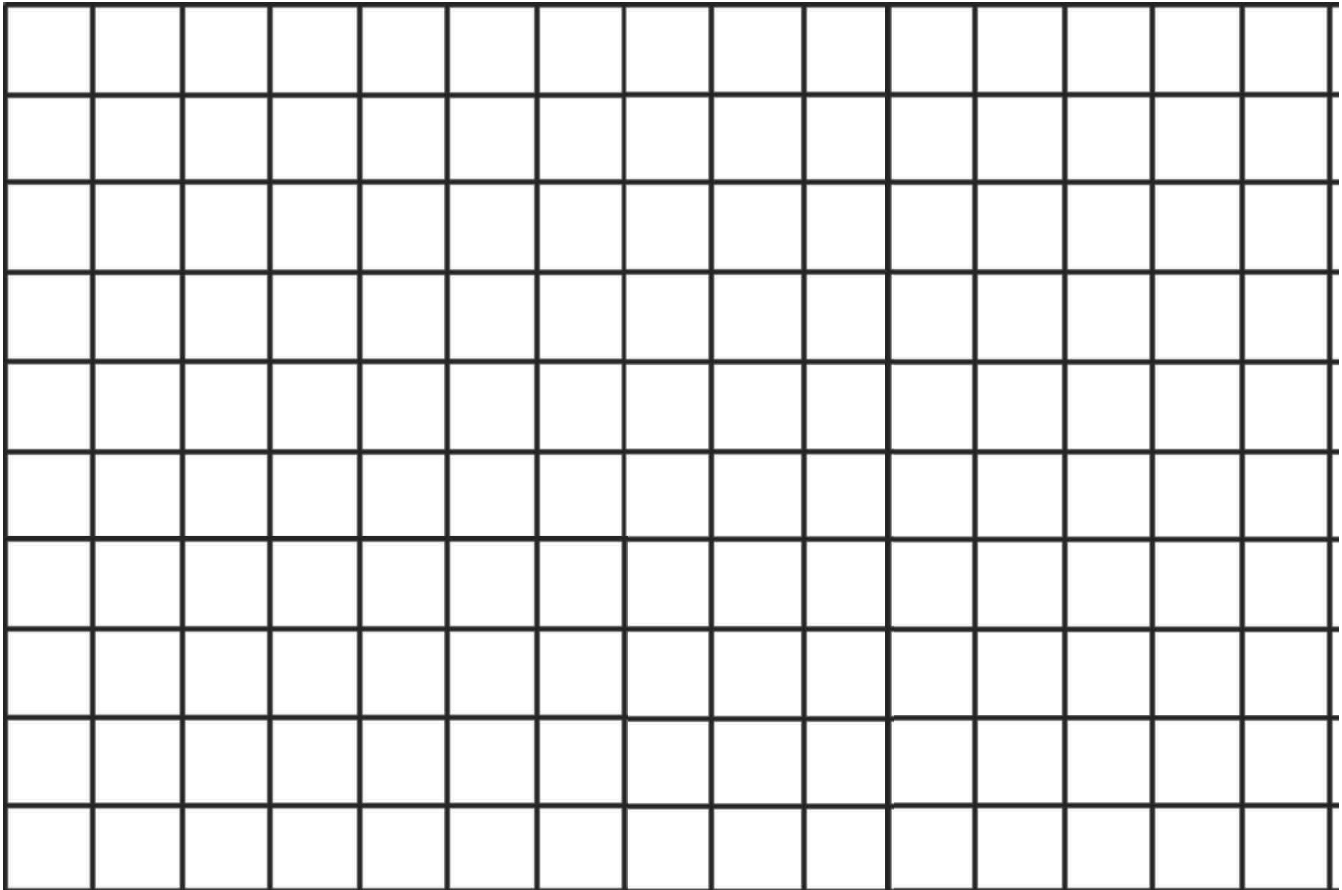
NUMBER OF PATCHES NEEDED: _____

**WHAT DO YOU NOTICE ABOUT THE AREA OF GRASS AND THE NUMBER OF PATCHES NEEDED?
EXPLAIN THE RELATIONSHIP BETWEEN THE TWO NUMBERS.**

A ROOM OF YOUR OWN

You get to design your very own room in your city. There are very few rules with this room, but be sure to make it super cool—this is your one chance to design it from scratch!

First, decide what shape your room will be. Draw the outline of the shape on the graph paper below. Try to fill up as much of the space as you can.



Draw and label each of these items in your room. Find the area and perimeter of each item. Then, add as many more items as you want!

Find the total area and perimeter of your room.

Item	Area	Perimeter
Bed		
Dresser		
Bookshelf		
Desk		

GOOD EATS GROCERY STORE

Your town has its very own café and grocery store. Read the word problems below to figure out some key information about your grocery store.

Floor The Store

You are putting flooring in the new building. You choose to put black and white tiles on the floor where the grocery store is and red and white tiles where the café is.

The black and white tile costs \$5 per square foot.

The red and white tile costs \$7 per square foot.

The grocery store is a square shape. It is 10 feet long.

The café is a 12 foot long square.

Find the total area and perimeter of each area.

Find the cost of tile for both the café and the grocery store.

The entire building is 22 by 12 units. Draw a model of what the store might look like. Use a centimeter ruler to represent each foot. Color in the black and white and red and white tiles to represent which space is which.

Remember that the two places, the grocery store and the café are connected and share a rectangular building... They just have different colored floors! The extra space left over is storage.

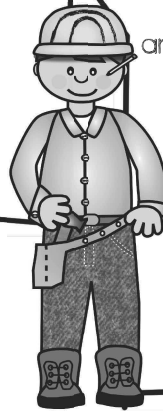
QUESTIONS NEED ANSWERING

Your city is almost ready to be built, and it is looking like perfection! Your board of directors (the people helping you build your city) has a few questions before it's time to break ground..

Farmer Johnson is planting a garden in the park. He has a square garden bed that is 21 feet long. He divides the bed into squares for vegetables. The squares are 3 feet by 3 feet long. How many different vegetable squares can he have?



The front of the school house measures 14 units long by 5 units high. The builder is putting a glass door that measures 4 units long by 3 units high. He needs to put at least four windows on the front. Each window is 2 units by 2 units. How much area will be left that needs to be painted?



The police station has a parking lot that is 72 feet long by 41 feet wide. Each parking spot measures 8 feet wide and 18 feet deep. Each spot has 23 feet behind it for the cars to back out. How many parking spots can the police station have?



Your city is quite small, so the only roads you have are two lane roads with no medians in between. Each lane must be 9 feet wide with a 4 foot wide "shoulder" on the side of the road where cars can pull off in an emergency. What is the absolute minimum width of the road, including the both shoulders?



Miss Clara, the teacher at the school, has one large classroom with 25 students. The dimensions of the classroom are 30 units by 30 units. Each desk is two units wide by three units long. How much space will be leftover after all the desks are in the room?

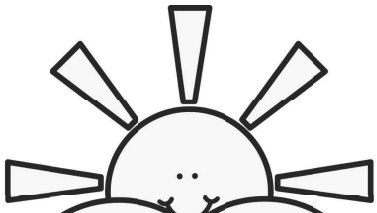


The mayor has asked you to design a welcome sign for your city. Use graph paper to design a sign, including your city's name written in block letters. Find the perimeter and area of your sign as well as the perimeter and area of each letter in your city name. Record that data here.


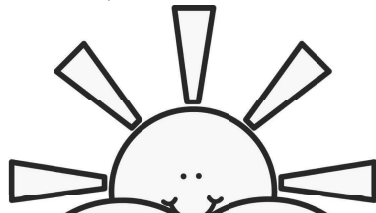


PERIMETER AT THE PARK


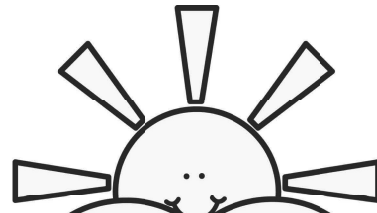
The park is the center of your city and the place where people will gather and play. The square park is 11 by 11 units on your original plan. You can scale it larger on a new piece of paper to plan your park. On the graph paper, draw a large square that is 22 units by 22 units. Follow the directions below to add elements to your park. Label the dimensions and find the area and perimeter of each element.




The perimeter of the park is bordered by a creek. Its area is 84 square units. At the park entrance, there is a bridge with an area of 4 units.

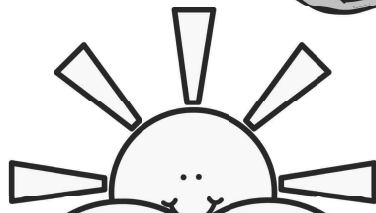
Your rectangular playground has a perimeter of 30 units. It is 8 units long.

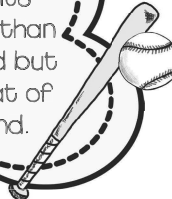
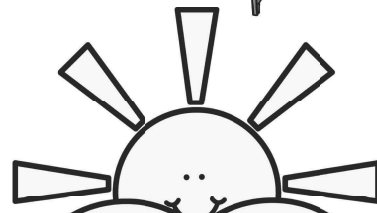
There are five benches in the park. Each bench has an area of two square units.





The sports field has an area of 80 units.

The baseball area is a pentagon. Its area is smaller than the sports field but larger than that of the playground.

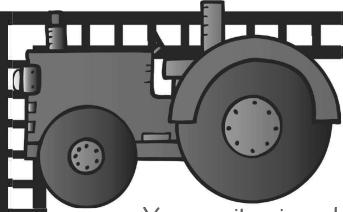



An octagonal skate park has the smallest area of all the spaces, with each side length measuring two units.



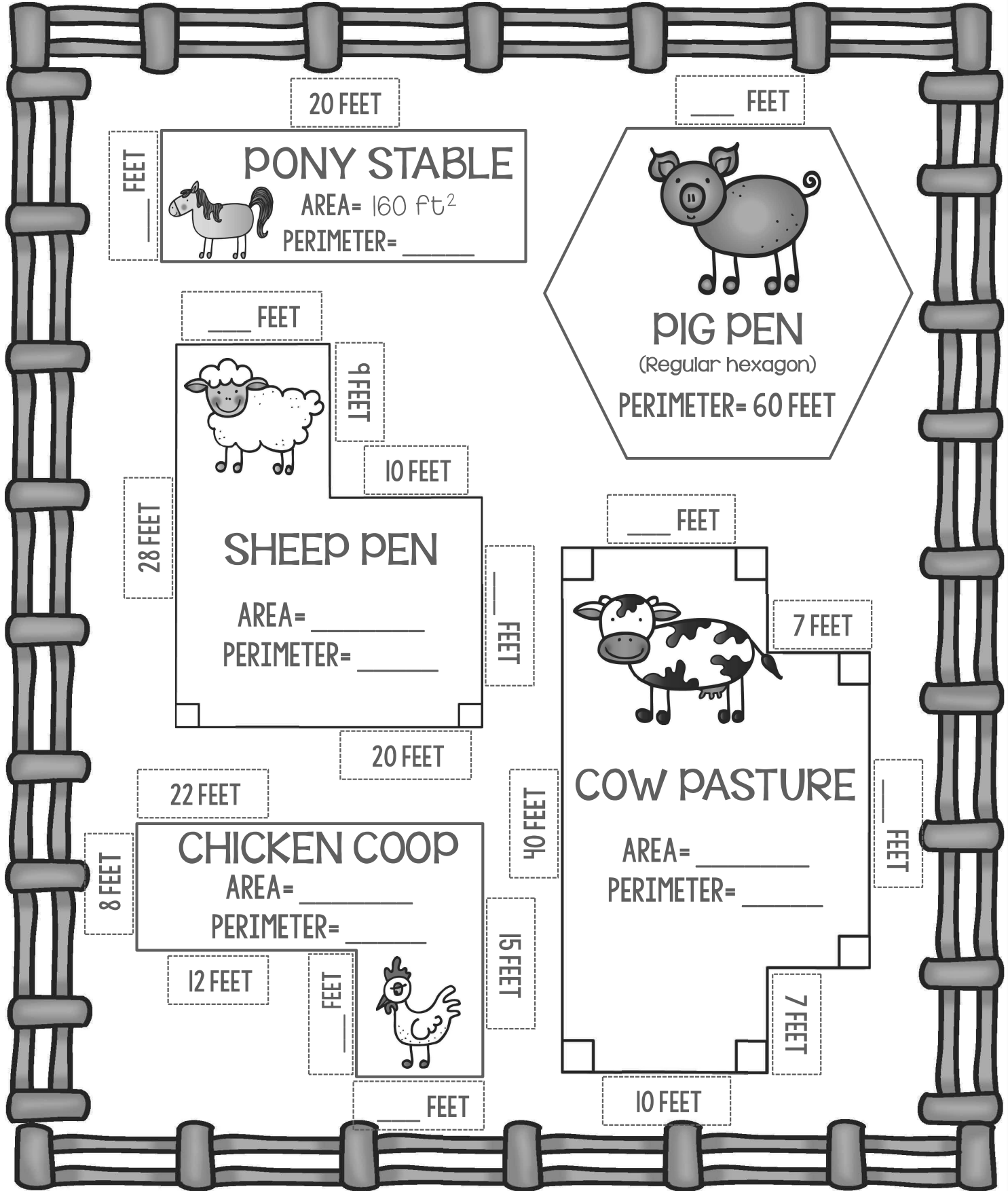
Add at least three more parts to your park. Draw them on your graph paper and be sure to find their area and perimeter.

NEW PARK ELEMENT	DIMENSIONS	PERIMETER	AREA



PETTING ZOO PONDERINGS

Your city is a bit too small for a zoo, so you opted for a petting zoo instead. Fill in the missing measurements on the drawing of the zoo below. (Remember, the drawings are not perfectly to scale!)





CITY OF SHAPES EXTENSIONS

LOOK AT YOUR ORIGINAL LAYOUT OF THE ENTIRE CITY. HOW MUCH AREA REMAINS?

THE OUTDOOR MALL MEASURES THIRTY BY SIX UNITS. SEPARATE THE MALL INTO INDIVIDUAL STORES THAT ALL HAVE THE SAME DIMENSIONS. THE STORES SHOULD FIT PERFECTLY INTO THE MALL WITH NO EXTRA SPACE.

THE MOVIE THEATRE MEASURED FIVE BY ELEVEN UNITS ON YOUR ORIGINAL PLAN. ON A PIECE OF GRAPH PAPER, TRY SCALING IT TO THREE TIMES THAT SIZE. THEN, ADD THEATRES, A CONCESSION STAND, RESTROOMS, AND A TICKET STAND. FIND THE AREA AND PERIMETER OF EACH INDIVIDUAL SECTION.

IF YOU COULD ADD ONE MORE BUILDING TO YOUR CITY, WHAT PURPOSE WOULD IT SERVE? DESIGN IT!