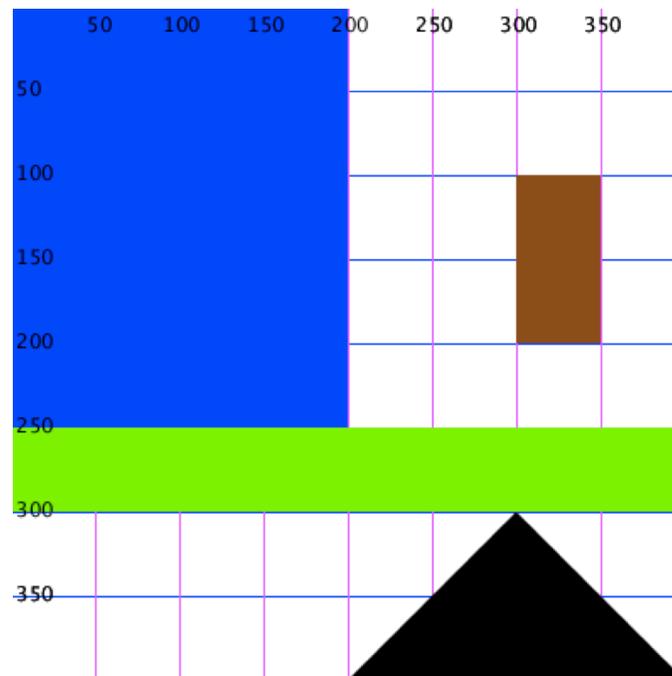


Name: \_\_\_\_\_

## Processing: More puzzle games!

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Today we are expanding on last week's puzzles programming! ***Our goal is to practice moving and creating ellipses, rectangles, and triangles to create pictures.*** We will start with the same 400 by 400 grid as last week with some extra shapes already drawn for you.



### Starting Code

```
size(400, 400);
background(255);
//the horizontal lines
stroke(0, 0, 255);
line(0, 50, width, 50);
line(0, 100, width, 100);
line(0, 150, width, 150);
line(0, 200, width, 200);
line(0, 250, width, 250);
line(0, 300, width, 300);
line(0, 350, width, 350);
//the vertical lines
stroke(255, 0, 255);
line(50, 0, 50, height);
line(100, 0, 100, height);
line(150, 0, 150, height);
line(200, 0, 200, height);
line(250, 0, 250, height);
line(300, 0, 300, height);
line(350, 0, 350, height);
//house
fill(153, 76, 0);
rect(300, 100, 50, 100);
//roof
fill(0, 0, 0);
triangle(200,400,300,300, 400,400);
//grass
fill(0, 255, 0);
rect(0, 250, 400, 50);
```

**TODO: Change the numbers in the starting code to move the shapes and recreate the puzzle 1 below. Add new shapes to create puzzles 2 and 3.**

For each of these puzzles you need to think about how to make the shape draw where you want it to go (use the grid to help you!)

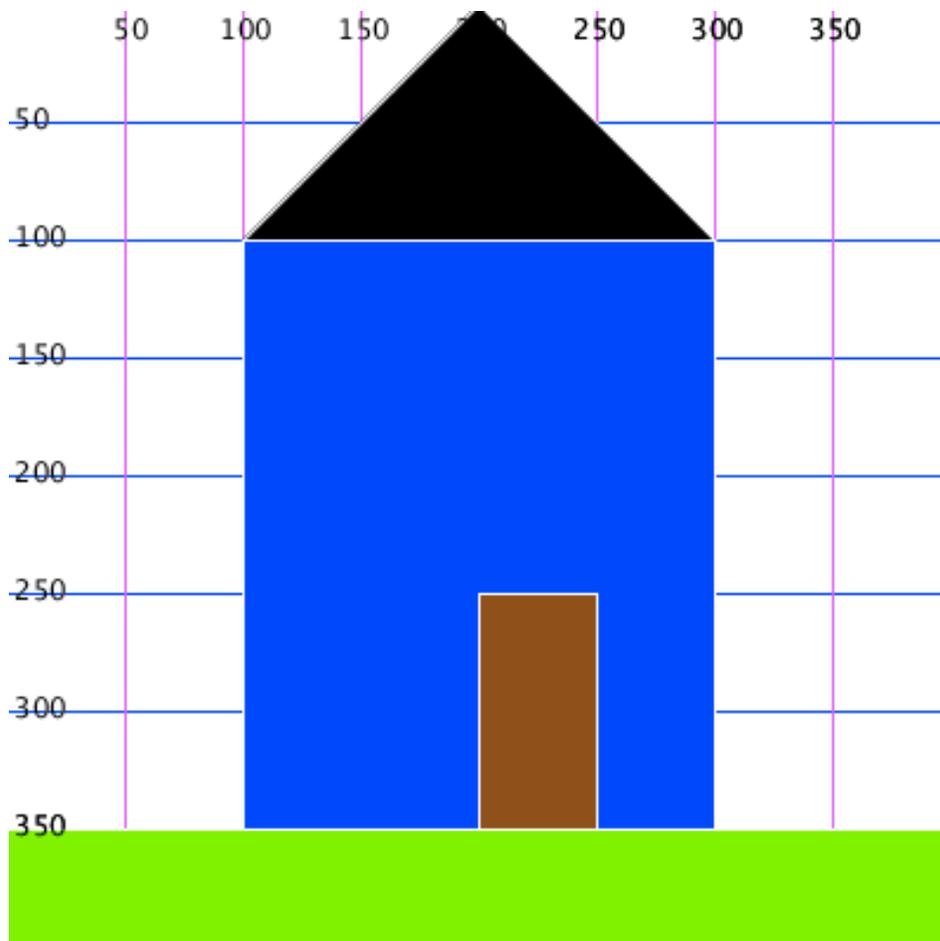
Recall that the shape commands are:

- `ellipse(x, y, width, height);`
- `rect(x, y, width, height);`
- `triangle(x1,y1, x2,y2, x3,y3);`

### **Puzzle 1 (intro level):**

This puzzle requires you to take the 4 shapes drawn from the starting code and change the numbers so that the picture matches the one below.

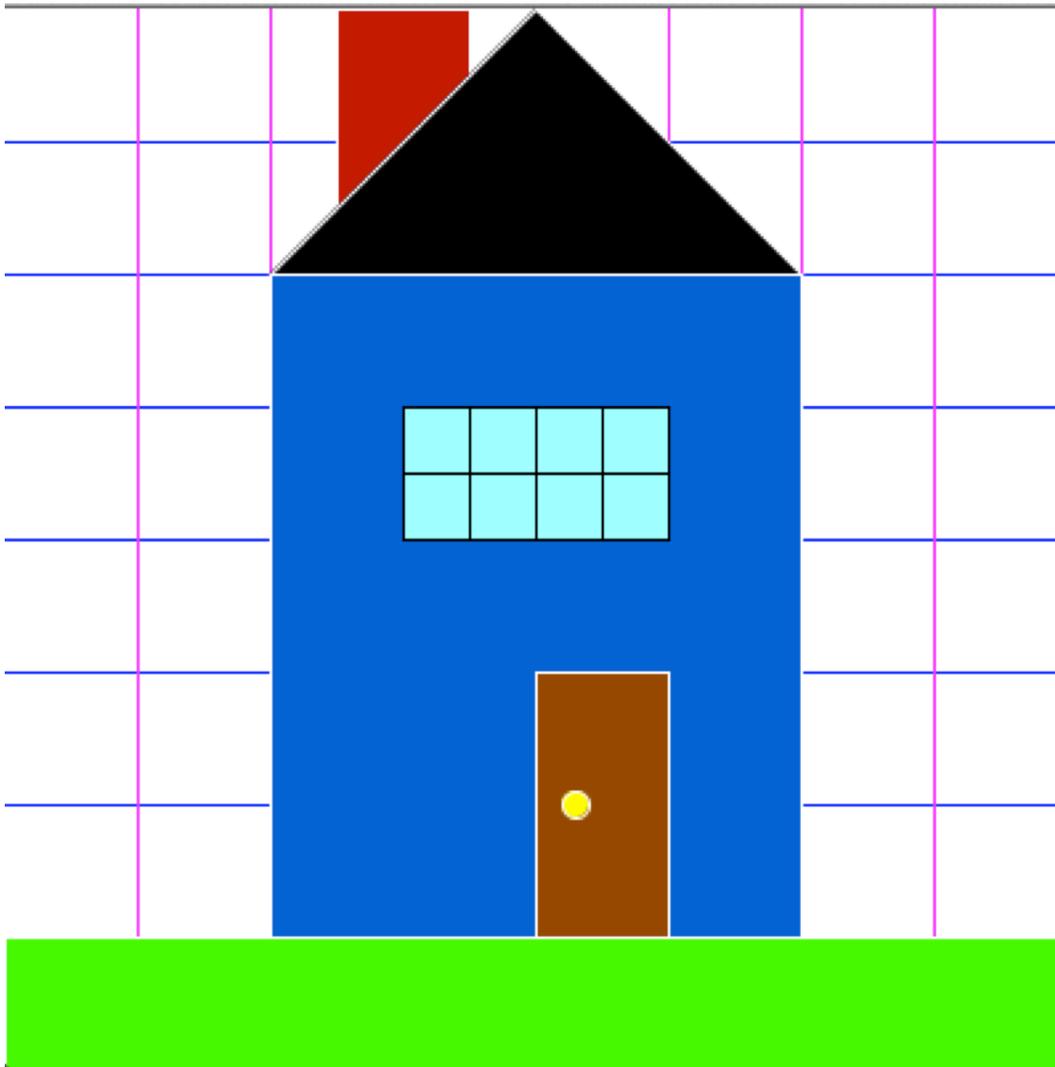
Suggestion - Starting with the grass and building up, move one shape at a time until it fits into the picture.



## Puzzle 2 (middle level):

Add a window, door knob, and chimney to make the house look more realistic! There are two different ways to draw the window...see if you can come up with both! The line command may be useful:

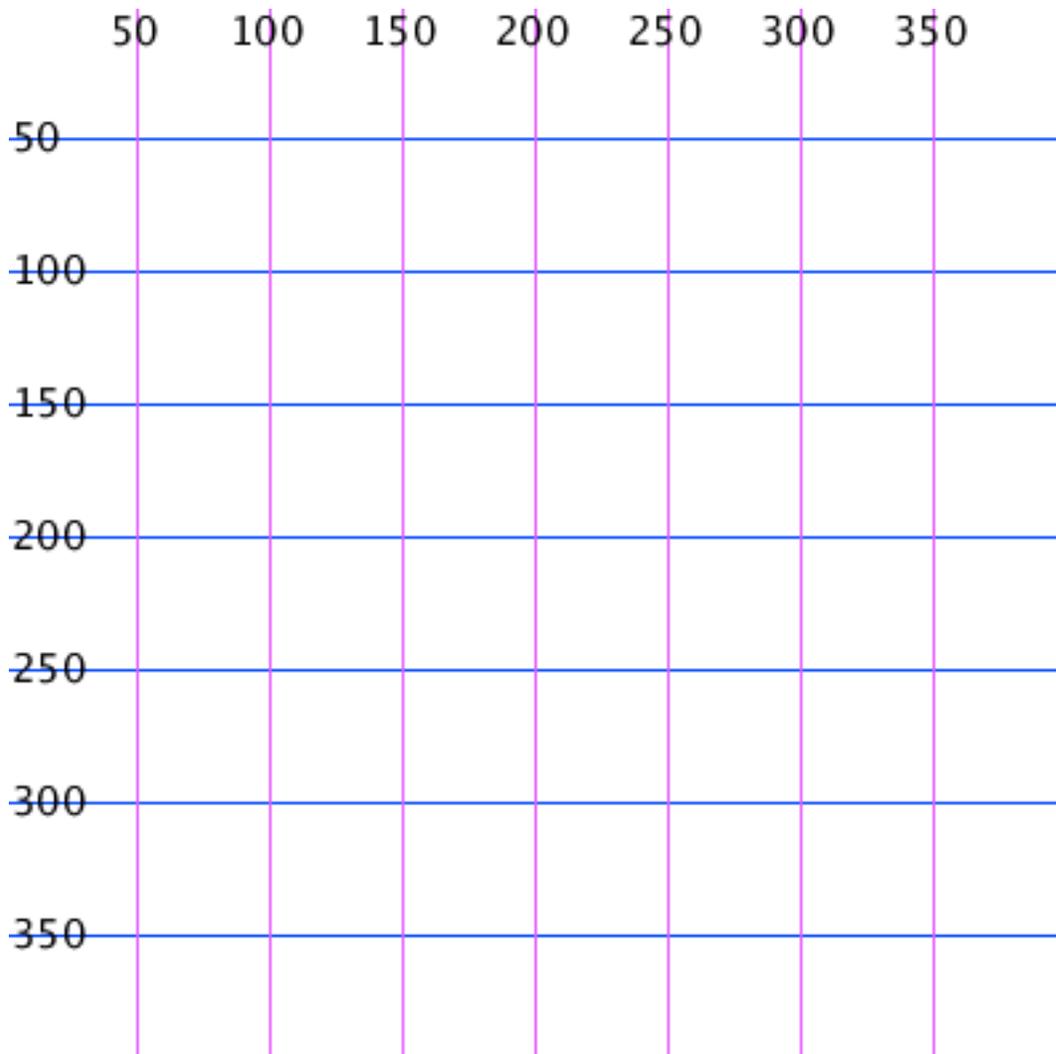
- `line(x1,y1, x2,y2);`



Hints:

- One way to draw the window involves 8 rectangles and the other involves 1 rectangle and 4 lines.
- If your chimney is showing up in front of your roof, think about the order that you draw your shapes in.

**Puzzle 3:** Make a puzzle for a friend to try! Keep adding to your house or start from scratch but make sure you use at least two different shapes. Once you've made your own puzzle, trade with a friend and try to make their puzzle while they attempt your puzzle. You can use the grid below to draw out your puzzle before starting to put in the code.



//notes for the teacher

If the students choose to use the line command, another command that the students might find useful is the stroke command.

```
stroke(0); or stroke (number,number,number);
```

The stroke command will color the line that is around an object (or in this case it will just color the line drawn).

There is an animation hidden in the code for the house. Once a student is done with their house, you could show them towards the very bottom of the code a section that looks like this...

```
void draw() {  
  background(255);  
  anim = false;  
  if (grid) {  
    drawGrid();  
  }  
}
```

just change the 'anim = false;' to 'anim = true;' and run the program again

One mistake that has been happening...students will make changes in their code, yet there does not seem to be any difference in the picture. It was discovered that the students had accidentally put down two copies of their code in the saved document and then placed both sets of code. That second set of code (that was so far down the page it wasn't even being seen) was the one that would be seen on the screen since it came last...order is very important in processing.

Another accident that seems to happen frequently is that students erase the brace '}' that comes after the line for the door. We've tried to alter the setup of the code (pushed the brace farther down the page) to help avoid this problem.