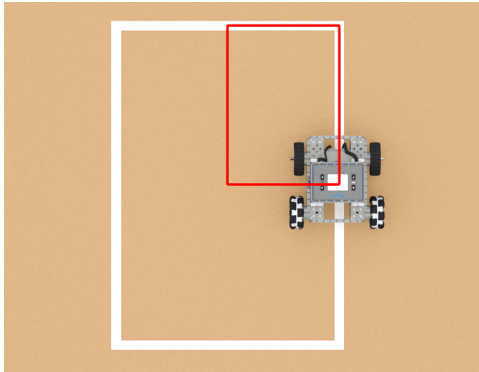




It's All Relative

Use multiplication to reduce a scale model.

Step by Step

1. [Build the BaseBot](#) and tape a rectangle 30cm (300mm) by 24cm (240mm) to the floor.
2. Build the code shown in the image to the right. Download and run the project. The project will direct the BaseBot to “trace” over the taped rectangle. This rectangle will be considered to be at full scale (original in proportion and size)
3. Think about what you would need to do if the full scale is too large. Can you make a rectangle half the size of the original?
4. Use the Scale Factor of $\frac{1}{2}$ (the number all lengths are multiplied by) to find the new height and width and replace the original parameters with the new scaled ones.
5. Place your BaseBot exactly halfway down the longer line and run the program. It should make a rectangle as shown in the picture.
6. What happens if you scale it down again by half?

```
# Begin project code
def when_started1():

    for repeat_count in range(2):
        drivetrain.drive_for(FORWARD, 300, MM)
        drivetrain.turn_for(LEFT, 90, DEGREES)
        drivetrain.drive_for(FORWARD, 240, MM)
        drivetrain.turn_for(LEFT, 90, DEGREES)
```

‘LEVEL UP’

- **Scale it Up-** Use a scale factor of 2 and explore how the Basebot enlarges the rectangle.
- **Triangles-** Measure out a large triangle. Follow the same steps as you did for the rectangle and try to scale it down by $\frac{1}{2}$.

Pro Tips

- To autofill a command line in VEXcode, right click on an open command line, then press CTRL and the space bar at the same time. This will open a window with a collection of commands you can pick.

Standard: CSTA 2-AP-13: Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.