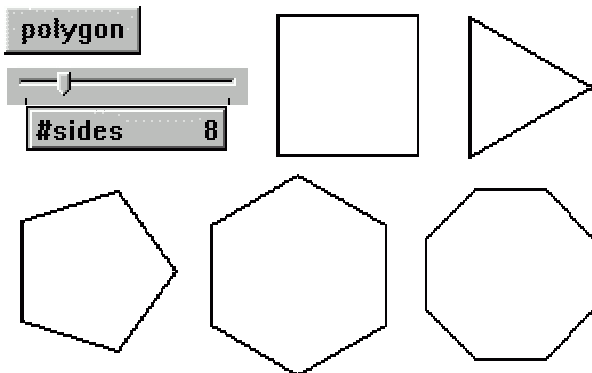


# Polygon Maker

## A MicroWorlds Activity Page



Start by writing commands in the command center to draw a square, such as these:

```
pd
fd 100
rt 90
fd 100
rt 90
fd 100
rt 90
fd 100
rt 90
```

What happens if you change the number after each *fd*?  
What happens if you change the number after each *rt*?

Since you are repeating 2 commands 4 times, you can put the 2 commands in brackets and use a repeat command:

```
repeat 4 [fd 100 rt 90]
```

How many degrees does the turtle end up turning in all?

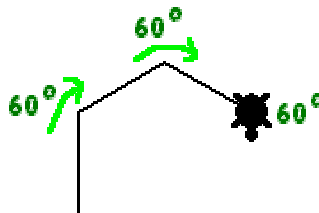
Now see if you can make a triangle: how much do you need to turn right?  
How much does the turtle end up turning in all?

```
repeat 3 [fd 100 rt ?]
```

To draw a complete, closed shape, the turtle will end up turning in a full circle. There are 360 degrees in a circle. We are measuring the outside angles as the turtle turns. Try a few experiments:

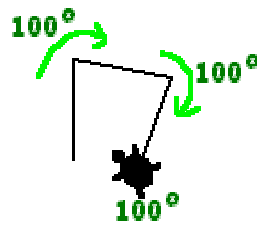
```
repeat 3 [fd 100 rt 60]
```

(The turtle didn't turn enough!)



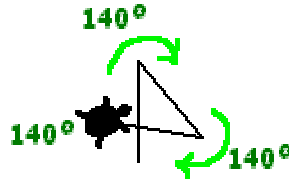
```
repeat 3 [fd 100 rt 100]
```

(not quite enough!)



```
repeat 3 [fd 100 rt 140]
```

(too much!)



You can let the computer do the math for you! Try this:

```
repeat 3 [fd 100 rt 360 / 3]
```

/ is the division sign. Be sure to leave a space before and after it.

Now control the number of sides with a slider! Place a slider on your project page and rename it. Set the minimum to 3. (You will want at least 3 sides.) Set the maximum to at least 20. Use the name of the slider in a procedure. Write your procedure on the procedures page. If your slider is named *#sides*, write:

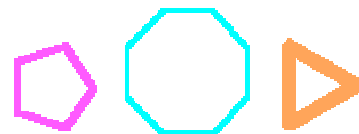
```
to polygon  
repeat #sides [fd 100 rt 360 / #sides]  
end
```

Add another slider named *length* to control the length of each side:

```
to polygon  
repeat #sides [fd length rt 360 / #sides]  
end
```

Add more sliders to make polygons of any thickness or color. This procedure uses two extra sliders named *howthick* and *color?*:

```
to polygon  
setpensize howthick  
setc color?  
repeat #sides [fd length rt 360 / #sides]  
end
```



Make a button named *polygon* and another named *cg* to erase your drawings.