

Graphics: Reminders

Structure of Code

Graphics can accept just one primitive easily.

```
Graphics[Disk[{0, 0}, 1]]
```

But if you try to put more than one primitive in, you get an error message. It says something about an improperly formatted option.

```
Graphics[Disk[{0, 0}, 1], Rectangle[{0, 0}, {2, 2}]] (* This will give an error *)
```

The reason you get an error is because the first argument to Graphics should be a list. The second, third, etc. arguments are options. The following example will now work.

```
Graphics[{Disk[{0, 0}, 1], Rectangle[{0, 0}, {2, 2}]}]
```

Once you start adding more primitives and directives, you will want to organize your code better to see what is going on. Note that the directives (colors, thickness, etc.) are in a list { } for each corresponding primitive.

```
Graphics[{
  {Red, Disk[{0, 0}, 1]},
  {Blue, Rectangle[{0, 0}, {2, 2}]}
}]
```

Now if you want to start adding options such as Background, Axes, and PlotRange, these need to be listed after the main list of primitives. They all need to be separated by commas.

```
Graphics[{
  {Red, Disk[{0, 0}, 1]},
  {Blue, Rectangle[{0, 0}, {2, 2}]}
}, Axes → True, PlotRange → 5, Background → Lighter[Green, 0.8]]
```

Common Error: Note that if you forget to put a comma between primitives (or sometimes in other places) you get an error message that refers to "Times." This is because without the comma, *Mathematica* is trying to multiply the two parts together.

```
Graphics[{
  {Red, Disk[{0, 0}, 1]}
  {Blue, Rectangle[{0, 0}, {2, 2}]}
}, Axes → True, PlotRange → 5, Background → Lighter[Green, 0.8]]
(* This will give an error *)
```

Practice Finding Errors

Type in the code below *exactly* as it is given here. This will produce error messages. Look at the error messages then see if you can figure out what needs to be fixed in order to see the picture. Fix the code.

```
In[5]:= Graphics[{
  {Orange, Disk[{-2, 0}, 1, {90 Degree, 270 Degree}]},
  {Orange, Rectangle[{-2, -1}, {-1, 1}]},
  {Orange, Polygon[{-1, 1}, {1, -1}, {1, 1}, {-1, -1}]},
  {Blue, Circle[{-2.5, 0.5}, 0.1]},
  {Red, Thick, Circle[{-2.5, -0.25}, 0.5, {250 Degree, 360 Degree}]},
  Axes → True, PlotRange → 3, Background → Lighter[Blue, 0.3]}]
```