

## Lesson 4 (1 day)

### Lesson Overview

In this exercise, students will use variables. Variables are just names that refer to something else in your code. This allows the program to be read more fluidly and more like English. You can see that so far we are trying to build skills so that they can read the program. It will be beneficial in the long run so that students can become more and more acclimated to looking at code as a reading text, not something foreign to them.

### Activity

Review what the last few lessons taught students. They can now read things and do math in the language. The next step is to learn about variables. In programming a variable is nothing more than a name for something so you can use the name rather than the something as you code. Programmers use these variable names to make their code read more like English, and because they have lousy memories. Explain that if they didn't use good names for things in their software, they'd get lost when they tried to read their code again. These are the same kind of variables in math equations. I always like to use the example of  $E=mc^2$ . Each variable represents a hard value of something so it allows scientist to read the formula more fluidly.

This exercise is a little tricky so remind the students of the tricks to help them out.

1. Write a comment above each line explaining to yourself what it does in English.
2. Read your .rb file backwards.
3. Read your .rb file out loud saying even the characters.

```
1 cars = 100
2 space_in_a_car = 4.0
3 drivers = 30
4 passengers = 90
5 cars_not_driven = cars - drivers
6 cars_driven = drivers
7 carpool_capacity = cars_driven * space_in_a_car
8 average_passengers_per_car = passengers / cars_driven
9
10 puts "There are #{cars} cars available."
11 puts "There are only #{drivers} drivers available."
12 puts "There will be #{cars_not_driven} empty cars today."
13 puts "We can transport #{carpool_capacity} people today."
14 puts "We have #{passengers} passengers to carpool today."
15 puts "We need to put about #{average_passengers_per_car} in each car."
```

---

**Note:** The `_` in `space_in_a_car` is called an underscore character. Find out how to type it if you do not already know. We use this character a lot to put an imaginary space between words in variable names.

---