

# CS161: Introduction to Computer Science

## Lab Assignment 2

For today's lab, you'll gain practice using **variables**, **arithmetic operators**, and **casting**. To get started, open BlueJ and create a new project called `lab2`. Make sure you create this new project inside your `cs161` directory.

### Warm Up

With your partner, answer exercise 2.11 from the textbook. Write your answers in the README file.

Check that your answers are correct by creating a new Java class called `BookExercise` and copying the code from the book into the `main()` method. Insert print statements and run the `main()` method to check that your answers are correct. For example,

```
public static void main(String[] args){
    int iResult, num1 = 25, num2 = 40, num3 = 17, num4 = 5;
    double fResult, val1 = 17.0, val2 = 12.78;

    iResult = num1 / num4;
    System.out.println("iResult equals " + iResult);
}
```

### Arithmetic Operations

Create a new Java class named `Arithmetic` with a `main()` method. You should complete the following exercises inside the `main()` method. Use comments to organize your code and make it clear where each exercise begins.

Note: Part of what you are practicing this week is the use of the `final` keyword. Use `final` whenever you have a constant – i.e., a variable whose value is a constant.

1. Create a variable to hold the radius  $r$  of a circle. Given the radius, compute and print the circumference and area. The equations you'll need are,

$$c = 2 * \pi * r$$
$$a = \pi * r^2$$

You can use 3.1415 for  $\pi$

2. Create a variable to hold some amount of Japanese currency (yen). Compute and print the equivalent amount of US dollars and cents. The current exchange rate between yen and dollars is:

$$1 \text{ yen} = 0.009129 \text{ dollars}$$

For example, if we have 2400.50 Japanese yen your code might print:

```
2400.5 Japanese yen is equivalent to:
US dollars: 21
US cents: 0.8445500000000017
```

Ignore the long decimal. (Hint: you will need to use casting to separate out the dollars versus the cents).

3. If you were to travel to the surface of another planet, although your *mass* would stay the same, your *weight* would change. Create a variable to hold a person's weight (on Earth). Using the table below, choose 3 different planets and compute how much that person would weigh on the surface of those planets. Print out the person's weight on Earth and the planets you chose.

Planet	Gravitational Factor
Sun	27.9
Mercury	0.38
Venus	0.91
<b>Earth</b>	<b>1.0</b>
Moon	0.17
Mars	0.38
Jupiter	2.54
Saturn	1.08
Uranus	0.91
Neptune	1.19
Pluto	0.06

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## Submitting your lab assignment

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Rename your `lab2` folder with both you and your partner's name. For example, `lab2_John_Doe_Jane_Doe`. After renaming, zip (i.e. compress) and submit via Moodle.