Topics: the `Math` class, selection (conditional), input

Reading (JV): Sec 2.6 (exclude the `Random` class), Sec 2.7, 3.1, 3.2

The `Math` class

A collection of basic mathematical functions. See Lewis & Loftus p. 84 for details.

```
double tmp = Math.exp(1);
tmp = 3*Math.sin(2);
tmp = Math.random();
tmp = Math.floor(Math.random());
```

Conditional Statement

```
if ( condition1 )
   statement1;


if ( condition1 )
   statement1;
else
   statement2;


if ( condition1 )
   statement1;
else if ( condition2 )
   statement2;
else
   statement3;
```

•At most one statement is executed
•At most one else clause

Example 1: Bacteria, re-visited

Bacteria B reproduces only when the temperature is above 12°C. The rate is a function of the temperature t in °C: $(t\text{-}12)^2$. Given variable **`temp`** which contains the temperature, write a ***program segment*** to compute and display the rate at which bacteria B reproduces.

User Input

See Lewis & Loftus Sec 2.7 for details on the **`Keyboard`** class.

Examples:
```
var1 = Keyboard.readInt();
var2 = Keyboard.readDouble();
var3 = Keyboard.readChar();
var4 = Keyboard.readBoolean();
```

Example 2: Shipping cost

A shipping company calculates shipping prices as follows:

- A package weighing 5 lbs (pounds) or less costs $12, excluding tax.
- A package weighing over 5 lbs and less than 10 lbs costs $18, excluding tax.
- A package weighing at least 10 lbs costs $20 plus $1.50 for each pound over 10 lbs. For example, a 10.5 lb package costs $20.75 to ship, excluding tax.
- Tax (8%) is charged for shipment to Region 1. No tax is charged for shipment to Region 2.

Write a program segment that

- prompts the user for the package weight (variable **`wt`**) and destination code (variable **`code`**). The code must be entered as 1 or 2.
- calculates the shipping charge (including tax) and stores the result in variable **`charge`**
- prints the value of **`charge`** in a descriptive sentence.