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: \((t-12)^2\). 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.