Topics: Selection (cont’d), MATLAB built-in functions, introduction to iteration
Reading (ML): Sec 3.3, 3.4.1–3.4.3, 4.1

Selection

Example: Bacteria B reproduces only when the temperature is above 12°C. The rate is a function of the temperature \( t \) in °C: \( (t - 12)^2 \) per hour. When the temperature drops below 0°C, the bacteria die at a rate of 10 per hour. Calculate the rate at which bacteria B increases given some temperature entered in °F.

\[
\begin{align*}
\text{if } (\text{tempC}>\text{tRep}) \\
\text{rate} &= (\text{tempC}-\text{tRep})^2;
\end{align*}
\]

else
\[
\text{rate} = 0;
\]
end
MATLAB Built-in Functions... Fun with MATLAB

MATLAB provides numerous built-in variables and functions. Below is a collection of commands that can be typed in the command window to illustrate some of the built-in features:

```matlab
% This is a comment

% Variables, constants, and simple calculations:
a = 100
b = 99
format compact
a/b
ans
y = ans
format long
y
format short
y
(3*2)^2
(3*2)^2;
x = 2; y = x^x; z = y^y
format loose

% Functions:
sqrt(x)
pi % a built-in variable
cos(pi)
abs(ans)
abs(cos(pi))
exp(ans)
rand(1)
mod(5,2)
help mod
lookfor mod
```

Iteration

How do I get from the front of the classroom to the back?

Important features:

- Task can be accomplished if some step is repeated a number of times

- Must be able to quantify success ⇒ __________________________________________________________________________

- Must have a starting point

- Must keep track of progress ⇒ __________________________________________________________________________