Summary of MATLAB Onramp

Basic syntax

Example	Description
x = pi	Create variables with the equal sign (=). The left-side (x) is the variable name containing the value on the right-side (pi).
y = sin(-5)	You can provide inputs to a function using parentheses.

Desktop management

Function	Example	Description
save	save data.mat	Save your current workspace to a MAT-file.
load	load data.mat	Load the variables in a MAT-file to the Workspace.
clear	clear	Clear all variables from the Workspace.
clc	clc	Clear all text from the Command Window.
format	format long	Change how numeric output is displayed.

Array types

Example	Description
4	scalar
[3 5]	row vector
[1;3]	column vector
[3 4 5;6 7 8]	matrix

Evenly-spaced vectors

Example	Description
1:4	Create a vector from 1 to 4, spaced by 1, using the colon (:) operator.
1:0.5:4	Create a vector from 1 to 4, spaced by 0.5.
linspace(1,10,5)	Create a vector with 5 elements. The values are evenly spaced from 1 to 10.

Creating matrices

Example	Description
rand(2)	Create a square matrix with 2 rows and 2 columns.
zeros(2,3)	Create a rectangular matrix with 2 rows and 3 columns.

Indexing

Example	Description
A(end,2)	Access the element in the second column of the last row.
A(2,:)	Access the entire second row
A(1:3,:)	Access all columns of the first three rows.
A(2) = 11	Change the value of the second element an array to 11.

Array operations

Example	Description
[1 1; 1 1]*[2 2;2 2] ans = 4 4 4 4	Perform matrix multiplication.
[1 1; 1 1].*[2 2;2 2] ans = 2 2 2 2	Perform element-wise multiplication.

Multiple outputs

Example	Description
[xrow,xcol] = size(x)	Save the number of rows and columns in x to two different variables.
[xMax,idx] = max(x)	Calculate the maximum value of x and its corresponding index value.

Documentation

Example	Description
doc randi	Open the documentation page for the randi function.

Plotting

Example	Description
plot(x,y,"ro-","LineWidth",5)	Plot a red (r) dashed (--) line with a circle (o) marker, with a heavy line width.
hold on	Add the next line to existing plot.
hold off	Create a new axes for the next plotted line.
title("My Title")	Add a label to a plot.

Using tables

Example	Description
data.HeightYards	Extract the variable HeightYards from the table data.
data.HeightMeters = data.HeightYards*0.9144	Derive a table variable from existing data.

Logicals

Example	Description
[5 10 15] > 12	Compare a vector to the value 12.
v1(v1 > 6)	Extract all elements in v1 that are greater than 6.
x(x==999) = 1	Replace all values in x that are equal to 999 with the value 1.

Programming

Example	Description

if x > 0.5
  y = 3
else
  y = 4
end
	If x is greater than 0.5, set the value of y to 3.
	
	Otherwise, set the value of y to 4.

for c = 1:3 disp(c) end	The loop counter (c) progresses through the values 1:3 (1, 2, and 3). The loop body displays each value of c.