1. Arithmetic operations 1+1, 3/5 …
2. Logical operations 1 == 1, 1 ~= 1, 1 && 0, 1 || 0, !0, ~1, xor(1,0)
3. Change the prompt PC1(‘New prompt’)
4. ; - suppress the output
5. Pi – this is pi
6. disp(pi), disp(sprint(‘2 decimals: %0.2f’, pi))
7. format long, format short
8. Define matrix A = [1 2; 3 4; 5 6; ]
9. V = 1:0.1:2 – vector 1 1.1 1.2 … 2
10. V = 1:7 – vector 1 2 … 7
11. Generate matrix with 1 – ones(2, 4)
12. Zeros matrix - zeros(2,8)
13. Random matrix - rand(2,5)
14. Gaussians distribution - randn(1,5)
15. Identity matrix - eye(4)
16. Help command – help eye
17. Size of a matrix size(a), size(A,1)
18. Size of the longest dimension length(A)
19. Current path – pwd, list - ls, change the path – cd
20. Load data – load filename, load(‘filename’)
21. Show all variables – who, whos
22. Delete a variable – clear A, delete all - clear
23. Save a data – save filename variable
24. Index of a matrix - A(2,4), A(2,:) (: means all elements), A(:,2:5)
25. More indexation - A([1 3], :) -1 and 3 row, all columns
26. Assignment – A(:, 2) = [1;3;6]
27. Append a column to the right – A = [A, [1;2;3]] or A = [A B]
28. Append a row - A = [A; [1 2 ... R]] or A = [A; B]
29. Put all elements of A into a single vector – A(:)
30. Matrix operations - A\*B, A + A
31. Element wise operations – A .\* B, A .^2, 1 ./A, log(A), exp(A), sin(A), abs(A), -A, A + 2
32. Transpose A’
33. Matrix/vector operations max (column wise for matrix) – val = max(v), [val, ind] = max(v)
34. Element wise compare – v < 5, returns vector, and find(v < 4) returns elements vector for condition. For matrix [r,c] = find(A < 5)
35. Magic matrix – magic(4) (use for examples)
36. Sum and product – sum(A), prod(A) – return vectors for columns (sum(A,2) rows wide)
37. Floor and ceil – floor(A), ceil(A)
38. Max of two matrixes max(A,B), returns matrix with max from bouth
39. Max for the dimensions – max(A,[],1) columns, max(A,[],2) rows
40. Invers – pinv, inv
41. Flip – flipud(A)
42. Plot – plot(x,y), x,y – vectors, plot(x,y,’r’) –red color for a line
43. Freeze the previous figure -hold on
44. Labels for the axes – xlabel(‘label’), ylabel(‘bl bla’)
45. Labels for the lines - legend (‘sin’, ‘cos’)
46. Title – title(‘Title’)
47. Save the picture – print –dpng ‘file.png’ (can be different format, use help)
48. Close the plot – close
49. Open more than one figure – figure(1); plot(… ; figure(2); plot(…
50. Divedes plot to a 1x2 grid and access 1st element, 2nd element – subplot(1,2,1); plot(… ; subplot(1,2,2); plot(…
51. Set ranges – axis( [-1 1 -2 2])
52. Clear figure –clf
53. Visualise matrix – imagesc(A) (and colorbar for a bar)
54. for i=1:10; …; end
55. for i=vector; …; end
56. Can use – break, continue
57. while i <= 6, … ; end
58. if I == 9, …; elseif g ==6, …; else …; end
59. Exit – exit or quit
60. Function – file functionname.m

function x = functioname(y)

or function [x1,x2] = functionname(y1,y2) ( [a,b] = functionname(c,d) )

1. Searchpath - addpath(‘path’)
2. Random vector 1 - N - randperm(N), for example (2,5,4,1,3)
3. Read an image - imread('bird\_small.png')
4. Reshape array - reshape(A, newRowsNumber, newColsNumber)
5. Mean - mean(A), standart deviation - std(B)

A = [1 2 10; 3 4 20; 9 6 15];

C = bsxfun(@minus, A, mean(A));

D = bsxfun(@rdivide, C, std(A))