Quiz questions for Chapter 1, Lecture 1.

The correct answer is highlighted.

1. Create two variables by assigning 4 and 5 to x and y. Assign the value of x + y to the variable z. What two statements do this correctly?

   a. 4 = x; 5 = y; x+y = z
   b. x = 4; y = 5; z = x+y
   c. x = 4; 5 = y; z = x+y

2. To convert angles in radians to angles in degrees, which factor do you need to multiply radians to covert to degrees correctly?

   a. 2*pi/360
   b. 360/(2*pi)
   c. 180/(2*pi)

3. Consider the row of numbers generated by the command
   >> x = 1:1:11; % How many numbers are in the list?

   a. 10
   b. 12
   c. 11

4. Consider the row of numbers generated by the command
   >> x = 1:2:11; % How many numbers are in the list?

   a. 5
   b. 6
   c. 7

5. Plot the sine of x from 0 to pi. To do this, which command do you enter?

   a. x = 0:2*pi/100:2*pi; plot(x,sin(x))
   b. x = 0:2*pi/100:pi; plot(x,sin(x))
   c. x = pi:2*pi/100:2*pi; plot(x,sin(x))

Quiz questions for Chapter 2, Lecture 2.

The correct answer is highlighted.

1. Which of the following names are valid, variable names?

    a. pay-plan
    b. 22d
    c. watt

2. Does MATLAB recognize the difference between `a` and `A`?

    a. Yes
    b. No

3. If you `clear` and assign the variables as shown and then execute who, what variables are in the work space?
    >> clear; a = 5; Bab = 3;

    a. a ans Bab
    b. a Bab
    c. A Bab

4. Create an array by executing the following command:
    >> A = [[1;2;3] , [4;5;6] , [7;8;9]]
    >> A(2) % is equal to what number in the array?

    a. 4
    b. 2
    c. 5

5. Consider the array created by the following command:
    >> A = [[1;2;3] , [4;5;6] , [7;8;9]]
    >> A = A'
    >> A(2) % is equal to what number in the array?

    a. 4
    b. 2
    c. 6

Quiz questions 3:

The correct answer is in bold.

1. The Command Window is the MATLAB window where we enter commands.
   True or False

2. Which of the following windows displays previous commands you have entered?
   Command Window
   History Window
   Old Commands Window
   Command History Window
   Entered Commands Window

3. The file type that we save MATLAB programs in is called a:
   Function file
   M-file
   Code file
   Doc-file
   X-file

4. The result of two-hundred-eighty-three times pi divided by seven is (using MATLAB):
   40.0000
   0.0777
   630.5719
   127.0101
   3.14156

5. The clc command exits MATLAB. True or **False**

6. MATLAB automatically puts comments in our code when we create a code and save it in an M-File. True or **False**

7. Which of the following characters is used by MATLAB to perform multiplication?
   ~
   *** → This is the correct answer.**
   +
   %
   &

Quiz questions 4:

The correct answer is in bold.

1. A scalar is a 2-by-2 array. True or **False**
2. Vectors are 1-by-n or n-by-1 arrays. **True** or False
3. A matrix is an m-by-n array, where m and n are integers. **True** or False
4. To multiply 2 arrays element-by-element, what operator must you use?
   +
   *
   .* → This is correct answer
   ./
   -
5. When you create (or assign) arrays, a comma separates the columns in each row and a semicolon denotes the start if the next row. **True** or False
6. Which of the following are valid variable names:
   PLANCKSCONSTANT
   _age
   3rdJuniper
   first_circle
   score

Quiz questions 5:

The correct answer is in bold.

1. If

```
a =
       1  2  3
       4  5  6
```

then which of the following is the result of a' ?Which of the following is the result of a' ?

```
6  5  4
3  2  1

6  5
4  3
2  1

1  4          Correct answer.
2  5
3  6

4  1
5  2
6  3
```

2. If

```
a =
    1  2  3
    4  5  6
```

then what command extracts the second column of matrix a?

a(:,2)
a(3,2)
a(2,:)
a(;,2)
a(end,:)
a(2,;)

3. If

```
a =
    1  2  3
    4  5  6
```

   then what is the result of the command a(2,1)? **Answer is 4.**

4. When multiplying matrices element-by-element, a dot-operator must be used. **True** or False

5. Is there a dot-operator for the addition of arrays element-by-element? Yes or **No**

6. When dividing matrices element-by-element, a dot-operator must be used. **True** or False

Quiz questions 6:

The correct answer is in bold.

1. For x = Acos(wt), when A = 4 cm, w = 0.6 rad/sec and t = 3sec, what is x
   -0.9088 cm
   -0.2272 cm
   0.2272 cm
   3.8954 cm
   2.6413 cm

2. What is the square root of 338 (to 4 decimal places)? **Answer is 18.3848**

3. What does the command [a, b] = max(x) do?
   Finds the maximum value in vectors a and b.
   Finds the maximum value and its position in vector x.
   Finds the position of the maximum value in vectors a and b.
   Finds the maximum value and minimum value.
   Forms an a by b matrix of maximum values.

4. Compute the sum of the terms in the vector F, where

```
F = [56, 46, 36, 44, 76, 60, 39, 33, 39, 44, 36, 42, 15, 24,100,
144, 45, 34, 33, 23, 47, 59, 47, 33, 54,209, 39, 56, 43, 22, 37,
55]
```

   Answer in 1670.

5. Find the product of the elements in vector R, then divide it by 500, where

```
R = [0.06, 0.4, 36, 4.4, 0.6, 6.0, 3.9, 0.033, 3.9, 4.4, 3.6, 42,
1.5, 0.024, 1, 0.4, 4.5, 4, 0.33, 0.23, 0.47, 5.9, 7, 33, 2.9,
0.9, 0.56, 0.03, 0.22]
```

   Answer is 1.1111

6. Find the standard deviation of F, where

```
F = [56, 46, 36, 44, 76, 60, 39, 33, 39, 44, 36, 42, 15, 24, 100,
144, 45, 34, 33, 23, 47, 59, 47, 33, 54, 209, 39, 56, 43, 22, 37,
55]
```

   Answer is 37.3038

7. What is the tangent of 16 degrees? **Answer is 0.2867**

Quiz questions 7:

The correct answer is in bold.

1. Which one of the following commands is used to read data from a Microsoft Excel file named 'spreadsheet'?

   xlsread('spreadsheet')
   readexcel('spreadsheet')
   readxls('spreadsheet')
   excelread('spreadsheet')

2. Is there an error in the following list of commands?

```
x = 1;
y = 3;
z = 5;
w = log(z - x*y)
```

   Yes or **No**

3. The following command has what kind of error?

   Syntax
   Run-time
   Logical
   There is no error in this line of code.

4. The following commands contain a logical error.

```
% Calculate square root of x
square_root = x.^2;
```

   True or False

5. The following command extracts data from the text file 'data.txt'.

```
uiimport('data.txt.')
```

   True or False

6. Which of the following command lines loads the data from 'test.mat' into the MATLAB workspace?

   open test.mat
   read test.mat
   load test.mat
   loadfile test.mat

Quiz questions 8:

The correct answer is in bold.

1. Which of the following blocks of code does not plot y=10x^2 and y = x^3 on the same figure?

```
  plot(x, 10.^2, x, x.^3);
hold on;
plot(x, 10*x.^2);
plot(x, x.^3);
hold off;
```

figure (1)
plot(x, 10*x.^2);
figure(2)
plot(x, x.^3);

```
figure(1)
plot(x, 10*x.^2, x, x.^3);
```

2. Which of the following lines of code plots y versus x with a red line?

```
plot('r', x, y);
plot(x, 'r', y);
```

plot(x, y, 'r');

```
plot(y, x, 'r');
```

3. Which of the following commands plots y = x^5 with a dashed line, triangle right markers, and in green?

plot(x, x.^5, '-->g');

```
plot(x, x.^5, 'drtg');
plot(x, x.^5, 'dash r-tri green');
plot(x, x.^5, '-g>');
```

4. The hold on command allows the user to plot more than one set of data on a single figure. **True** or False.

5. The following command does what?

```
plot(x, sin(x), 'yp')
```

Plots sin(x) vs. x with a yellow plus sign marker and no line
Plots sin(x) vs. x with yellow pentagram markers and no line

Plots x vs. sin(x) with yellow plus sign markers and no line
Plots x vs. sin(x) with yellow pentagram markers and no line

6. Which of the following sets of commands does not plot e^x and ln(x) on the same figure?

```
 plot(x, exp(x));
hold on;
plot(x, log(x));
hold off;
```

```
 plot(x, exp(x), x, log(x));
```

```
figure(1)
plot(x, exp(x));
figure(2)
plot(x, log(x));
```

```
figure(1)
plot(x, exp(x), x, log(x));
```

7. We can plot several curves on a single figure. **True** or False

Quiz questions 9:

The correct answer is in bold.

1. Which one of the following commands plots a graph in the lower right corners of a 3 x 3 grid of graphs?
   `subplot(3,3,1)`
   `subplot(3,3,3)`
   `subplot(3,3,7)`
   `subplot(3,3,9)`

2. The command pie(z) creates a pie chart of z. **True** of False

3. The built-in command `logxlogy` creates a plot with logarithmic scaling on both the x and the y axes. True or **False**

4. Which of the following commands plots r = sin(theta) in polar coordinates?
   `polar(theta,r);`
   `polar(r,theta)`
   `plot(theta,r)`
   `plot(r,theta)`

5. The polyfit function with degree 3 selected, produces a cubic model for the data
   `x =[1,4,6,9,11,14,15] ,`
   `y = [-2,175,613,2110,3878,8045,9910].`
   It is given by the formula y = 3x^3 - x^2 + x - 5. **True** or False

6. To evaluate the function y = 3x^3 - x^2 + x – 5 over a range of x = 1:100, with coef = [3, -1, -5], which command can you use?
   `polyval(coef, x)`
   `model(coef, x)`
   `polyfit(coef, x)`
   `linereg(coef, x)`

7. If coef=[3, 0, -1, 2, 7] , does polyfit(coef, x) return 3x.^5 - x.^3 + 2x.^2 + 7x? Yes or **No**

Quiz questions 10:

The correct answer is in bold.

1. Given the function `y = x * ln(x)`, compute the definite integral of this function from `x = 17 to x = 23`. Hint: Try using `sym2poly` to get an exact number. **Answer is 359.94.**

2. Given the function `y = x * ln(x)`, find its derivative with respect to `x`. What is it?
   `log(x) + 1`
   `x * log(x)`
   `log(x)`
   `x / log(x)`

3. Given the function `y = x * ln(x)`, what is the value of y at x = 3.25?
   `2.67`
   `3.27`
   `3.83`
   `4.32`

4. Given the function `y = x * ln(x)`, what is the root of `y`?
   `0`
   `1`
   `2`
   `3`

Quiz questions 11:

The correct answer is in bold.

1. Any variable in the workspace can be accessed by a user-defined function. True or **False**

2. Which of the following is NOT a valid name for a function?

```
Poker
Blackjack
Solitare
52 Card Pickup
```

3. The first line of a function that takes as input mass and velocity and outputs kinetic energy would resemble which of the following:

```
function energy = kinetic_energy(mass,velocity)
function[mass,velocity] = kinetic_energy(energy)
kinetic_energy = function(mass,velocity)
[mass,velocity] = function(kinetic_energy)
```

4. A function must return numerical output.True or **False**

5. Write a function that converts lengths from inches to centimeters. **Programming question**

Quiz questions 12:

The correct answer is in bold.

1. In the command `fprintf` within the string statement what operator executes a linefeed?

   `\n`
   `\l`
   `\nl`
   `\new`
   `\new_line`

2. To display formatted output in the command window, we used the *plot* command. True or **False**
3. Which one of the following is a valid placeholder in an `fprintf` statement

   `%d`
   `%n`
   `%p`
   `%r`
   `%v`

4. The *input* command can only take text as input. True or **False**
5. Which of the following commands will ask the user to input a radius and store it in a variable called `radius`?

```
input=radius('Enter a radius: ')
radius=('Enter a radius')
radius=input('Enter a radius')
input(radius)=('Enter a radius: ')
input=('Enter a radius: ')
```

6. Write a program to ask for a number and determine if the number is positive, negative, or neither.

7. Write a program to ask for input of a radiation level and determine if that radiation level is safe. (A level less than 4 curies is safe.)

Quiz questions 13:

The correct answer is in bold.

1. Consider the following assignment of variables:

```
a=3; b=4; c=true; d=1;
```

If the following commands are executed after the assignment of variables what are their truth values? In other words are they **True(1)** or False(0)?

```
a. a|b                      % True or False

b. (a+b)< (b+a)             % True or False

c. ~c&b                     % True or False

d. (b-a)==d                 % True or False

e. abs(b-a) == abs(a-b)     % True or False

f. isnumeric(c)             % True or False

g. isnumeric(d)             % True or False

h. isempty(a)               % True or False

i. c == d                   % True or False

j. (a|b)&c                  % True or False
```

Quiz questions 14:

The correct answer is in bold.

1. Loops are MATLAB constructs that allow a set of commands to be executed multiple times. **True** or False

2. A `for` loop repeats:
   Forever
   Until the user stops the loop
   A set number of times known before the loop is executed
   An unknown number of times
   A set number of times unknown before the loop is executed

3. The vector may be used to increment a `for` loop by using the following construct:
   first : increment : last
   increment : first : last
   last : increment : first
   increment : last : first
   first : last : increment

4. How many times will a `for` loop starting with `for = 1:3:19` execute (or repeat)?
   0
   3
   6
   7
   19

5. A `for` loop construct must end with an `end` statement. **True** or False
6. After the execution of the following loop, what will be the values of the elements of vector `b`?

```
a=[3 7 1 9 11];
for i=1:1:5
     b(i)=a(i)^2 + i;
end
```

   b=[10 51 4 85 126]
   b=[9 49 1 81 121]
   b=[3 7 1 9 11]
   b=[1 2 3 4 5]
   b=[4 9 4 13 16]

Quiz questions 15:

The correct answer is in bold.

1) `While` loops repeat a block of commands as long as a logical expression is false. True or **False**

2) `While` loops can be used to ensure that the user inputs the proper type of data. **True** or False

3) Once the logical expression at the start of a while loop is false, the statements after the `end` statement are executed. **True** or False

4) How many times will the following loop repeat?

```
i = 2; while i <= 16; i = i+2; end
```

0 times
2 times
8 times
16 times
infinite

5) The following loop will repeat until

```
while text(x); x = x+1; end
```

forever
until test(x) is false
until test(x) is true
0 times
It is impossible to tell.

6) The following loop will repeat how many times?

```
n = 1;
while n < 5
     n = n - 1;
end
```

Pick an answer: 0, 1, 4, 5, or **infinite**.

Quiz questions 16:

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1. Write a program uses a loop to calculate the decibel level (dB) of power levels between 1 Watt and 20 Watts in 0.5 Watt increments. Plot dB versus power using one of the semilog plot commands. The equation needed is as follows:

   $$dB = 10*\log10(P2/P1)$$

   where P2 is the measured power and P1 is a reference power of 1 Watt (in this problem).

2. Write a function that uses a `for` loop and accepts two sets of input data, *viz.*: A vector of test scores. The number of scores. The function should return the number of passing grades. Your function must use both of the input values. Assume that the lowest passing grade is a 60%.