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The format Command

By default, MATLAB displays numbers with four decimal place values. This is known as short format. However, if you want more precision, you need to use the format command. The format long command displays 16 digits after decimal.

```
% For example,  
format long  
x = 7 + 10/3 + 5 ^ 1.2
```

```
x =  
  
17.231981640639408
```

```
% For example,  
format short  
x = 7 + 10/3 + 5 ^ 1.2
```

```
x =  
  
17.2320
```

The format short e command allows displaying in exponential form with four decimal places plus the exponent.

```
% For example,  
format short e  
4.678 * 4.9
```

```
ans =
```

2.2922e+01

The format long e command allows displaying in exponential form with four decimal places plus the exponent.

```
% For example,  
format long e  
x = pi
```

x =

3.141592653589793e+00

The format rat command gives the closest rational expression resulting from a calculation.

```
% For example,  
format rat  
4.678 * 4.9
```

ans =

2063/90

Create directory progs under default directory

```
%mkdir prim
```

changing the current directory to progs

```
%chdir prim
```

creating an m file named prog1.m

```
%edit prim1.m
```

```
NoOfStudents = 4790;  
TeachingStaff = 175;  
NonTeachingStaff = 35;  
  
Total = NoOfStudents + TeachingStaff + NonTeachingStaff;  
  
disp(Total);
```

5000

MATLAB - if... end Statement

```

a = 10;
% check the condition using if statement
if a < 20
    % if condition is true then print the following
    fprintf('a is less than 20\n' );
end

```

a is less than 20

```
fprintf('value of a is : %d\n', a);
```

value of a is : 10

MATLAB - if...else...end Statement

```

a = 55;
if (a == 11)                % boolean condition
    fprintf('Value of a is 11\n' );

else
    fprintf('Values not matching\n');
    fprintf('Exact value of a is: %d\n', a );
end

```

Values not matching
Exact value of a is: 55

MATLAB - if...elseif...elseif...else...end Statements

```

a = 55;
if (a == 11)                % boolean condition
    fprintf('Value of a is 11\n' );

elseif (a == 22)
    fprintf('Value of a is 22\n' );

elseif (a == 33)
    fprintf('Value of a is 44\n' );

else
    fprintf('Values not matching\n');
    fprintf('Exact value of a is: %d\n', a );
end

```

Values not matching
Exact value of a is: 55

The Nested if Statements

```

a = 100;
b = 200;
% check the boolean condition
if(a == 100)

```

```

    % if condition is true then check the following
    if(b == 200)
        % if condition is true then print the following
        fprintf('Value of a is 100 and b is 200\n' );
    end
end
end

```

Value of a is 100 and b is 200

```

fprintf('Exact value of a is : %d\n', a );
fprintf('Exact value of b is : %d\n', b );

```

Exact value of a is : 100

Exact value of b is : 200

The switch Statement

```

grade = 'B';

switch(grade)
    case 'A'
        fprintf('Excellent!\n' );

    case 'B'
        fprintf('Well done\n' );

    case 'C'
        fprintf('Well done\n' );

    case 'D'
        fprintf('You passed\n' );

    case 'F'
        fprintf('Better try again\n' );

    otherwise
        fprintf('Invalid grade\n' );
end

```

Well done

The Nested switch Statements

```

a = 100;
b = 200;
switch(a)
    case 100
        fprintf('This is part of outer switch %d\n', a );

        switch(b)
            case 200
                fprintf('This is part of inner switch %d\n', a );
            end
        end
end

```

This is part of outer switch 100
This is part of inner switch 100

Matlab Data types

```
str = 'Hello World!';
```

```
n = 2345;
```

```
d = double(n);
```

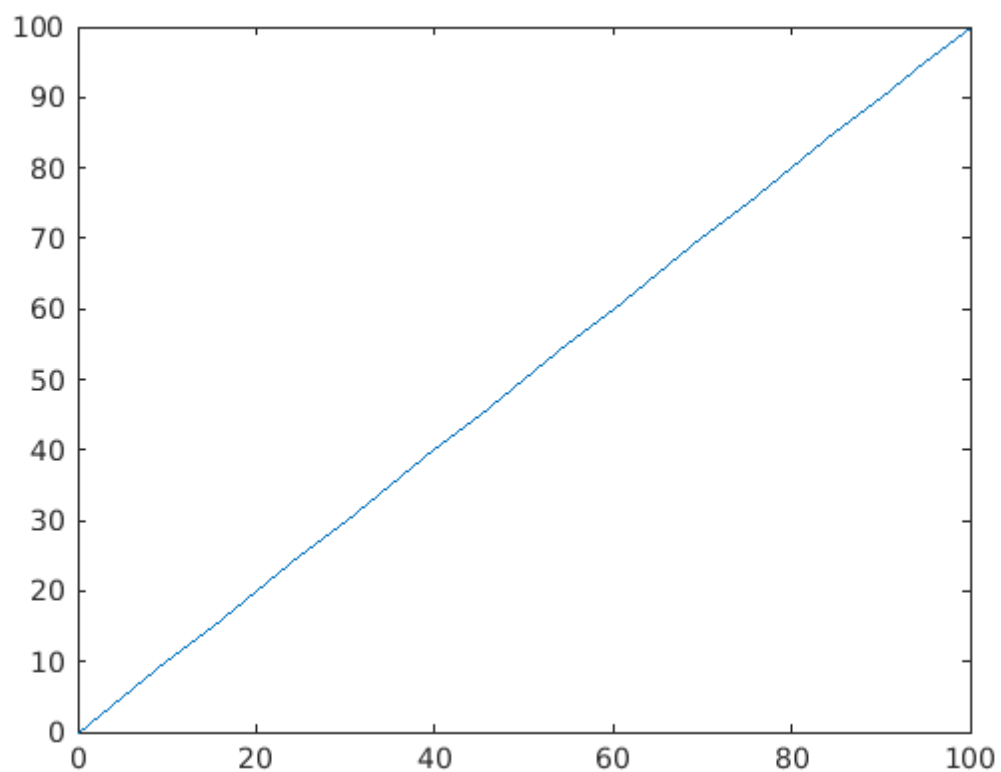
```
un = uint32(789.50);
```

```
rn = 5678.92347;
```

```
c = int32(rn);
```

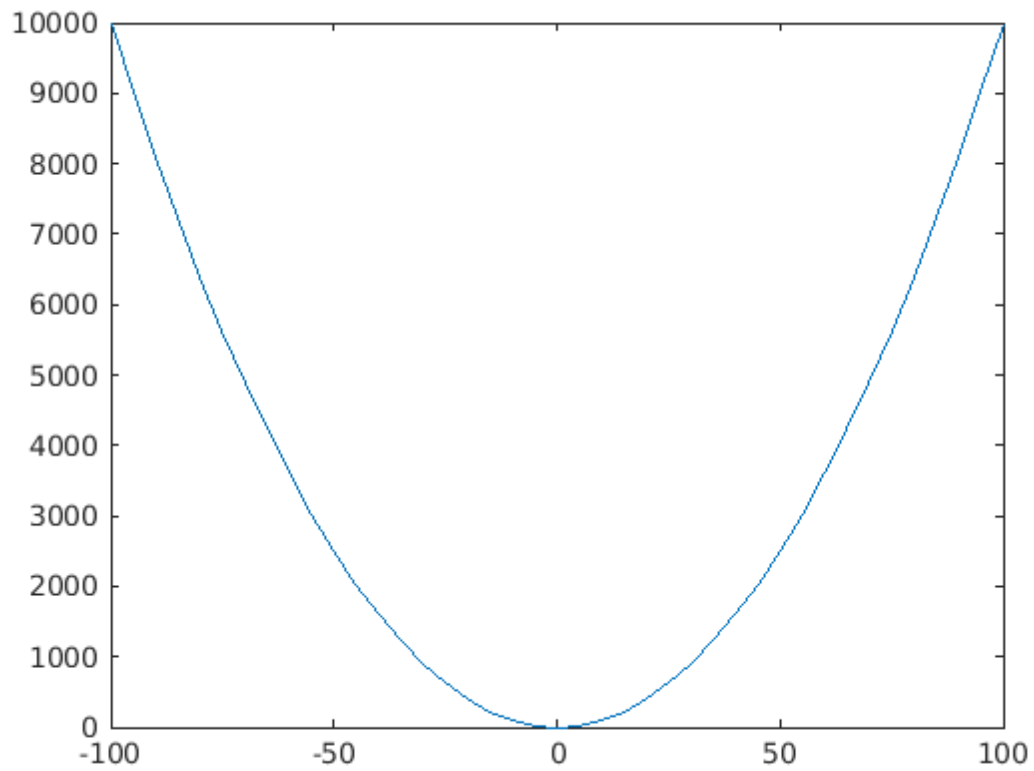
Simple Plots

```
m = (0:5:100);  
y = m;  
plot(m, y);
```



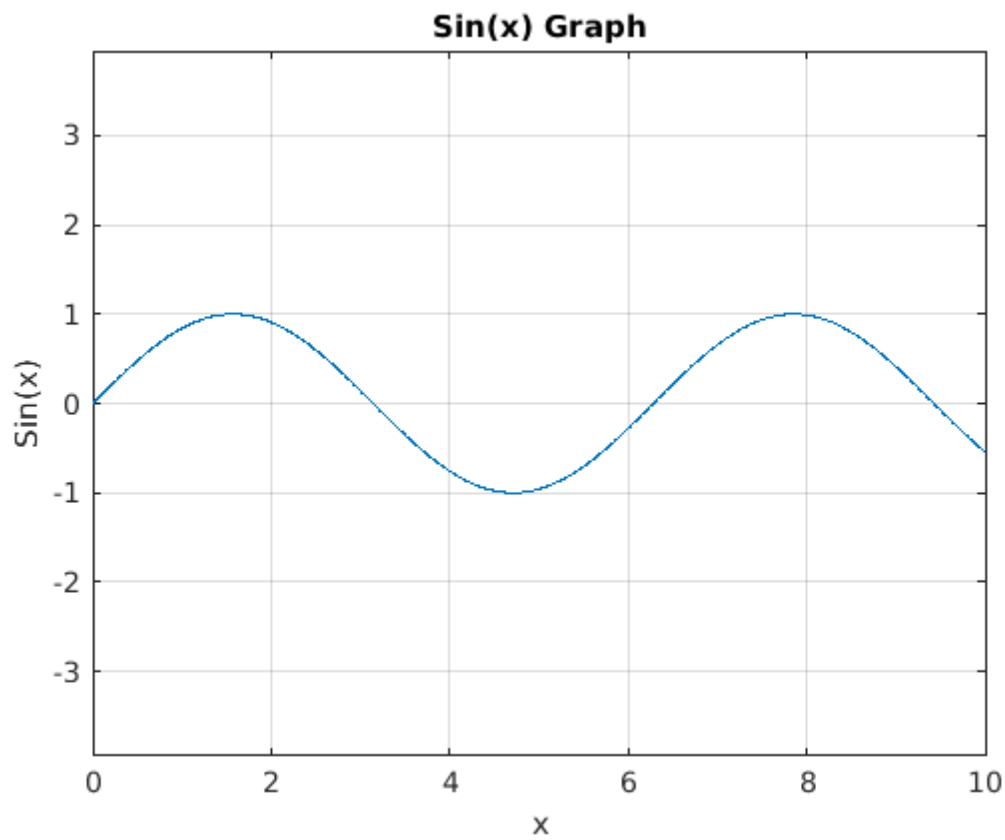
Plot of $y=x^2$

```
k = (-100:5:100);  
y = k.^2;  
plot(k, y)
```



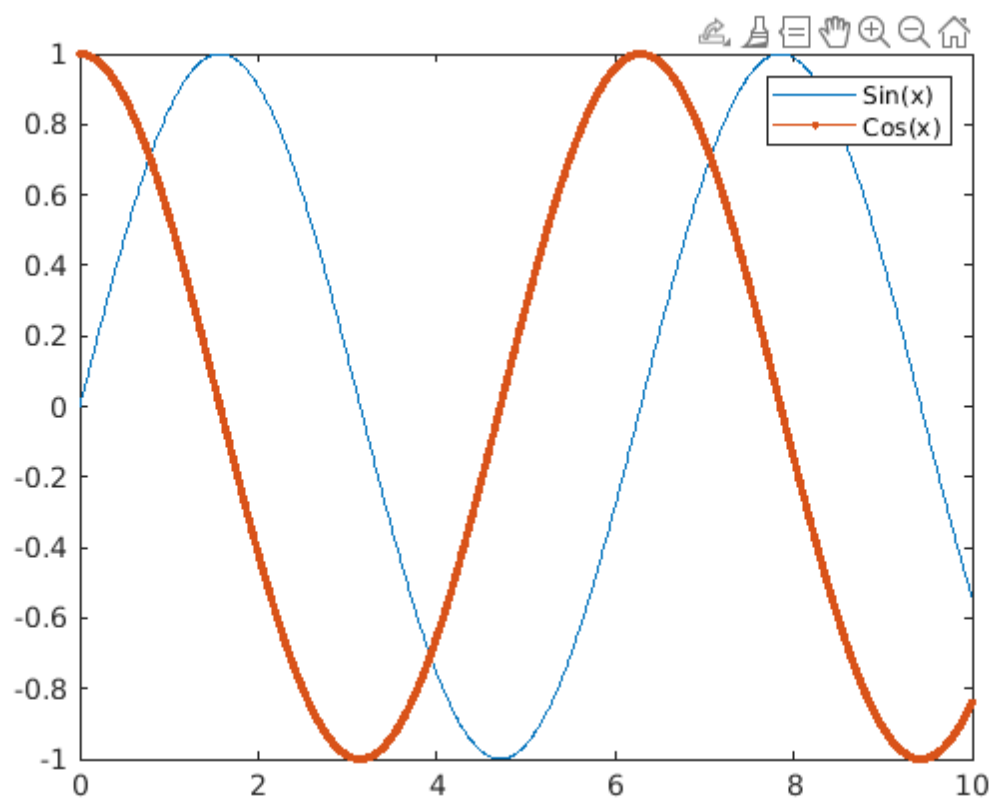
Graph of sin Function

```
x = (0:0.01:10);  
y = sin(x);  
plot(x, y), xlabel('x'), ylabel('Sin(x)'), title('Sin(x) Graph'),  
grid on, axis equal
```



Multiple Functions on Same graph

```
x = (0 : 0.01: 10);  
y = sin(x);  
g = cos(x);  
plot(x, y, x, g, '-.-'), legend('Sin(x)', 'Cos(x)')
```



Function

```
a=10;  
b=cube(a);  
disp(b);
```

```
disp(cube(a)); % All display 1000
```

1000

```
disp(cube(10));
```

```
function y=cube(x)  
    % cube(x) returns the cube of x  
    y = x * x * x;  
end
```

1000