# Variables

A ***literal*** stays the same
20 is always 20

```
ellipse(mouseX, mouseY, 20, 20);
```

A ***variable*** changes (varies)
mouseX could be any number

| | | |
|---|---|---|
| mouseX | ——— | mouse position on the x axis |
| mouseY | ——— | mouse position on the y axis |
| width | ——— | width of the canvas |
| height | ——— | height of the canvas |
| frameRate | ——— | current frameRate |
| frameCount | ——— | for how many frames the sketch has been running |

int

float

boolean

color

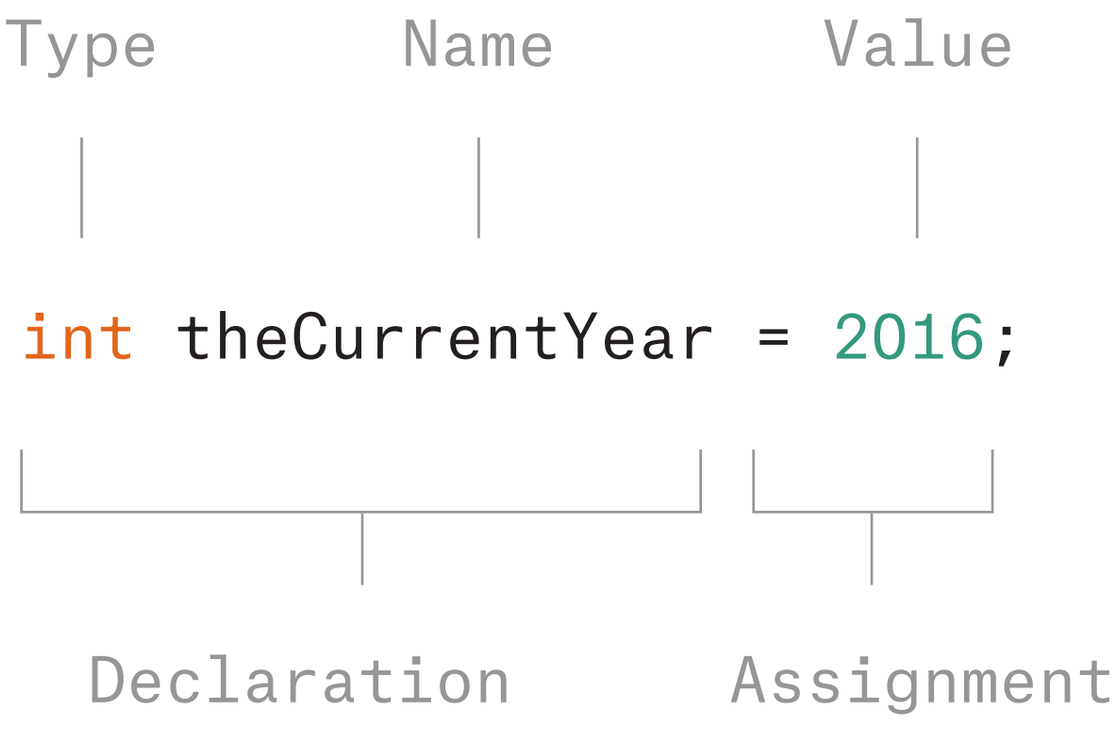
char

String

# int

Stores whole numbers (integers)

```
int theCurrentYear = 2016;
int aPersonsAge = 55;
int numParticipants = 9;
```


Type
Name
Value
int theCurrentYear = 2016;
Declaration
Assignment

# float

Stores numbers with decimal points (floating point)

```
float productCost = 19.95;
float documentHeight = 29.7;
float pi = 3.14;
```

# boolean

true or false?

```
boolean on = true;
boolean mouseIsDown = false;
boolean expired = true;
```

# color

Stores a color

```
color red = color(255, 0, 0);
color highlightColor = #FFFF00;
color textColor = color(50);
```

# char

Stores a single character

```
char firstInitial = ‘D‘;
char lastKeyPressed = ‘A‘;
char YorN = ‘N‘;
```

# String

Stores a ‘string’ (sequence) of characters i.e. text

```
String name = “Dan”;
String message = “Hello!”;
String content = “It was the best of times, it
```

# Operators

```
+    Add

-    Subtract

*    Multiply

/    Divide
```

```
++   increment (Add one)

--   decrement (Subtract one)
```

# + Addition

```
int apples = 4;
int oranges = 6;
int fruits = apples + oranges;
```

# - Subtraction

```
int purchased = 100;
int sold = 25;
int inventory = purchased - sold;
```

# * Multiplication

```
float price = 19.99;
float unitsSold = 25;
float revenue = unitsSold * price;
```

# / Division

```
int miles = 80;
int hours = 3;
int speed = miles / hours;
```

# ++ Increment

```
int age = 55;
age++;
println(age); // 56
```

# -- Decrement

```
int sessions = 10;
sessions--;
println(sessions); // 9
```

Sketch_10_Variables_1 | Processing 3.0.2

Java ▾

Sketch_10_Variables_1

```
1  float myXPosition = 250;
2  float myYPosition = 250;
3
4  void setup() {
5    size(500, 500);
6    background(255);
7  }
8
9  void draw() {
10   // draw an ellipse at the variable x and y position
11   ellipse(myXPosition, myYPosition, 20, 20);
12 }
13
14 void mousePressed() {
15   // add 3 to xPosition
16   myXPosition = myXPosition + 3;
17
18   // add 3 to yPosition
19   myYPosition = myYPosition + 3;
20 }
21
22
23
24
```

Done saving.

Console | Errors

Sketch_10_Variables_1 | Processing 3.0.2

Java ▾

Sketch_10_Variables_1

```
float myXPosition = 250;
float myYPosition = 250;

void setup() {
  size(500, 500);
  background(255);
}

void draw() {
  // draw an ellipse at the variable x and y position
  ellipse(myXPosition, myYPosition, 20, 20);
}

void mousePressed() {
  // add 3 to xPosition
  myXPosition = mouseX;

  // add 3 to yPosition
  myYPosition = mouseY;
}
```

Console  Errors

Sketch_10_Variables_1 | Processing 3.0.2

Java ▾

Sketch_10_Variables_1

```
1  float myXPosition = 250;
2  float myYPosition = 250;
3
4  void setup() {
5    size(500, 500);
6    background(255);
7  }
8
9  void draw() {
10   // draw an ellipse at the variable x and y position
11   ellipse(myXPosition, myYPosition, 20, 20);
12
13   myXPosition = myXPosition + 3;
14   myYPosition = myYPosition + 3;
15 }
16
17 void mousePressed() {
18   // add 3 to xPosition
19   myXPosition = mouseX;
20
21   // add 3 to yPosition
22   myYPosition = mouseY;
23 }
24
```

Done saving.

Console | Errors

Sketch_12_Variables_3 | Processing 3.0.2

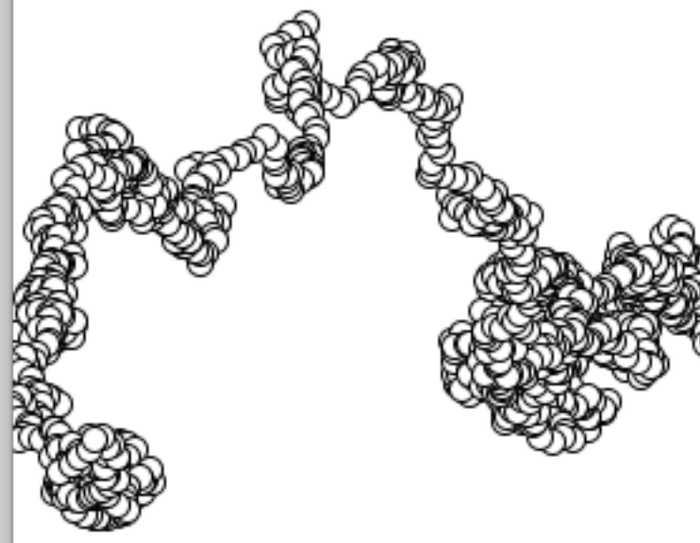
Java ▾

Sketch_12_Variables_3

```
float myXPosition = 250;
float myYPosition = 250;

void setup() {
  size(500, 500);
  background(255);
}

void draw() {
  // draw an ellipse at the variable x and y position
  ellipse(myXPosition, myYPosition, 10, 10);

  // add a random number between -5 and 5 to both variables
  myXPosition = myXPosition + random(-5, 5);
  myYPosition = myYPosition + random(-5, 5);
}
```

Console  Errors

Sketch_12_Vari



Sketch_13_Variables_4 | Processing 3.0.2

Java

Sketch_13_Variables_4

```
float myXPosition = 250;
float myYPosition = 250;

float rectSize = 10;

void setup() {
  size(500, 500);
  background(255);
}

void draw() {
  // draw a rectangle at the variable positions
  rect(myXPosition, myYPosition, rectSize, rectSize);

  // round the random number to the nearest 10th
  myXPosition = myXPosition + (round(random(-1, 1)) * rectSize);
  myYPosition = myYPosition + (round(random(-1, 1)) * rectSize);
}
```

Console Errors

Sketch_13_Variables_