Emphasize that this will be a quick intro. We'll come back to this stuff again in more detail starting next time.
Walk them through Graphics file installation.
There should be a link on today's details page.

```
IDLE 1.2.1
>>> # Transcript for Catapult first session (point out the comment)
>>> 3 + 4
7
>>> 3 + 4 * 2  # Note that the answer is NOT 14.
```

Note the operator precedence

```
11
>>> 9 / 5
1.8
>>> 9 // 5
1
>>> 9 % 5      # Remainder when 9 is divided by 5 (mod operator)
4
>>> 9 ^ 5      # Valid, but not exponentiation!
12
>>> 9 ** 5
59049
>>> width = 4
>>> height = 5
>>> width
4
>>> width, height
(4, 5)
>>> width = width + 2
>>> width
6
```

Mention case-sensitive variable names and everything else in Python:

```
>>> Width     # Width is not the same as width

Traceback (most recent call last):
  File "<pyshell#0>", line 1, in <module>
    Width
NameError: name 'Width' is not defined
>>> triangleArea = width * height / 2
>>> triangleArea
15
>>> def rectArea(height, width):
      return height*width
```

The above defines the rectArea function; now we call it.

```
>>> rectArea(6, 8)
48
```

What about built-in functions?

```
>>> abs(-7)
7
>>> sin(pi/3) # not everything is built in
Traceback (most recent call last):
  File "<pyshell#17>", line 1, in <module>
    sin(pi/2)
NameError: name 'sin' is not defined
>>> math.sin(math.pi)
Traceback (most recent call last):
  File "<pyshell#24>", line 1, in <module>
    math.sin(math.pi)
NameError: name 'math' is not defined
```

```
>>> import math
>>> math.sin(math.pi)
1.2246063538223773e-016
>>> from math import sin, pi
>>> sin(pi/2)
1.0
>>> from math import *
>>> sqrt(2)
0.8660254037844386
>>> (3 + 2j)*(2 -4j) # complex numbers!
(14-8j)


>>> #find out the names of the items imported from a module
>>> dir(math)
['__doc__', '__name__', 'acos', 'asin', 'atan', 'atan2', 'ceil', 'cos', 'cosh',
'degrees', 'e', 'exp', 'fabs', 'floor', 'fmod', 'frexp', 'hypot', 'ldexp', 'log',
'log10', 'modf', 'pi', 'pow', 'radians', 'sin', 'sinh', 'sqrt', 'tan', 'tanh']

>>> math.factorial(100)
933262154439441526816992388562667004907159682643816214685929638952175999932299156
089414639761565182862536979208272237582511852109168640000000000000000000000000

>>> "Bill"
'Bill'
>>> 'Bill'
'Bill'
>>> "Mary's house"
"Mary's house"
>>> 'Mary's house'
SyntaxError: invalid syntax
>>> 'Mary\'s house'
"Mary's house"
>>> name = "Sonia"
>>> name
'Sonia'
>>> fullName = "Claude" + "Wilson" + "Anderson"
>>> fullName
'ClaudeWilsonAnderson'
>>> "Hello" * 10
'HelloHelloHelloHelloHelloHelloHelloHelloHelloHello'
>>> "Hello " * 5
'Hello Hello Hello Hello Hello '
>>> fullName
'ClaudeWilsonAnderson'
>>> fullName[0]
'C'
>>> fullName[0] + fullName[2]
'Ca'
>>> len(fullName)
20
>>> fullName[len(fullName)]
```

```
Traceback (most recent call last):
  File "<pyshell#34>", line 1, in <module>
    fullName[len(fullName)]
IndexError: string index out of range
>>> fullName[len(fullName) - 1]
'n'
>>> fullName[-1]
'n'
>>> fullName[-2]
'o'
>>> fullName[0:6]
'Claude'
>>> fullname[:4]
'Clau'
>>> fullname[-8:]
'Anderson'
>>> fullname[:5] + fullName[5:]
'ClaudeWilsonAnderson'
>>> for x in [4, 5, 6, 7, 10, 13]:
      x + 3
7
8
9
10
13
16
>>> # All numbers up to, but not including, the last one
>>> for number in range(11):
      sqrt(number)
0.0
1.0
1.4142135623730951
1.7320508075688772
2.0
2.23606797749979
2.449489742783178
2.6457513110645907
2.8284271247461903
3.0
3.1622776601683795
>>> # Count by twos
>>> for number in range(0,11,2):
      number * number
0
4
16
36
64
100
>>> # Two ways to do multiples of 17
```

```
>>> for number in range(0, 171, 17):
     number
0
17
34
51
68
85
102
119
136
153
170
>>> for number in range(0, 11):
     number * 17
0
17
34
51
68
85
102
119
136
153
170
>>> for letter in fullName:
     letter
'C'
'l'
'a'
'u'
'd'
'e'
'W'
'i'
'l'
's'
'o'
'n'
'A'
'n'
'd'
'e'
'r'
's'
'o'
'n'
```

```
>>> for letter in fullName:
      "Gimme a " + letter
'Gimme a C'
'Gimme a l'
'Gimme a a'
'Gimme a u'
'Gimme a d'
'Gimme a e'
'Gimme a W'
'Gimme a i'
'Gimme a l'
'Gimme a s'
'Gimme a o'
'Gimme a n'
'Gimme a A'
'Gimme a n'
'Gimme a d'
'Gimme a e'
'Gimme a r'
'Gimme a s'
'Gimme a o'
'Gimme a n'
>>> fullName[0] in "aeiou"
False
>>> fullName[0] in "RCGH"
True
>>> for letter in fullName:
      if letter in "aeiouy":
            "Gimme an " + letter
      else:
            "Gimme a  " + letter
'Gimme a  C'
'Gimme a  l'
'Gimme an a'
'Gimme an u'
'Gimme a  d'
'Gimme an e'
'Gimme a  W'
'Gimme an i'
'Gimme a  l'
'Gimme a  s'
'Gimme an o'
'Gimme a  n'
'Gimme a  A'
'Gimme a  n'
'Gimme a  d'
'Gimme an e'
'Gimme a  r'
'Gimme a  s'
'Gimme an o'
```

```
'Gimme a  n'
>>> for letter in fullName:
      if letter in "aeiouy":
            "Gimme an " + letter
      elif letter in "rt":
            "Gimme lots of " + letter*20
      else:
            "Gimme a " + letter

'Gimme a C'
'Gimme a l'
'Gimme an a'
'Gimme an u'
'Gimme a d'
'Gimme an e'
'Gimme a W'
'Gimme an i'
'Gimme a l'
'Gimme a s'
'Gimme an o'
'Gimme a n'
'Gimme a A'
'Gimme a n'
'Gimme a d'
'Gimme an e'
'Gimme lots of rrrrrrrrrrrrrrrrrrr'
'Gimme a s'
'Gimme an o'
'Gimme a n'
```