Start Python 2.6, type stuff into IDLE, observe outputs and COPY them here. Also, do some calculations and answer some questions.

(Yes, really)

```python
print None
None

print type(None)
print type(True)
print type(False)
```

Invent two positive x and y integers \(\leq 2,147,483,647\) but whose product \(\geq 2,147,483,648\). Get Python to multiply them and explore the types: (tip: choose easy-to-write numbers.)

```python
X = (your choice); Y = (your choice)
bigi = X*Y; print X, Y, bigi
```

Record your vote (1)-(6)

Record the correct formula for the number of integers in \({ a, a+1, \ldots, b }\) when \(a \leq b\) ________

APPLY this formula to \({ -(2^{31}), \ldots, -1, 0, 1, \ldots, (2^{31} - 1) \} \).

What is a? (Note: It's negative!) ________ What is b? ________

What is \(2^{31} + 2^{31}\)? What is \(2 \times 2^{31}\)? Show calculation here:

What do you get from applying the formula? Simplify ________

(16 points so far)

```python
print 1.0
print 1*1.0
print 1/0
print 1.0/0
print 1/0.0
print 1.0/0.0
```

Calculate \(1.001 \times 1.001\) using arithmetic:

\[
\begin{align*}
1.001 \\
1.001 \\
\hline
0.001001 \\
1.001 \\
\end{align*}
\]

Now substitute 0.001 for x and simplify:

```bash
Now substitute 0.001 for x and simplify:

\[
\begin{align*}
1.001 = 1 + x, \text{ (with } x = 0.001=1/1000) \\
(1 + x) \times (1 + x) = [\text{multiply out..}]
\end{align*}
\]

Would you trust your teddy bear to floating point arithmetic? ________ (yes/no)
myD = dict() ->
myD['apple'] = 'fruit, record, PC' ->
myD['pear'] = 'fruit' ->
myD['Chaiken'] = 'undefinable' ->
print myD['pear'] ->
print myD ->
print mD['xxx'] ->

Write results of exploring the Python 2.6 library Turtle class here

x = 1.00000000001 (10 zeros); print x*x ->
x = 1.000000000001 (11 zeros); print x*x ->
x = 1.0000000000001 (12 zeros); print x*x ->
x = 1.0 + 10.0**(-11); print x ->
x = 1.0 + 10.0**(-12); print x ->

minny = 10.0**(-13)
x = 1.0; print x ->
x = x + minny; print x ->
x = x - minny; print x ->

What would the final value of x be if the above 4 lines were done in mathematically accurate real or rational arithmetic? 

bitty = 2.0**(-39)
x = 1.0; print x ->
x = x + bitty; print x ->
x = x - bitty; print x ->