

1. What is the difference between boolean logic and arithmetic? Comparators?

2. Calculate the following by hand. Then, double-check your work using Python. Submit both this sheet as well as your Python implementation.

(Note - you really do need to be able to do these by hand, simple problems will be on your exam, so practice!)

a = 5
b = 10
c = -10
d = 10
e = 1
g = 2
h = 0

t = True
f = False

a + b
a * b
b ** a
b ** a - c
d / g - e
d / (g - e)

a > b
b > c
a > b > g
b > a > g
(a > b) > g
(a > b) > c

h = h
h == h
g >= a
a <= c
d == c

h == f
e == t
t > f
t >= f
t > g
f > g

t & t
t | t
t | f
t & f
f & t
f ^ t
t & f | t
t & f | f

t ^ f
t ^ f | f

(not t)
(not f)
(not t) == f
(not f) > 0

(15 + c) > a
(15 + c) >= a
(15 + c) <= a
(15 + c) < a

(t & f) & (t & t)
(t & f) | (t & f)
(t & f) ^ (t & f)
(t & f) ^ (t | f)
(t & f) | (t & f) | (t ^ f)

Small Program Example:

For the below, also show what would be printed.
Note - we are overwriting the value of x!

```
x = (t & t) ^ (f & f)
print(x)
x = x - 1
print(x)
x == False
(not x) == False
```

3. In your code, make a simple list as well as a dictionary, each with at least five elements. I don't care what you put in them, just explain in the comments.