

Sample Final

- Evaluate each expression. Indicate floats by including a decimal point (so to show 1 as a float, write "1.0") If any cannot be evaluated, say why.
 - $3 + 5.0$
 - $10 \% 4 + 7 / 2$
 - $\text{abs}(5 - 20 / 3) ** 4$
 - $\text{range}(4, 13, 3)$
 - "If %d + %d = %2.2f, then %s" % (2, 2, 4, "bye!")
 - $4 / "3"$
- Convert the following into Python:
 - The volume *vol* of a sphere is $4\pi r^3$ divided by 3 (remember the result is a floating point number!).
 - The value of the string variable *str* with all occurrences of the letter "e" replaced by the character "3"
 - Subtract 159 from the product of 3 and 27, using integers
- The A–F grading system assigns the following grades to scores. If your score is less than 1 point, you get an F; if it is less than 2 points, you get a D; if it is less than 3 points, you get a C; if you get less than 4 points, you get a B; and if you get 4 points or more, you get an A. Write an "if" statement that, given a score in the variable *score*, prints the corresponding grade.
- What does the following function do when given a list of numbers as the argument?

```
def f(lst):
    a = i = 0
    n = len(lst)
    while i < n:
        if lst[i] <= 0:
            i += 1
            continue
        a += lst[i]
        i += 1
    return float(a) / n
```

- Rewrite the function in problem 4 so that it uses a "for" loop, not a "while" loop.
- What does the following program do:

```
d = dict()
while True:
    try:
        line = raw_input("EOF to stop> ")
    except EOFError:
        break
    for i in line:
        d[i] = d.get(i, 0) + 1
u = d.keys()
for i in u:
    print i, d[i]
```

7. What does the following program do:

```
def y(n):  
    if n < 10:  
        return str(n)  
    else:  
        d = str(n % 10)  
        return y(n / 10) + d  
  
print y(174)
```