Warm up discussion problem:

The five figures shown below represent the appearance of a solid, opaque object as seen from five of its six sides. Each line shown depicts a side of the object that is perpendicular to the plane of this page. The object was constructed by gluing together a number of identical cubes so that at least one face of each added cube precisely and entirely covers and is everywhere contiguous with one face of a previous cube. Draw the sixth view of the object. Clockwise or counterclockwise rotations of the sixth view are acceptable, but a mirror image (the sixth side as viewed from inside the solid) is not acceptable.

Same problem, different solid.

Workshop:

Functions

1. Parameters are an important concept in defining functions.
   (a) What is the purpose of parameters?
   (b) What is the difference between a formal parameter and an actual parameter?
   (c) In what ways are parameters similar to and different from ordinary variables?
2. Functions can be thought of as miniature (sub)programs inside other programs. Like any other program, we can think of functions as having input and output to communicate with the main program.

(a) How does a program provide “input” to one of its functions?
(b) How does a function provide “output” to the program?
(c) Discuss the differences and similarities between return and print(), both which pass information in programs.

3. Consider this very simple program:

```python
def cube(x):
    answer = x * x * x
    return answer

def main():
    answer = 4
    result = cube(3)
    print(answer, result)

main()
```

The output of this program is 4 27. Explain why the output is not 27 27, even though the function cube seems to change the value of answer to 27. Trace through this program and verify your answer.

4. Write the code for these functions:

```python
def sphereArea(radius):
    # Returns the surface area of a sphere with radius

def sphereVolume(radius):
    # Returns the volume of a sphere with radius

Use these two functions to write a program that returns the area and the volume of a sphere given its radius as input.

5. Write a program that calculates the cost per square inch of a circular pizza, given its diameter and price. The formula for area is \( A = \pi r^2 \). Use two functions, one to compute the area of a pizza, and one to compute cost per square inch.

6. Can you rewrite the Numbers lab assignment (Newton’s Method) to use a function named nextGuess(guess, x) that returns the next guess in solving for a square root value?