

```
In [1]: import math
```

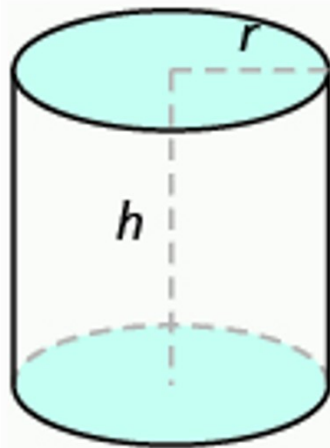
PFDS: FINAL EXAM -- TERM ONE (QUESTION 4)

Part One: Write a program that uses one function to compute the surface area and volume of a cylinder.

- Test Case: $r = 5$ inches and $h = 20$ inches

Part Two: Write a program that uses two functions (one that is called inside the other) to compute the surface area and volume of a cylinder.

- Test Case: $r = 5$ inches and $h = 20$ inches



$$\text{Volume: } V = \pi r^2 h \text{ or } V = Bh$$

$$\text{Surface Area: } S = 2\pi r^2 + 2\pi rh$$

```
In [6]: def find_volume(r,h):
        return math.pi * (r**2) * h
        def find_surface_area(r, h):
            return (2 * math.pi * (r**2)) + (2 * math.pi * r * h)
        r = int(input("Input the radius: "))
        h = int(input("Input the height: "))
        print(f"Volume: {find_volume(r,h):.2f}")
        print(f"Surface Area: {find_surface_area(r,h):.2f}")
```

```
Input the radius: 5
Input the height: 20
Volume: 1570.80
Surface Area: 785.40
```

```
In [9]: def find_surface_area(r,h):
        def find_volume(r,h):
            return math.pi * (r**2) * h
        return ( (2 * math.pi * (r**2)) + (2 * math.pi * r * h), find_volume(r,h))
        r = int(input("Input the radius: "))
        h = int(input("Input the height: "))
```

```
print(f"Surface Area: {find_surface_area(r,h)[0]:.2f}")  
print(f"Volume: {find_surface_area(r,h)[1]:.2f}")
```

```
Input the radius: 5  
Input the height: 20  
Surface Area: 785.40  
Volume: 1570.80
```

In []: