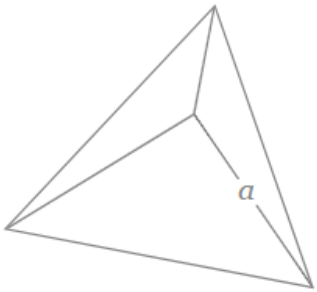
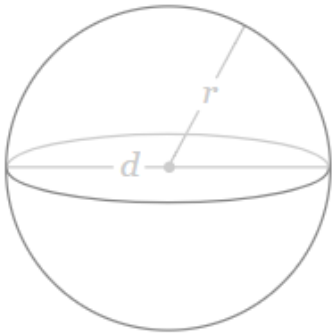
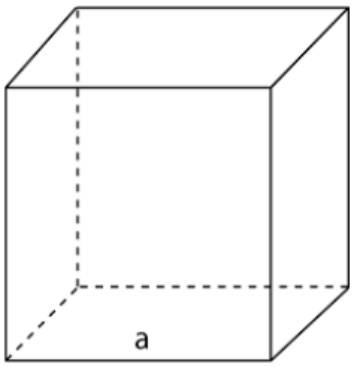
# CIS 262 Exercise 1 – 3D Shapes

Create three classes that represent three, three-dimensional shapes shown below, e.g. sphere, tetrahedron, cube. Include properties named SurfaceArea and Volume and a method named Enlarge that increases the size of (expands) the shape by a specified percentage. Throw an exception when a negative size is assigned. Provide a constructor that accepts the value required to define the size of the shape. Also provide a default, parameter-less constructor that assumes a size. Finally, create an app that tests all members of the classes. (Your app does NOT need to display images of the shapes, as shown below) For arithmetic operations and constants, see the Math class, p. 341.

| Shape | Volume | Surface Area | |
|---|---|---|---|
| Tetrahedron | $V = \frac{1}{12}\sqrt{2}\,a^3$ | $A = \sqrt{3}\,a^2$ |   |
| Sphere | $V = \frac{4}{3}\pi r^3$ | $A = 4\pi r^2$ |   |
| Cube | V = a ^ 3 | A = 6 a ^ 2 |   |

Sample Data


Shapes
Size
Volume
Surface Area
Cube:
1.00
1.00
6.00
Sphere:
1.00
4.19
12.57
Tetra:
1.00
0.12
1.73
Create bigger shapes
Enlarge 10%
Try a negative size