Assignment: Algorithm Design for calculating the area and volume of 3D objects

Objective: The goal of this assignment is to practice algorithmic thinking and problem-solving. For **each** of the six 3D objects listed below, you must design two separate, step-by-step algorithms:

1. One algorithm to calculate the **Volume**.
2. One algorithm to calculate the **Total Surface Area**.

Your Task: You must deliver your algorithms as **flowcharts** and **textual algorithm** (**pseudocode)**.

Each algorithm must clearly show:

- **Start:** The beginning of the process.
- **Input:** The specific information you must get from the user (e.g., "Get radius `r`").
- **Process:** The steps needed to perform the calculation. You will need to research and find the correct mathematical formulas for these shapes.
- **Output:** The final result you will display (e.g., "Display Volume").
- **End:** The end of the process.

Shapes to Design For

Design your algorithms for the following shapes, using the required inputs specified.

1. Cube

- **Required Input:** Side length (`a`)

2. Rectangular Prism

- **Required Inputs:** Length (`l`), Width (`w`), Height (`h`)

3. Sphere

- **Required Input:** Radius (`r`)

4. Cylinder

- **Required Inputs:** Radius (`r`), Height (`h`)

5. Cone

- **Required Inputs:** Radius (`r`), Perpendicular Height (`h`)
- **Hint:** For the surface area algorithm, you will need to find the "slant height" first. This will likely involve the Pythagorean theorem.

Example (How to think about one algorithm):

Algorithm: Volume of a Cube

1. Start
2. Get side length `a` from the user.
3. Calculate Volume (You must find the formula for this step).
4. Display the calculated Volume.
5. End

You must provide this level of detail for **both volume and surface area** for all shapes.

Good luck!