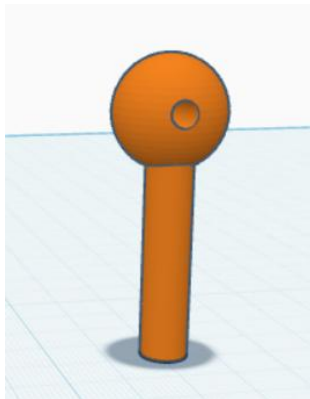


3D design

Task Description:

Using **Tinkercad**, reproduce the 3D component using the following dimensions:

- Create a **vertical cylindrical shaft, 8 mm in diameter and 40 mm high**.
- Position a **sphere, 20 mm in diameter**, centrally on top of the cylindrical shaft.
- Create a **5 mm diameter through-hole** through the sphere, positioned as shown in the reference image.
- Ensure that the cylinder and sphere are **centrally aligned** and combined to form a single component.
- The completed model must closely match the orientation and appearance of the supplied reference image.



Can the student place an object,
Can the student align a second object,
Can the student make a hole and
Can the student group objects?

PCB design

Task Description:

Using **PCB design software of your choice**, create a simple PCB containing:

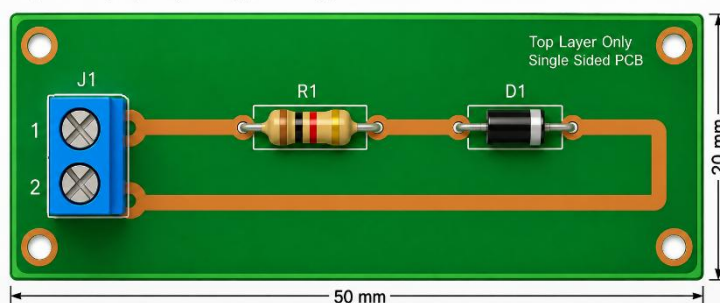
- One **2-way terminal block (J1)**
- One **resistor (R1)**
- One **diode (D1)**

Connect the components in series as follows:

J1 Terminal 1 → R1 → D1 → J1 Terminal 2

Use **top-layer copper only** for all tracks. Position the components neatly and ensure the PCB demonstrates correct **component placement, orientation, electrical connection, track routing, and use of the top copper layer only**.

Top View (Top Layer Copper Only)



Circuit Diagram



Components:

J1 - 2-pin terminal block
R1 - Resistor
D1 - Diode (e.g. 1N4007)

Demonstrate your ability to place a schematic component,

Demonstrate your ability to wire a schematic component,

Demonstrate your ability to place a PCB component and

Demonstrate your ability to wire PCB component.