Learning to properly identify and use hand tools is important to the success of the SeaPerch project.

This worksheet is just for identifying the tools. Other resources are available to help demonstrate the proper and safe usage of the tools.

### SeaPerch Tool Bag – List of Supplies

1. Tool Bag - Zippered Heavy Duty
2. Power Drill - Corded
3. Soldering Iron Stand
4. Sandpaper Sheet - 220 Grit
5. PVC Cutter - Ratcheting
6. Digital Multimeter
7. Wire Strippers
8. Adjustable Vice - Clamp-On
9. Krazy Glue
10. Alligator-Alligator Motor Test Leads
12. Desoldering Pump
13. Nut Driver - 1/4" Non-Magnetized
14. Wire Cutters
15. Needle Nose Pliers
16. Phillips Screwdriver - #2 x 4"
17. 3/32" Drill Bit
18. 1/4" Drill Bit
19. 3 Alcohol Wipes
20. 3 Threaded Insert Tee Nut
21. 3 Nylon-insert Hex Locknut
22. 3 Propellers
23. 3 Propeller Shafts
24. 1 SeaSwitch Spare Parts
   - 1 SeaSwitch - Complete
   - 1 Modular Jack 8P8C
   - 2 Fuseholders
   - 2 Fuses 6.3A TE5 Radial Lead
   - 2 Printed Circuit Boards
25. 1 SeaPerch Construction Manual
26. 2 SeaPerch Brochures
Identify the Tools

Name: Vise (Table Swivel Vise)
Usage: Clamping parts for drilling, cutting, and soldering.

Students will need the vise for the following:
• Cutting and drilling the pipes.
• Drilling the pipe Elbows.
• Soldering the wires on the motors.
• Assembling the propellers.

Name: Ratcheting pipe cutter
Usage: Cutting PVC pipe
## Identify the Tools

<table>
<thead>
<tr>
<th>Name</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2 Phillips screwdriver</td>
<td>Installing (tightening) and removing Phillips head screws. Screw drivers come in different sizes for different screw head sizes.</td>
</tr>
<tr>
<td>¼” Nutdriver</td>
<td>Tightening and loosening ¼” hex nuts. Students will use the nutdriver for assembling the propellers.</td>
</tr>
<tr>
<td>Name</td>
<td>Usage</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Diagonal cutting pliers</td>
<td>Cutting wires and cable ties.</td>
</tr>
<tr>
<td>Needle nose pliers</td>
<td>Holding and cutting.</td>
</tr>
<tr>
<td>Wire strippers</td>
<td>Stripping (removing) wire insulation and cutting wire. Students will use the wire strippers to strip the tether cable wires. Can also be used to crimp terminals.</td>
</tr>
</tbody>
</table>
Identify the Tools

3/8" Corded Power hand drill

Usage: Holding drill bits for drilling holes. Drills may also be used to hold screwdriver bits for tightening and removing screws. The 3/8" size refers to the maximum drill bit size the drill can hold.

Drill bits.

Usage: Drilling holes in the pipes, pipe elbows, and motor cases.

Name: Drill bits.
The SeaPerch tool kit comes with 3/32” and 1/4” diameter drill bits.
Identify the Tools

Name: 25 watt Soldering iron
Usage: Soldering wires, electrical components, and other items together.

Name: Soldering iron stand
Usage: The soldering iron gets extremely hot and the stand provides a safe place to store it to prevent injuries and fires.

Name: Desoldering tool
Usage: Removing solder during circuit repair.
Identify the Tools

Name: Digital multimeter and test probes
Usage: Testing voltage, amperage, electrical resistance, and continuity. Students will use the multimeter to test and troubleshoot the control box circuitry.

Name: Alligator test leads
Usage: One end clips on the test probes and the other end on the part being tested.
### Identify the Tools

<table>
<thead>
<tr>
<th>Name</th>
<th>Abrasive paper (sandpaper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>Removing burrs (sharp edges) from pipes after drilling. Abrading the motor shaft to help glue adhere better.</td>
</tr>
</tbody>
</table>

### Tools from older tool kits

<table>
<thead>
<tr>
<th>Name</th>
<th>Channel lock pliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>Multi use adjustable pliers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Multi-bit screwdriver/nutdriver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>For Philipps and slotted head screws as well as 1/4” and 5/16” hex nuts.</td>
</tr>
</tbody>
</table>