DIVE EARTH SCIENCE
Hands-On Lab Instructions & Supply List by Lab

Students are NOT required to complete the labs hands-on. Students can simply watch the Video Labs and fill in the Activity pages in the Lab Workbook. However, if you would like your student to have a hands-on experience, you can purchase **the DIVE Lab Kit from:** Nature's Workshop Plus

Other than the supplies listed in the "**You Provide"** list on page 2, this kit provides everything you need to complete 27 of the 28 lab activities. Lab 3.7 is not included as it requires expensive ($500+) equipment. Watch the video for this lab.

Parent Setup Instructions:

1. After purchasing the lab kit, gather the **"Supplies You Provide"** listed on page 2 of this guide.

2. Read the student instructions as well as the **"Special Instructions"** on pages 3-6.

Student Lab Instructions:

1. **FIRST:** Preview the DIVE video lab. Don't fill in the lab workbook and don't take notes. It's just a quick overview so you know what to expect during the lab.
2. Read the "Special Instructions" for the lab under "Supplies by Lab" (starting on page 3).
3. Gather all the supplies listed for the lab on page 3.
4. While watching the video lab again, use the supplies to complete the lab activity and record date in the Lab Workbook. Pause and rewind the video as needed.
5. Watch the video solutions at the end of the video and correct your work as needed.

Safety Precautions: These experiments may have harmful chemicals. Please use extreme caution when doing each experiment. Make sure you are in a well ventilated area and wearing safety equipment. There are safety goggles included in this lab kit, but we also encourage you to acquire and wear safety gloves and even a laboratory coat.

Supplies You Provide

The list below is for those using the NWP lab kit. This is a comprehensive list of the supplies needed to complete all 27 labs. Note: A list of supplies used in each lab is on page 3.

- ☐ **Scientific Calculator**
- ☐ **Cookie Sheet** Standard Size Used in Lab 1.3 & 2.3
- ☐ **Dark-colored Crayon** Used in Lab 1.3 to write on plastic container.
- ☐ **Muriatic Acid** Used for Hydrochloric Acid in Lab 1.4 (16 drops)
- ☐ **Red Acrylic Paint 2 oz** Used in Lab 1.6 to paint the clay Gold Panning bowl
- ☐ **Hammer - standard** Used in Lab 1.7 to break a rock #40 Iron Pyrite
- ☐ **5 lb of Sand** Used in Lab 1.7, 2.3, 2.4, 2.5, 2.7, 3.4, 3.5, 3.6, & 4.1
- ☐ **1 lb table Salt** Used in Lab 2.4 & 3.2
- ☐ **Air Popcorn Popper** Used in Lab 2.6
- ☐ **Bowl (for Popcorn)** Used in Lab 2.6
- ☐ **Popcorn.** Used in Lab 2.6 Weight: 85.82g
- ☐ **(2) 5-gallon Buckets** Used in Lab 3.7
- ☐ **Brooder Reflector Light with Clamp** Used in Lab 3.1 & 4.1
- ☐ **250 W Heat Lamp Bulb** Used in Lab 3.1 & 4.1
- ☐ **Ice** used in Lab 2.5 & 3.3
- ☐ **Corn Starch (24 oz.)** Used in Lab 2.3 & 3.6
- ☐ **Duct Tape** Used in Lab 4.1
- ☐ **Electrical Tape** Used in Lab 2.3
- ☐ **1 roll of Paper Towel** Used in Lab 1.7, 3.4, & 4.2
- ☐ **3 Colored Pencils Yellow, Green & Blue** Used in Lab 4.3
- ☐ **2 Plastic Soda Bottles** (2L work best) Used in Lab 4.4
- ☐ **Hobby Knife (Exacto Knife)** Used in Lab 4.6
- ☐ **Blunt Clay Sculpting Knife**
- ☐ **Wood Glue** Used in Lab 4.6
- ☐ **Download Stellarium (free)** Used in Lab 4.7 Site: stellarium.org
- ☐ **Download NASA's Eyes on the Solar System (free)** Used in Lab 4.7Site: solarsystem.nasa.gov/eyes/
- ☐ **Microsoft Excel, Google Sheets, or Numbers** Used in Lab 3.3, 3.7, & 4.4
- ☐ **10-day Weather Forecast and Weather History Report for your town** Used in Lab 4.4
- ☐ **Computer or Device with Google Earth Pro** Used in Labs 1.2, 1.3, 2.1, 2.2, & 4.7
  - ☐ Download Google Earth Pro (click here for free download).

Optional Items:

- **Clay Pottery Wheel**: Can be used to make a clay gold panning bowl in Lab 1.6 but the bowl can be made by hand.
- **Electric Drill (Optional)** used in Lab 2.3 with 1 inch Diameter Drill bit
- **Digital Camera** Used in Lab 2.4, 2.5, & 4.2

Supply List By Lab

Lab	Supplies in the Kit	You Provide
1.1	**Special Instructions:** **In the video he uses specific rocks. If you don't have them in you rock collection, pick any 2 rocks that fit in the cylinder. The focus of this lab is not the rocks, it is learning the scientific method by calculating density.** Classroom Collection of Rocks and Minerals Mineral Test Kit Digital Pocket Scale (Digital Balance) 100 ml Graduated Cylinder Forceps (Tweezers)	Cup (Could use a Clear Plastic Cup) Scientific Calculator Water
1.2	Magnetic Compass Drawing Compass Ruler	Computer with Google Earth Pro (click here for free download). **NOTE**: Your lab may have outdated information telling you to use earth.google.com, which no longer has the same features as the Pro version. Only use the Pro version of Google Earth. Scientific Calculator
1.3	Contour Model Kit with Pencil Ruler	Water Clear Plastic Cup Cookie Sheet Dark Crayon (Computer with Google Earth Pro (See note in Lab 1.2 instructions above)
1.4	**Special Instructions:** **Iron Apatite is not included in the lab kit. Use Obsidian instead. Watch the video lab for the section on Beryl and record results in the lab workbook.** Classroom Collection of Rocks and Minerals Mineral Test Kit Digital Pocket Scale (Digital Balance) 100 ml Graduated Cylinder Forceps (Tweezers)	Cup (Could use a Clear Plastic Cup) Scientific Calculator Water Muriatic Acid*- Use this for Hydrochloric Acid *This is a strong acid and should be treated as any household chemical like Clorox. If you get it on anything (including the rock samples), rinse thoroughly with water.
1.5	Classroom Collection of Rocks and Minerals Mineral Test Kit Digital Pocket Scale (Digital Balance) 100 ml Graduated Cylinder Forceps (Tweezers)	Cup (Could use a Clear Plastic Cup) Scientific Calculator Water

Lab	**Supplies in the Kit**	**You Provide**
1.6	Classroom Collection of Rocks and Minerals Mineral Test Kit Air-Dry Clay **Save the clay Gold Pan you made for use in Lab 1.7**	Acrylic Paint Blunt Clay Sculpting Knife (Could use a butter knife or plastic knife) Scientific Calculator
1.7	Classroom Collection of Rocks and Minerals	Clay gold pan from Lab 1.6 Hammer Water Sand
2.1	**Supplies in Kit:** Ruler **Special Instructions:** The GPS unit used in the video lab is cost prohibitive. For this lab, watch the video and fill in the Lab Workbook.	Computer with Google Earth Pro (See note in Lab 1.2 instructions above) Scientific Calculator
2.2	None Required	Computer with Google Earth Pro (See note in Lab 1.2 instructions above). **NOTE: If you started prior to November, 2018, your Lab 2.2 may be outdated.** Click here to open and print an updated version of the Lab 2.2 pages. Click here to watch the updated video lab.
2.3	Plastic Beads Metal Beads Clear Plastic Cups Plastic Container (From Lab 1.3 or Plastic Large Container) Toothpick	Electric Drill (Optional) Water Sand Corn Starch
2.4	Clear Plastic Cups Plastic Container (From Lab 1.3 or Plastic Large Container) Plastic Tubing Cardboard	Bucket Salt Water Sand
2.5	Plastic Container (From Lab 1.3 or Plastic Large Container) Clear Plastic Cup Rocks (Bag of Limestone)	Water Sand Corn Starch (Leftover from Lab 2.3)
2.6	Digital Pocket Scale (Digital Balance) 100 ml Graduated Cylinder	Air Popcorn Popper Bowl Popcorn

Lab	**Supplies in the Kit**	**You Provide**
2.7	Clear Plastic Cup Plastic Large Container ½ Sheet of Cardboard Foam Ruler String (Save for Lab 4.2 & 4.5)	Water Sand
3.1	Plastic Container (From Lab 1.3 or Plastic Large Container) Ruler Thermometer Stopwatch	250 W Heat Lamp Bulb (find it at a local hardware store) Brooder Reflector with Clamp (find it at a local hardware store) Water
3.2	Plastic Container (From Lab 1.3 or Plastic Large Container) 100 ml Graduated Cylinder Digital Pocket Scale (Digital Balance) Plastic Tubing (From Lab 2.4)	Salt Water 2 containers for mixing
3.3	Clear Plastic Cup Blue Food Coloring (save for Lab 3.6)	Ice Warm Water
3.4	Plastic Container (From Lab 1.3 or Plastic Large Container) 100 ml Graduated Cylinder Ruler Hay Plaster of Paris	Dish Cloth Tools for Mixing Water Sand
3.5	Plastic Container (From Lab 1.3 or Plastic Large Container) Stopwatch Silicon Sealant Plaster of Paris	Containers and tools for mixing Water Sand
3.6	Plastic Container (From Lab 1.3 or Plastic Large Container) Ruler Plaster of Paris Blue Food Coloring (From Lab 3.3)	Containers and tools for mixing Digital Camera (Optional) Water Sand Corn Starch
3.7	**Lab 3.7 cannot be completed hands-on.** It requires very expensive GPS equipment ($500). Watch the video lab and complete the lab activity pages in the lab workbook.	

Lab	**Supplies in the Kit**	**You Provide**
4.1	Clear Plastic Cups Thermometers Stopwatch Ruler	250 W Heat Lamp Bulb (find it at a local hardware store) Brooder Reflector with Clamp (find it at a local hardware store) Tape Water Sand
4.2	Thermometers String (From Lab 2.7) Rubber band	Paper Towel Digital Camera (Optional) Water
4.3	None	Colored Pencils (Optional)
4.4	Tornado Tube	Microsoft Excel 10-day Weather Forecast and Weather History Report for your town Two Plastic Soda Bottles (2L work best) Water
4.5	Thumbtacks Cardboard String (From Lab 2.7)	None
4.6	Alpha III Model Rocket Launch Set A8 Model Rocket Pack (3 engines, 3 igniter plugs, 3 igniters, and 3 pieces of recovery wadding) String (From Lab 2.7) Ruler Protractor Weight 4 AA Batteries	Hobby Knife Wood Glue
4.7	None	Computer with Google Earth Pro (See note in Lab 1.2 instructions above) Download Stellarium (click here), the free planetarium or your computer (watch video lab if you have a tablet, but not a computer). Download NASA's Eyes on the Solar System (click here), a solar system exploration app. Works on Mac, PC, and most mobile devices.