



EXPLORATION EDUCATION

Advanced Physical Science Course

TIPS AND UPDATES FROM VERSION 10.3.X TO 10.4.X

Version 10.4.X is our latest version. In it we have made several updates including newer graphics and clearer explanation in some of the lessons, activities and experiments. We also updated some of the instructions in the project building sections. You will want to make these changes in your teacher's manual and logbook as noted below in the "Updates" section.

Tips:

- **Follow directions:** don't jump ahead – particularly when building the projects.
- **Racer:** Take your time when gluing on the axle holders. Make sure they are straight. Also, make sure the motor is glued on straight.
- **Glider and mini-house:** we generally send a little extra wood, so if you end up with extra pieces, that's okay. Also, even if a piece gets broken, you can usually glue it back together and it will still work just fine.
- **Steamboat:** to help the boiler last longer, we encourage you to run the boat in short intervals (so it doesn't overheat and form a leak).

Updates:

If you have version 10.3.X, please make the following corrections in the teacher's manual and logbook where appropriate.

- **Lesson 3.2** – added one question. "If a ball with a mass of 2kg was kicked and its moving speed was 10 m/s², how much force did the kick have?" Answer: "C"
- **Lesson 5.2 Experiment** – we no longer use a banana in this experiment. Because they were not always available, and the results varied depending on type/ripeness/etc. We also use zinc instead of aluminum. Data: Candle = .96 g/cm³, **Zinc = 7.14 g/cm³**, Egg = 1.12 g/cm³, ~~Banana = 1.02 g/cm³~~
- **Lesson 6.3 Experiment** – Answers: **D:** 0.01 foot-pounds **E:** About 55,000 racers to equal one horse.
- **Lesson 8.3 Experiment** – We updated this experiment, these are the answers to the new questions. 1. Wheels, pulleys, axles, inclined plane (wedge/screw eye in side of car), 2. Student will discuss how push, pull, gravity, mass, inertia, speed, velocity, and centripetal force are involved in this activity.
- **Lesson 9.1 Experiment** – Correct answer for worksheet: **A)** mechanical
- **Lesson 11.3** – Correct answer **1. A, D**
- **Lesson 16.4** – #2 and "In Your Own Words (IYOW)" should read:
2. A computer stores information digitally as either 1's or 0's. The combination of these 1's or 0's determines what it says.
IYOW: The hard drive is either given a magnetized section or un-magnetized to represent ones or zeros.