Errata for the Second Printing of *Exploring Creation With Physics, 2nd Edition*

With the help of students and teachers, we have found a few typos in the second printing of the second edition. These are listed in the errata sheet for the first printing as well.

Student Text

Introductory Remarks:

p. 3 In the second paragraph on the page, the object discussed is not really a cube. It should be called a box

Module #1:

CD ONLY In the section entitled "Speed and Velocity," near the top, the phrase:

…is 60.0 meters · 30.0 seconds… should read:

…is 60.0 meters ÷ 30.0 seconds…

CD ONLY In Experiment 1.2, step #7, the phrase:

…Dt. Take your value for Dv and divide it by Dt.… should read:

…Δt. Take your value for Δv and divide it by Δt.…

Module #2:

p. 41 In the fourth line above Example 2.2, the phrase

initial velocity, final velocity, acceleration, and distance.

Should read:

initial velocity, final velocity, acceleration, and displacement.

p. 43 In the third equation on the page, the "a" should be in boldface type.

p. 46 In both equations labeled (2.18), the "a" should be in boldface type.

p. 50 In the illustration, the velocity of the plane should have units of miles/hr.

p. 61 Near the end of the 13th line from the bottom, the word "help" should be replaced with "held"

Module #3:

CD ONLY In the section entitled "Vectors," near the bottom, the phrase:

…*learned that to solve for q in the above equation*… should read

…*learned that to solve for* θ *in the above equation.*…

Module #4:

p. 113 In the last equation on the page, there should be no negative sign on the 9.8 m/sec^2.

p. 114 In the first equation on the page, the argument of cosine should be 45.0^o.

p. 139 In question #3, "gunnery sergeant" should be replaced with "crew," as there is no gunnery sergeant position in the navy.

Module #5:

CD ONLY In the section entitled "An Equation for the Frictional Force," The bold-faced sentence should have a closed parenthesis after μs.

p. 148 The force in "On Your Own" problem 5.3 should be 15 Newtons, not 15.0 Newtons.

p. 164 The beginning of the last sentence of the first paragraph on this page should be "Since 530…" It currently reads "Since 580..."

pp. 170 The mass in the second equation should be 4.1 kg, not 4.0 kg. The equation should read:

$$\mathbf{w} = (4.1\,\text{kg}) \cdot (9.8\,\frac{\text{m}}{\text{sec}^2}) = 4.0 \times 10^1\ \frac{\text{kg} \cdot \text{m}}{\text{sec}^2} = 4.0 \times 10^1\ \text{Newtons}$$

Module #6:

CD ONLY In the section entitled "Translational Motion and Measuring Weight 2," "32 m/sec2" should be replaced by "32 ft/sec2"

p. 187 In the eighth line from the bottom, the acceleration should read 32 ft/sec^2

p. 188 Near the middle of the the 7th line from the bottom, the phrase "or course" should be replaced with "of course"

p. 195 The 7th line from the bottom should begin, "to indicate this, because it is used to get the *magnitude* of the torque…" the word "to" was left out.

p. 206 The second equation on the page should be $T_{1y} = T_1 \cdot \sin(45^o) = 0.71 \cdot T_1$.

p. 211 At the bottom of the page, the equation should use the symbol μ_k instead of μ_s.

Module #7:

p. 221 In the fourth line of the third paragraph, the word "strong" should be replaced with "string."

Module #8:

p. 278 In the last equation for 8.3, there should be an "=" before 2.6×10^3

p. 282 In the fifth and sixth equations on the page, 0.65 should be 0.67. This does not affect the answer.

p. 286 In problem #9, the time should be 2.40 minutes. This gives three significant figures, and that's how many are used for time in the solution.

Module #9:

CD ONLY "euation (9.7)" should be replaced with "Equation (9.7)."

In the section entitled "Angular Momentum, the units for angular momentum should be $\frac{\text{kg} \cdot \text{m}^2}{\text{sec}}$, not $\frac{\text{kg} \cdot \text{m}}{\text{sec}}$

p. 303 The left side of the second to the last equation should read -6.8×10^3, because when you multiply the numbers above, you have only three significant figures for each term. Then, when you add the terms, you can only report your answer to the hundreds place. This changes the final equation and the final answer. The final answer, then, should be 4.3 m/sec.

Module #10

p. 322 Last paragraph on this page, fourth line up, should say "force equal to but opposite the weight of the object…"

Module #12:

p. 416 In problem 12.6, one index of refraction (1.5) has only two significant figures. Thus, the answer can have only two. This means the correct answer is 58^o.

Module #13:

p. 432 The first line should say that the proton is more than 1,800 times as massive as the electron.

p. 440 The last three words on the page should be "Figure 13.3, a"

p. 445 In the second problem of Example 13.4, the charge should be -0.0060-mC.

Module #14:

p. 462 In the equation for ΔV, the initial potential should be 6.4×10^7 V, as calculated in the first two equations on the page. This changes ΔV to 1.8×10^7 V, which changes ΔPE to -1.0×10^5 J.

Module #15:

p. 507 Because of the rules of addition for significant figures, 1/Reffective should be 0.150 1/Ω, which makes Reffective 6.67 Ω.

Module #16:

p. 539 The first line of the second paragraph should read:

In the next section, we are going to see the usefulness of Faraday's Law of Electromagnetic…

"see" was left out

p. 542 The definition of direct current should say "flows" not "flow".

p. 546 The last seven words of #15 should say "magnet is the same in each case".

Extra Practice Problems for Module #6:

p. 569 The angle for problem 1 should be 45^o, not 45.0^o.

Extra Practice Problems for Module #9:

p. 573 Question #6 should ask for the velocity, not the speed.

p. 573 Question #8 should ask for the speed, not the velocity.

SOLUTIONS AND TESTS GUIDE

Answers to the Review Questions for Module #11

p. 11 In problem #5, the fourth difference should read "Sound waves travel more quickly in solids than in liquids and more quickly in liquids than in gases, whereas light waves generally travel more slowly the more dense the medium."

Solutions to the Practice Problems for Module #2:

p. 26 The first equation should read:

$$\mathbf{v}^2 = \mathbf{v}_o^2 + 2\mathbf{a} \cdot \Delta\mathbf{x}$$

The "**a**" was left out.

Solutions to the Practice Problems for Module #4:

p. 37 The answer to the second equation on the page should be 2.3×10^3 m. It was incorrectly written as 2.3×10^2 m. This does not affect the final answer, as the proper value was used in subsequent steps.

Solutions to the Practice Problems for Module #6:

p. 53 The weight that starts the 3rd line of the page should be 210 N, not 220 N. That weight is used in the solution, so the answer is not affected.

p. 55 For question #9, here is a better way of calculating the acceleration. This keeps consistent with our use of significant figures.

$f + -w \cdot \sin(\theta) = ma$

95 Newtons + -(290 Newtons)·sin(23°) = (30.1 kg)·a

95 Newtons + -110 Newtons = (30.1 kg)·a

a = -20 Newtons / 30.1 kg = -0.7 m/sec2

Sample Calculations for Experiment 6.1:

p. 56 The last line of data should read, "Minimum weight while elevator is falling: 171.1 lbs."

In addition, the average reported in the sample calculation should be 47.54,

which changes the angle to 27.98^{o} and μ to 0.5313.

Solutions to the Practice Problems for Module #7:

p. 61 The answer to question #10, should say 2.24 hours instead of 2.2 hours.

Solutions to the Practice Problems for Module #8:

p. 63 The answer to the first problem needs three significant figures. Thus, it should be 1.40×10^2 J.

p. 64 The value inside the square root should be 350 instead of 340 for question 3.

p. 65 The value inside the square root should be 290 instead of 292 for question 4.

Solutions to the Practice Problems for Module #9:

p. 72 The last equation for #6 should have a positive 18 in the numerator. This does not affect the final answer.

Solutions to the Practice Problems for Module #11:

p. 80 The answer to #2 should be *0.2157*. Since there are four significant figures in each number of the equation, there should be four in the answer.

p. 82 The answer to #7 should be *16 m/sec*. In the term where 551 is divided by 578 and multiplied by 346.7, you have only three significant figures. Since the next step is subtraction, you need to round that to 331. That means the result of the subtraction can be reported only to the ones place.

Solutions to the Practice Problems for Module #12:

p. 87 The answer to #7 should be *1.70*. Since there are three significant figures in each number of the equation, there should be three in the answer.

Solutions to the Practice Problems for Module #13:

p. 92 The units for the answer to 5b should be Newtons / C.

Solutions to the Practice Problems for Module #14:

p. 98 The third equation should be:

$$\Delta PE = q\Delta V = (1.5\ \text{C}) \cdot (-8 \times 10^9\ \frac{\text{N} \cdot \text{m}}{\text{C}}) = -1 \times 10^{10}\ \text{N} \cdot \text{m} = -1 \times 10^{10}\ \text{J}$$

Solutions to the Extra Practice Problems for Module #2:

p. 110 The solution to problem #5 should be -4 ft/sec^2. The units in the underlined portion of the answer should be changed to ft/sec^2 as well.

p. 111 In problems 8 and 9, the very last sentences should both end, "or 270 ft/sec down." In addition, the acceleration should be -32 ft/sec^2 and the displacement -1,140 ft, since both are directed down.

Solutions to the Extra Practice Problems for Module #6:

p.128 The second equation in the problem should read:

$$T_{2y} = (10.3 \text{ lbs}) \cdot \sin(105°) = 9.95 \text{ lbs}$$

This does affect the weight calculation to make 19.9 lbs. This does not affect the solution. However, the angle must be defined properly, which makes it 105º rather than 75º. This is where the third significant figure comes from.

p. 131 The solution to problem #8 should be -7.0 m/sec^2.

Solutions to the Extra Practice Problems for Module #7:

p. 136 In the last equation for problem #8, the denominator should not be squared. It does not affect the answer, as it was not squared when the math was done.

p. 137 The answer to the first equation should be 3.639×10^{11} m. It should then be plugged into the equation for Δt, but it does not affect the answer.

Solutions to the Extra Practice Problems for Module #9:

p. 145 In problem #7, the numerator for $\mathbf{v}_{both}$ should be 1.15×10^5, which changes the answer to 83.2 m/sec.

Solutions to the Extra Practice Problems for Module #15:

pp. 171-172 In problem #8, the single-digit resistances are listed as 5.0 Ω and 4.0 Ω. As a result, the solution should have the resistances to the tenths place as well. This changes the significant figures:

$$\frac{1}{R_{effective}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \frac{1}{R_5} = \frac{1}{5.0\,\Omega} + \frac{1}{15\,\Omega} + \frac{1}{4.0\,\Omega} + \frac{1}{5.0\,\Omega} + \frac{1}{20\,\Omega} = 0.77\,\frac{1}{\Omega}$$

$$R_{effective} = 1.3\,\Omega$$

Even though 20 has only one significant figure, we are adding, so we look at decimal place. All of the inverses go to the hundredths place, so that is why we can report the sum to 0.77, which allows us to report the effective resistance to two significant

figures. This changes the equations at the top of the next page to:

$$V = IR$$
$$I = \frac{V}{R} = \frac{1.5\ V}{1.3\ \Omega} = 1.2\,A$$
$$P = IV = (1.2\,A)\cdot(1.5\,V) = 1.8\ W$$

This makes the answer 1.8 W.

Test for Module #2:

p. 177 and pullout tests page 3 In question 12, the word "travel" should replace the word "skid." When a car skids, the brakes really aren't providing the negative acceleration, friction is.

Test for Module #6:

p. 185 and pullout tests page 11 In question 8, the child sitting on the swing is pictured on the SAME page, not the next page, as the question states.

Test for Module #8:

p. 190 and pullout tests page 15 #13 should start, "A 345-gram box slides down"

Test for Module #11:

p. 195 and pullout tests page 21 Question 3 should be reworded as follows:

Given substances A and B above, if A is a solid and B is a liquid, in which does sound travel faster?

Solutions to the Test for Module #1:

p. 207 The equation for question #7 should start out as:

$$\mathbf{v} = \frac{\Delta \mathbf{x}}{\Delta t}$$

Solutions to the Test for Module #8:

p. 238 The final answer for #10 should be 5.3 m/sec.

p. 239 The points for problem #12 should read, "(2 pts: one for equating kinetic energy and the work done by friction, one for the displacement)"

p. 240 The numerator of the last equation on the page should be **1.83×10^3**. This does

not affect the answer.

p. 239 and 240 All references to a "ball" should be replaced with "box" in problem #13

Solutions to the Test for Module #9:

p. 243 In the last equation for problem #12, the units on 3.7 should be m/sec. The "kg" part of the unit should not be there.

Solutions to the Test for Module #11:

p. 248 The answer to question #3 should be reworded as follows:

Sound speed increases from gas to liquid to solid. Thus, sound travels faster in substance A.

Solutions to the Test for Module #15:

p. 263 The answer to problem #14 should be *667 Watts*. The parallel resistors were not calculated with proper significant figures. Using the proper significant figures rules, the left-hand parallel set is 8.13 Ω and the right-hand set is 6.49 Ω. This changes the total resistance to 21.6 Ω, which changes the current to 5.56 A, which changes the final answer to 667 Watts.

Solutions to Quarterly Test #1:

p. 280 Because of the significant figures rules, the answer to problem #25 should be *90 ft*.

Solutions to Quarterly Test #2:

p. 287 To keep things consistent with the way significant figures are handled, the answer to #21 should be *4.7 m/sec*. Minor differences like this are not important, however.

p. 288 The second equation on the page is missing the closing square bracket under the square root sign.

p. 288 The grading suggestion should read, "(2 pts: one for equating kinetic energy and the work done by friction, one for the distance)"

Solutions to Quarterly Test #3:

p. 291 In the first equation on the page, there should be no "kg" unit with 5.7. Instead, the "kg" unit with 58.0 should cancel the "kg" unit in the denominator.

p. 292 In the second equation on the page, the number in the denominator should be 0.075. The typo was not used in the calculation, so the answer is not affected.

p. 294 In the equation for #18, the units on 21.3 were left out. They should be "m/sec."

Solutions to Quarterly Test #4:

p. 297 Problem #4: The answer should be -2.0 C.

p. 297 Problem #5: The answer should read, "The greatest acceleration will occur where the force is the greatest. In an electric field, this occurs where the line density is the greatest, directly next to A or B."

p. 297 Problem #6: This should be worth **2** pts: ½ for each force, and one for the answer. This makes the total possible points for the test **37** (p. 302).

p. 301 Problem #19: the third set of parallel resistors should have a resistance of 9.90 Ω, which makes the total resistance 23.4 Ω, which makes the current 5.13 A, which makes the power 6.16 Watts.