5 – Maximizing Points on Exams (The 4-Step Process—Usually Physics)

NOTE The following is one of the key points of this textbook—that is, all questions are written and structured the way one would to maximize points on exams! It is good for your health!

The Four-Step (or three-step FFF) Process to Point Maximization of Exams: PHYSICS

Step 1: Formulae [Usually worth 50% of the credit]

Step 2: Formulate [Usually worth 50% of the credit]

Step 3: Execute [Usually worth -50% of the credit]

Step 4: Finalize [Usually worth 0% of the credit]

Think of solving math or physics problems like writing an essay. Where the question is the title, the formulae and formulation are the introduction, the formulation with the execution is the body, and finalizing is the summary. **Basic Physics Example**:

Step 0 (Question = Title): If a car is traveling at 10 feet per second in a straight line, for 5 minutes, **what is** the **total distance** traveled in **meters**?

Step 1 (Introduction = Formulae/Units) 50% of Credit on the Exam (in most cases).

$$(\text{velocity})(\text{time}) = (\text{distance}), \qquad v_x \Delta t = \Delta x \;\Rightarrow\; v_x = \frac{\Delta x}{\Delta t}.$$

$$t = 5\text{ min} = (5\text{ min})\left(\frac{60\text{ s}}{1\text{ min}}\right) = (5\ \cancel{\text{min}})\left(\frac{60\text{ s}}{1\ \cancel{\text{min}}}\right) = 300\text{ s}.$$

Step 2/3: Formulate/Execute = Body (more or less) 50% of Credit on Exam (in most cases).

$$v = 10\ \frac{\text{ft}}{\text{s}} = \frac{10\text{ ft}}{1\text{ s}} = \left(\frac{10\ \cancel{\text{ft}}}{1\text{ s}}\right)\left(\frac{12\ \cancel{\text{in}}}{1\ \cancel{\text{ft}}}\right)\left(\frac{2.54\ \cancel{\text{cm}}}{1\ \cancel{\text{in}}}\right)\left(\frac{1\text{ m}}{100\ \cancel{\text{cm}}}\right) = \frac{(10)(12)(2.54)}{100}\ \frac{\text{m}}{\text{s}} = \frac{6(2.54)}{5}\ \frac{\text{m}}{\text{s}}$$

$$= \frac{6(2.00+0.54)}{5}\ \frac{\text{m}}{\text{s}} = \frac{\big(12.00+6(0.54)\big)}{5}\ \frac{\text{m}}{\text{s}} = \frac{(12.00+3.24)}{5}\ \frac{\text{m}}{\text{s}} = \frac{15.24}{5}\ \frac{\text{m}}{\text{s}} = 3.048\ \frac{\text{m}}{\text{s}}.$$

$$v_x \Delta t = \Delta x \;\Rightarrow\; \Delta x = \left(3.048\ \frac{\text{m}}{\text{s}}\right)(300\text{ s}) = 914.4\text{ m}.$$

Step 4: Finalize 0% of Credit on Exam = Summary. The answer is worth nothing!

Therefore, the total distance travelled is 914.4 m.

