

Physics 2A Homework assignments

Doing the homework problems is one of the most important steps to understanding the applications of the concepts taught in class. Most of your work in this class should be devoted to the homework problems. Do not let the fact that each problem is worth only one or two points deter you from giving these problems the bulk of your attention. It will be time well spent.

You may work on the homework problems EITHER individually OR in groups. If you work in groups (no more than 3 per group), then the group will submit ONE set of answers with everyone's name on it. However, I strongly recommend that each group member get a copy of the graded problems.

Each member of the group is responsible for understanding all of the material. Therefore, when working as a group, you must meet as a group and decide on answers/approaches as a group before submitting the final answers. (In other words, you can't split up the problems and staple them together right before class.)

All problems are worth 2 points, unless you are told otherwise. You should attempt ALL problems. The problems are listed in numerical order, and NOT order of difficulty. **(Double) underlined problems are probably (much) more challenging.** You may want to skip around when working on the problems, but **you should submit problems in the order listed.**

Some problem sets may not be collected because they would naturally be due near/on test dates. Solutions, however, will be posted and you are STRONGLY urged to work on the suggested problems.

EC = Extra credit. Don't forget, only a random sample of problems will be graded.

Set	Due	Chap.	Problems
A	not due	1	9, 13, 14, 18, 28, 35, 39, 40, 41, 42 – these are good practice for lab skills and math review!
B		2	1, 7, <u>22</u> , <u>35</u> , <u>37</u> , <u>39</u> , 43, <u>45</u> , <u>49</u> , <u>61</u> . EC = <u>38</u> , <u>48</u> , <u>57</u> . <u>For all:</u> Don't forget to draw pics!!
C		3	8 (graphically), 9, <u>18</u> , 22, <u>30**</u> , <u>31</u> , 36*, <u>38*</u> , <u>58</u> , <u>71</u> . EC = <u>56</u> , <u>61</u> , <u>70</u> . Hint #18: forces are vectors! *you may omit these if we did not cover "Relative motion" in class. **Clear = go above, Fall short = go below
D		4	15, 17, 18, 35, <u>41</u> , <u>43*</u> , <u>50**</u> , <u>51^x</u> , <u>58</u> , <u>77</u> . *terminal = constant. **Force is horizontal, not uphill! ^x Two FBDs: crutch, person.
E		4	2*, 6**, <u>26</u> , <u>27</u> , <u>29</u> , <u>34</u> , <u>44</u> , <u>49</u> , <u>52</u> , <u>68</u> . EC = <u>62</u> , <u>69</u> , <u>76</u> . *ignore gravity. **watch units. Hint #27(a): 1 system. #52: blocks diff accel! #44(b): assume crate starts with an uphill velocity.
F		5	5, 9, 21, 26, <u>31</u> , <u>33*</u> , 48, <u>53</u> , <u>66**</u> , <u>77</u> . EC = <u>43</u> , <u>54</u> , <u>76</u> . *20m above starting point. **1 pound on Earth = 454 grams
G		6	18, <u>21*</u> , <u>22</u> , 25, <u>36</u> , <u>42</u> , <u>44</u> , <u>50</u> , <u>57</u> , <u>58</u> . EC = <u>54</u> , <u>64</u> . *Use <i>relative motion</i> . Omit if not covered.
H		7	1, 4, <u>10</u> , 21, 23, <u>24*</u> , <u>28</u> , 43, <u>47</u> , <u>51**</u> . EC = <u>26</u> , <u>48</u> , <u>53</u> . *bank=tilt. **Hint #51: what force holds you up if no floor?
I		7	<u>25</u> , 35*, 36*, <u>45*</u> , <u>57</u> . Hint #57: $v_{top} \neq 0!$ *omit if we skipped Kepler's laws AND Universal Gravity.
		8	2, 5, 8, 18, <u>21</u> .
J		8	<u>23</u> , <u>32</u> , <u>36</u> , 39, 43, 45, 47, <u>51</u> , <u>53</u> , <u>68</u> . EC = <u>14</u> , <u>25</u> , <u>50</u> . Hint #32: Which dir are F_N and f ? #36: $a_T = r\alpha$.
K		9	1, <u>10</u> , 13, <u>17</u> , <u>22*</u> , 27, <u>33</u> , <u>34</u> , 42, <u>46</u> . EC = <u>38</u> , <u>45</u> . *2 questions!
L		10	1, 12, <u>21</u> , 29, <u>30</u> , 36, 40, <u>44</u> , <u>58</u> , <u>60</u> . EC = 48, <u>53</u> , <u>54</u> . Hint #12: each half-oscillation is one tick on a clock. #44: see pp. 322-323. #60: if gases in different box are in equilibrium, what's the net force on each gas box? Think of another constraint (i.e. condition/equation), BEFORE trying to do physics stuff.
M		11	2, <u>10</u> , 12, 15, 20, <u>30</u> , 34, <u>38</u> , <u>44</u> , <u>54</u> . EC = <u>17</u> , <u>18</u> , <u>36</u> . Hint #34, 38: read pp. 342-344. #44: Tungsten melts at a VERY high temperature.
N		13	20, 26, 27, <u>32</u> , 37, 40.
		14	10, 13, <u>14</u> , <u>15</u> .

Exam problems will include numerical problems like those given above, AND **conceptual questions.** You are encouraged to look at the conceptual questions at the end of each chapter, as well as the many questions & quizzes throughout the chapters. Some answers to these questions are at the end of the book. I will be happy to provide answers to other questions.