# TAM 210/211 - Written Assignment Instructions

To teach you how to prepare your analyses in a logical manner, you will be asked to submit an INDIVIDUAL assignment. Find below the requirements and guidelines for this written assignment:

1. Solutions should be NEAT. Do not cross out text or drawings. Make sure erasures are complete, i.e., that the previous text does not show through.
2. Your name and discussion session number must be printed legibly on the top of the first page.
3. Use plain white paper (with no lines) or engineering paper. It is acceptable to recycle, i.e. use the clean back-side of used sheets of paper.
4. Use proper units in case numerical values are given.
5. Use half page per problem.
6. Scan your report and save it in pdf format. Files in any other format will not be graded.
7. While scanning make sure you scan all the pages of your written report in ONE pdf file. We will only grade a single pdf file.
8. Your scanned work must be in portrait format.
9. IN SUMMARY, WE WILL ONLY GRADE REPORTS UPLOADED AS A PDF FILE, SINGLE DOCUMENT, PORTRAIT FORMAT! NO EXCEPTIONS!! Submitted assignments that do not comply with these guidelines will receive a ZERO score.

**How to submit a written assignment**

1. Written assignments will be posted on compass 2g. Please log into compass 2g and go to course content, and click on the folder "Written Assignments"
2. Click on the available assignment, for example, Written Assignment 2
3. To save/read the problem statement, click on the attached file, e.g. WA2.pdf
4. To start the submission process, click on "Browse my computer" and select your scanned document.
5. After you are finished uploading your document, please click on "SUBMIT" to complete your submission.
6. You must be able to open your document from compass. Check the preview to verify your submission was completed successfully. Note that this preview cannot be upside down; TAs will be reading and grading your report directly from compass and will NOT download your document. If the document does not appear correctly on compass, your assignment will not be graded and therefore you will receive a zero score.
7. These assignments are due at 11:59pm. Late reports will not be accepted (you will not be able to upload it on compass 2g). No exceptions. DO NOT SEND YOUR LATE WRITTEN REPORT BY EMAIL.

Name:_____

# TAM 210/211 Written Assignment 2, Fall 2017

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The **OBJECTIVE** of this written assignment is to practice **drawing free-body diagrams (FBD)**. For problems 6 to 10, identify and draw the FBD(s) necessary to solve the given problem. Assume the masses of beams and links are negligible, and there is no friction.

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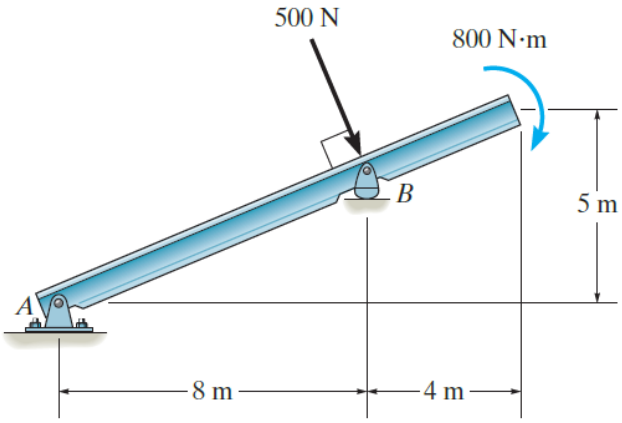
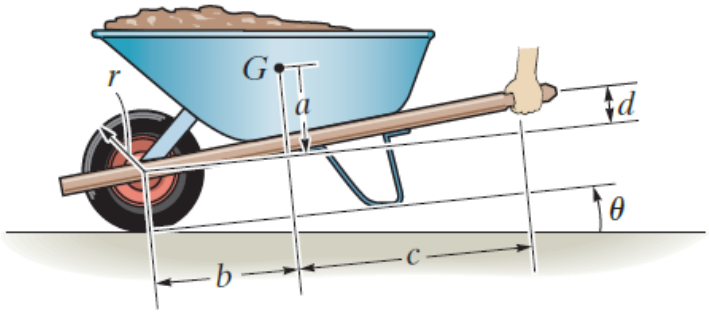
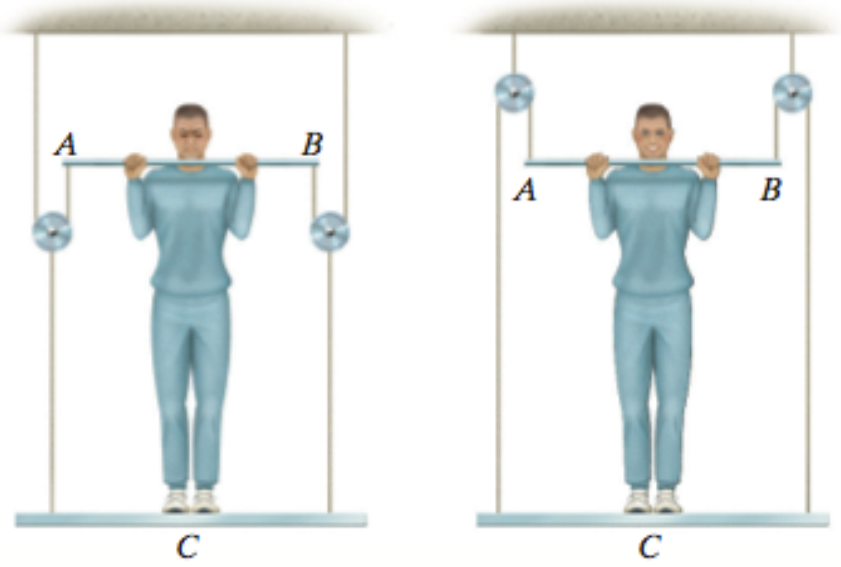
**Problems 1:** Draw the free-body diagram of the beam.



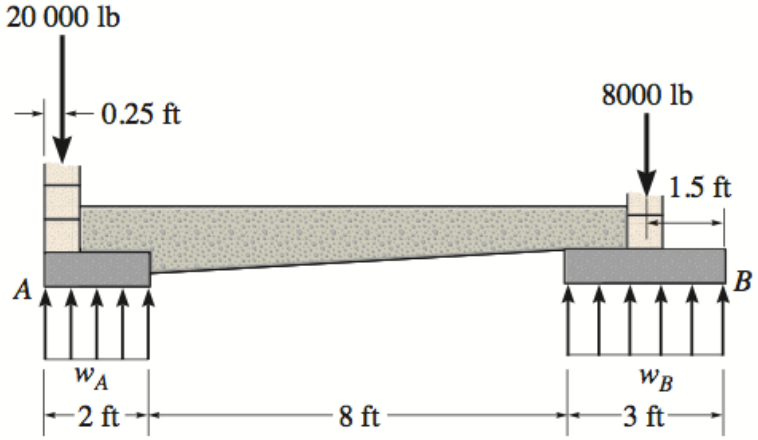

**Problem 2:** Draw the free-body diagram of the wheelbarrow and its contents. Together they have a mass of 60 kg and a center of mass at G. A pulling force of P is applied at the handle (e.g. at the location of the hand).



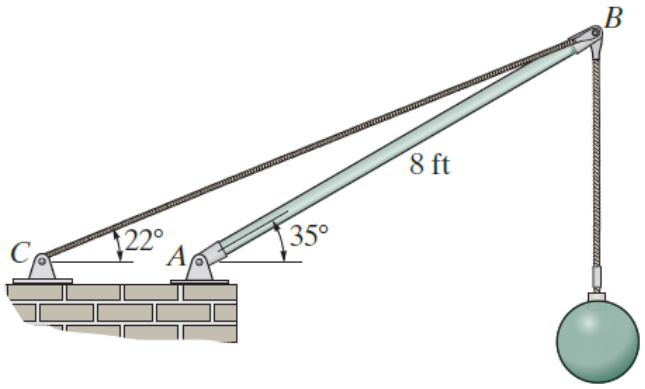
**Problem 3:** A man having a weight of *W* attempts to hold himself using one of the two methods shown. Draw the free-body diagram of the man in both configurations.



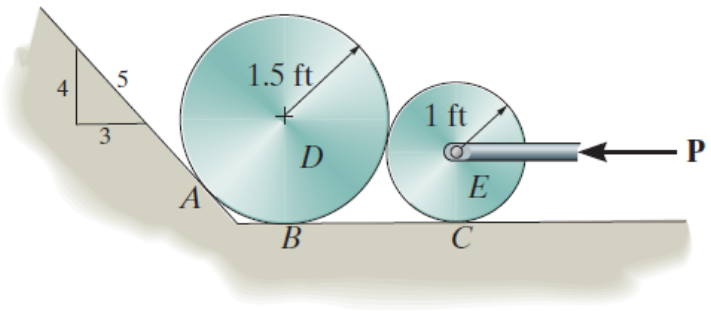

**Problem 4:** The cantilever footing is used to support a wall near its edge *A* so that it causes a uniform soil pressure under the footing, $w_A$ and $w_B$, measured in lb/ft at pads *A* and *B*. Draw the free free-body diagram of the cantilever footing.



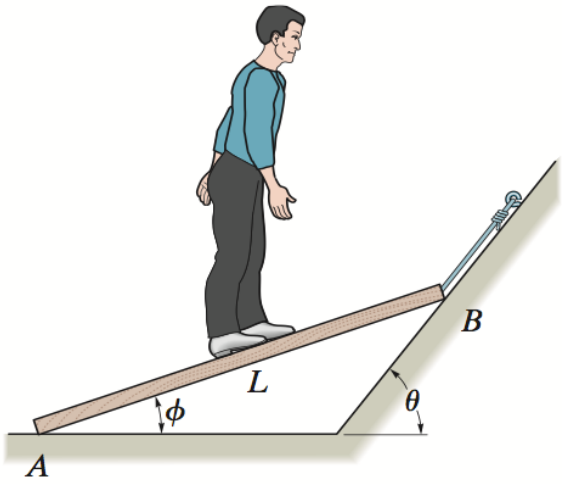
**Problem 5:** Draw the free-body diagram of the boom AB.



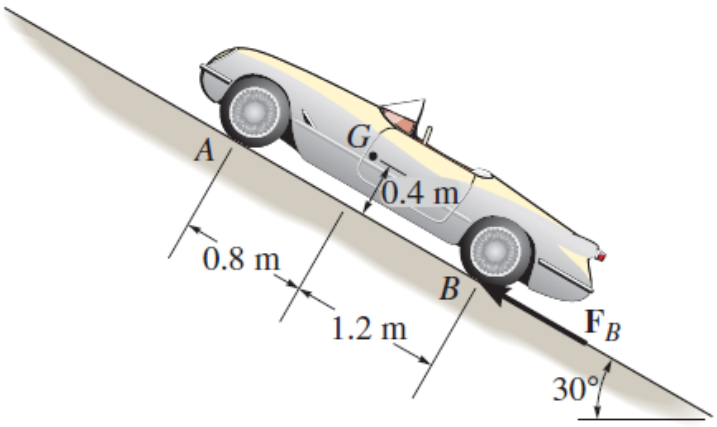

**Problem 6:** Given the weights of disks *D* and *E*, draw the FBD(s) for finding the minimum force **P** required to push disk D up the ramp.



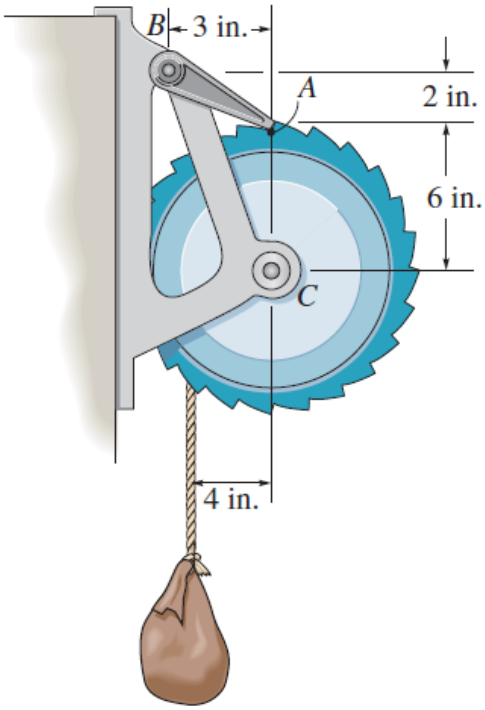
**Problem 7:** The man has a weight **W** and stands at the center of the plank. If the planes at *A* and *B* are smooth, draw the FBD(s) for determining the tension in the cord.




**Problem 8:** The sports car has a mass of 1.5 Mg and mass center at G. Assume the surface is smooth, draw the FBD for finding the magnitude of force $\mathbf{F_B}$ required to keep the car at equilibrium.



**Problem 9:** The maximum compression strength of pawl *AB* is 1.5 kN, draw the FBD for finding the maximum allowable mass of the bag.




**Problem 10:** The platform scale consists of a combination of third and first class levers so that the load on one lever becomes the effort that moves the next lever. Through this arrangement, a small weight can balance a massive object. Draw the FBD(s) for determining the required mass of the counterweight *S* necessary to balance load *L*.