

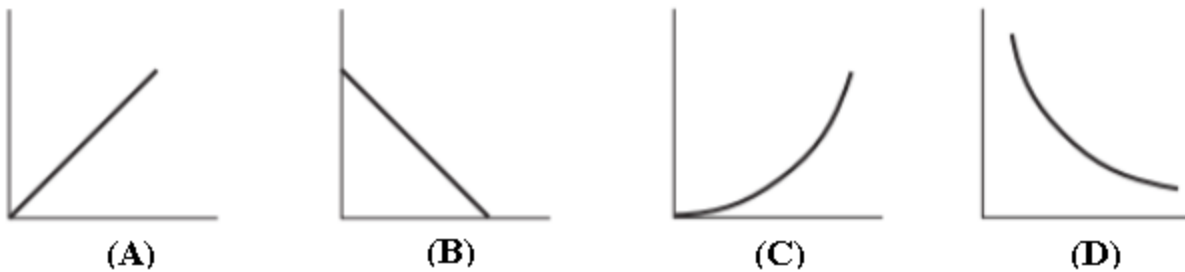
Week 7 - Dynamics

Homework Procedure: Read pages specified in Honors Physics Essentials by Dan Fullerton. Questions labeled TQ will be questions about the text you read. These TQ's can be answered in one word, one phrase, or a complete sentence. Questions labeled CQ are conceptual questions and must be answered in complete sentences. Questions labeled QQ's are quantitative questions and the equation, substitution with units, and solve with units must be shown on your paper. CQ's and QQ's will be similar to the questions found in the Honors Physics Essentials textbook.

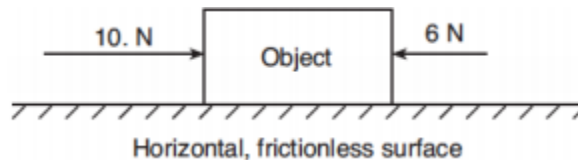
Read Page 64 (Newton's 2nd Law of Motion)

TQ1. What is the equation to Newton's 2nd Law of Motion?

CQ2. Which graph below best represents the relationship between acceleration and the net force on an object?

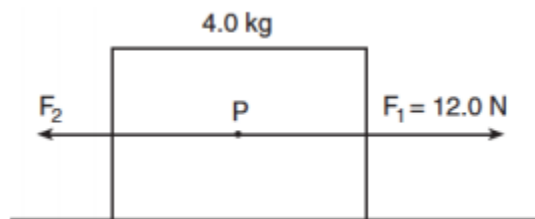


CQ3. Which graph above best represents the relationship between acceleration and the mass of an object?



QQ4. On the object above, what is the net force (and direction) on the object?

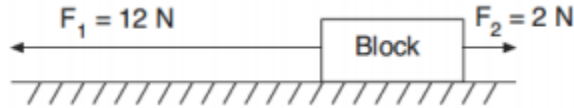
QQ5. Using your answer from QQ4, what is the acceleration of the object if it has a mass of 0.5 kg?



QQ6. If the 4 kg box (shown above) is accelerating at 2 m/s^2 to the right, what is the net force acting on the box?

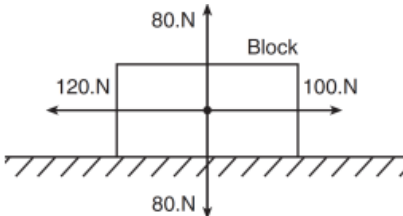
QQ7. Using your answer from QQ6 and the diagram above, what is the frictional force, F_2 , acting on the box?

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QQ8. Two forces are acting on a block (shown above). What is the net force on the block?

QQ9. If the block in QQ8 is accelerating at 4 m/s^2 , what is the mass of the block?



QQ10. What is the net force (magnitude and direction) on the block shown above?

QQ11. If the block is 5 kg, what is the acceleration (magnitude and direction)?

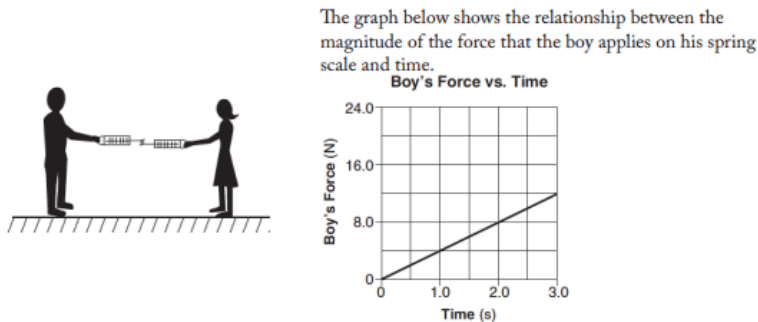
Read Page 70-71 (Newton's 3rd Law)

TQ12. In your own words, what is Newton's 3rd Law?

TQ13. What are the pairs called that forces always come in?

CQ14. The Earth exhibits a gravitational attraction on the Moon of approximately $2 \times 10^{20} \text{ N}$ of force. Does the Moon exhibit a lesser, greater, or the same gravitational attraction on the Earth?

CQ15. If a 65-kilogram astronaut exerts a force with a magnitude of 50 N on a satellite that she is repairing, what is the magnitude of the force that the satellite exerts on her?



CQ16. A 100 kg boy pulls on a spring scale attached to a spring scale held by a 50 kg girl. The graph above shows the boy's force vs. time. Which graph below best represents the girl's force vs. time?

