

Free Particle Model Worksheet 1a: Force Diagrams

In each of the following situations, represent the object with a particle. Sketch all the forces acting upon the object, making the length of each vector represent the magnitude of the force. Also use congruency marks to indicate which vectors are equal in magnitude.

1. Draw a force diagram for the motionless cat on a rug. Label the forces and use equality marks on the force vectors.



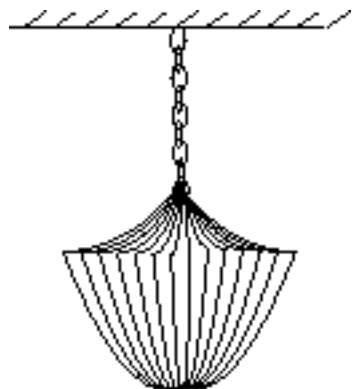
2. Draw a force diagram for the skater, moving at constant speed across frictionless ice. Label the forces and use equality marks on the force vectors.



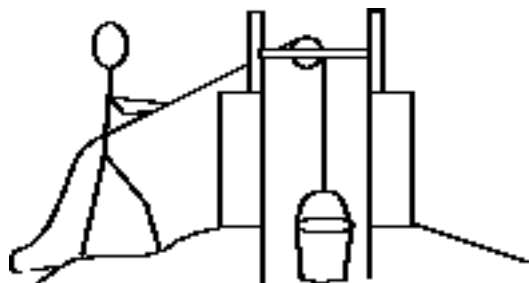
3. Draw a force diagram for the softball player who is slowing as she slides into the base. Label the forces and use equality marks on the force vectors.



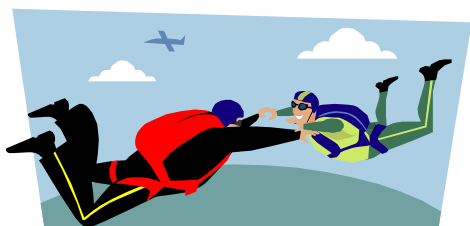
4. Draw a force diagram for a chandelier that is suspended from the ceiling by a chain. Label the forces and use equality marks on the force vectors.



5. Draw a force diagram for the bucket of water that is being raised from the well at constant speed. Label the forces and use equality marks on the bucket of water.



6. Draw a force diagram for a skydiver who has just left the plane and is still speeding up. Label the forces and use equality marks on the force vectors.



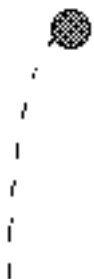
7. Draw a force diagram for a skydiver who is descending at a constant velocity. Label the forces and use equality marks on the force vectors.



8. Draw a force diagram for a ball rising in a parabolic trajectory. Label the forces and use equality marks on the force vectors.



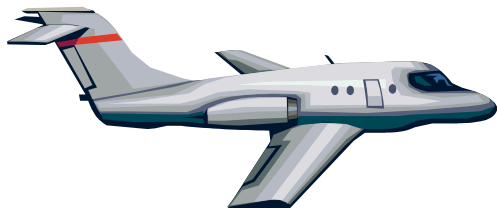
9. Draw a force diagram for a ball at the top of a parabolic trajectory. Label the forces and use equality marks on the force vectors.



10. Draw a force diagram for a cork floating in water. Label the forces and use equality marks on the force vectors.



11. Draw a force diagram for an airplane in straight and level flight. Label the forces and use equality marks on the force vectors.



12. Draw a force diagram for a nail that has been picked up by a magnet. Label the forces and use equality marks on the force vectors.

