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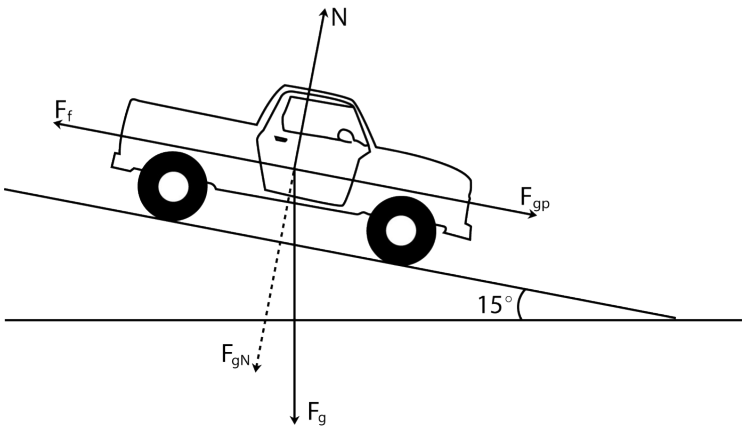
Drawing Free Body Diagrams



F_f = 7500 N F_{gN} = 9500 N

F_{gp} = 2500 N mass = 1000kg

Step 1: Draw an arrow (vector) in the direction of gravity. This is called F_g.
Step 2: Is this object on an incline? Yes? Draw another vector perpendicular to the angle of incline. Label this vector F_{gN}. No? Move on to step 3.
Step 3: Draw a vector opposite of F_g or F_{gN} if it exists. Label this FN
Step 4a: Are there other forces? Draw the vectors in those directions. Is there a resistive force? Draw that vector and label it Fr.
Step 4b: Is the object moving? Draw the vector in the direction of the motion and label it F_{net}.
Now you have a Free Body Diagram
Now do these:

1. Draw a free body diagram of a book on a desk. The book has a mass of 1800g.

2. Draw a FBD of an airplane in the sky. Think of the properties of flight. The mass of the plane is 12,000kg.

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3. Draw a FBD of a wagon being pulled by a boy. Include the boy. Wagon – 7.8kg. Boy – 18kg

4. Draw a FBD of a skateboarder on a ramp. The skateboard has a mass of 2.2kg. The person has a mass of 62kg. The ramp is inclined to 36°.

5. Draw a FBD of a car going down hill. The Car has a mass of 2178kg. The hill is 12°.