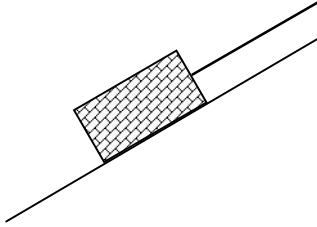
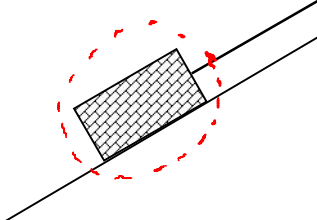
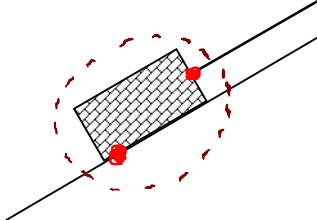
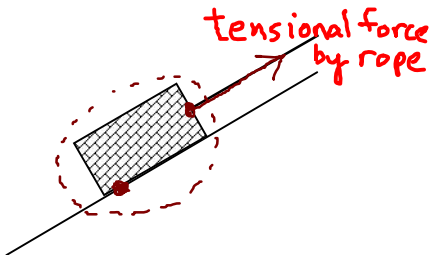
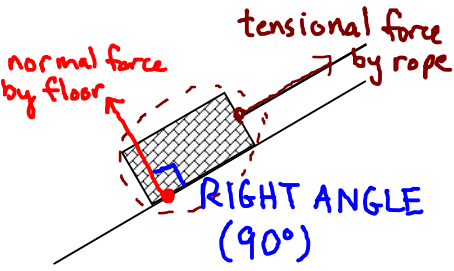
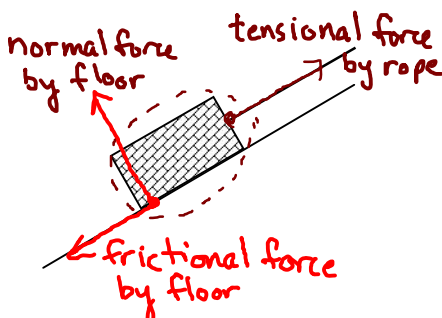
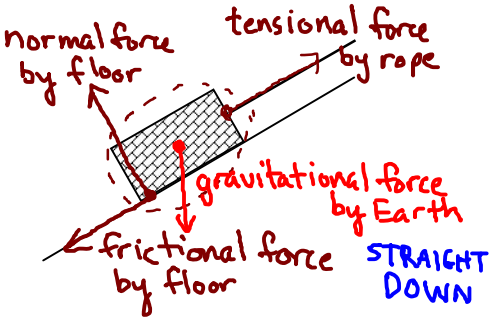
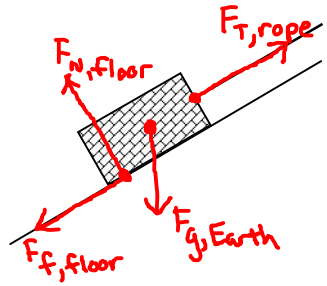


# How to identify the forces acting on an object and draw its force diagram

<p><b>Read the problem</b> carefully.  <b>Draw a picture</b> if one is not included.</p>	<p>A block is being pulled up a hill. There's friction.</p>  <p>A simple diagram showing a rectangular block with a brick-like texture on an inclined plane. The plane is represented by two parallel lines sloping upwards from left to right.</p>
<p><b>Identify the system</b> and draw a dotted circle around it.</p>	 <p>The same diagram as above, but with a red dotted circle drawn around the block to identify it as the system.</p>
<p>Identify the <b>contact forces</b>. Find the places the environment touches the system.</p>	 <p>The diagram with the dotted circle, now with two red dots placed at the points where the block touches the inclined plane: one at the top-right corner and one at the bottom-left corner.</p>
<p>For each force, label the <b>type of force</b> and the <b>object exerting that force</b>.</p> <p>For each force, draw a straight arrow indicating the <b>direction the force is exerted</b>. Look in your notes for a list of forces and their directions.</p>	 <p>The diagram with the dotted circle and red dots. A red arrow points up the incline from the top-right contact point. The label "tensional force by rope" is written in red above the arrow.</p>
<p>For the direction, ask yourself "What's happening to the system?"</p> <p>"What's the rope doing to the block?" Not "What's the block doing to the rope?"</p>	 <p>The diagram with the dotted circle, red dots, and tensional force arrow. A second red arrow points perpendicular to the incline from the bottom-left contact point, labeled "normal force by floor" in red. A blue right-angle symbol is drawn at the contact point, with the text "RIGHT ANGLE (90°)" written in blue next to it.</p>

<p>Some contact points have more than one force exerted at that point.</p> <p>Frictional force goes the direction the atoms are being sheared at the point of contact.</p>	
<p>Identify the <b>field forces</b>. So far we're dealing with only gravitational force.</p> <p>Gravitational force is <b>ALWAYS STRAIGHT DOWN</b> (toward the center of the Earth, or the source of the gravitational field).</p>	
<p>The diagram is complete. You may abbreviate the forces only if you use proper abbreviations.</p>	

Tips:

- When determining the direction of the force, ask yourself “What’s **happening** to the system?” and **NOT** “What is the system **doing** to its surroundings?”
- If the object is on or near Earth (almost always), there’s gravitational force by Earth acting on it **straight down**.