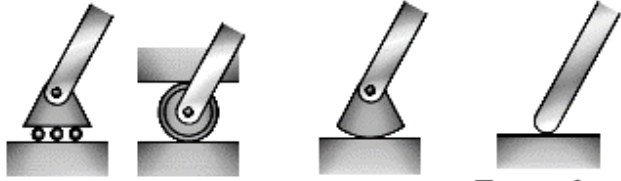



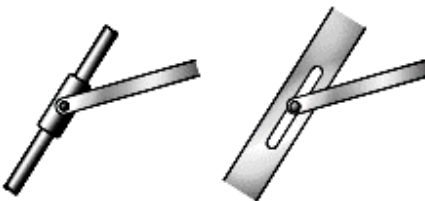
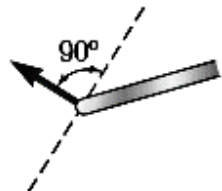

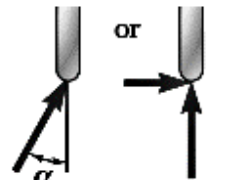

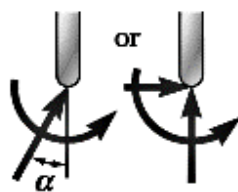
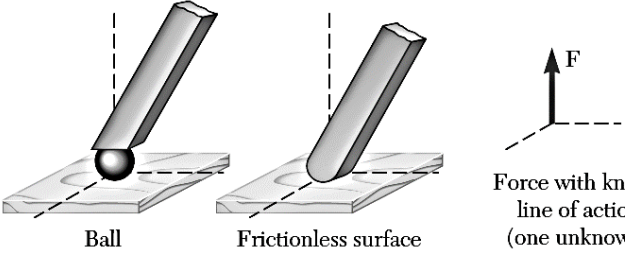
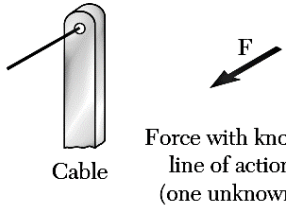
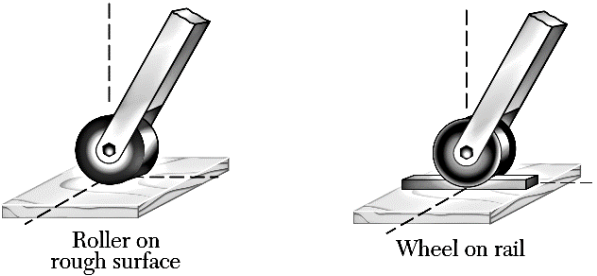
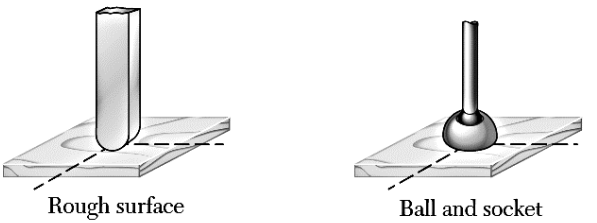
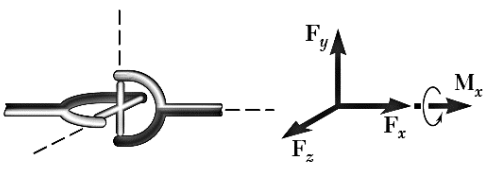
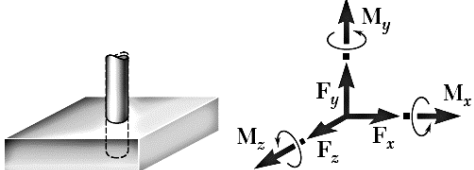
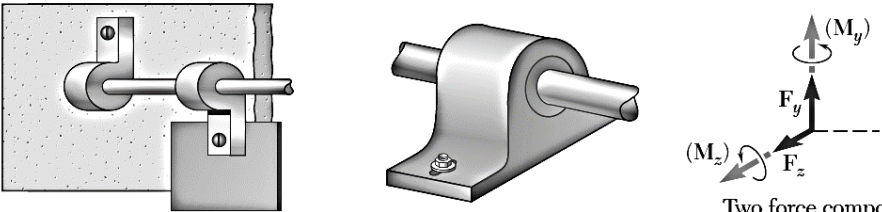
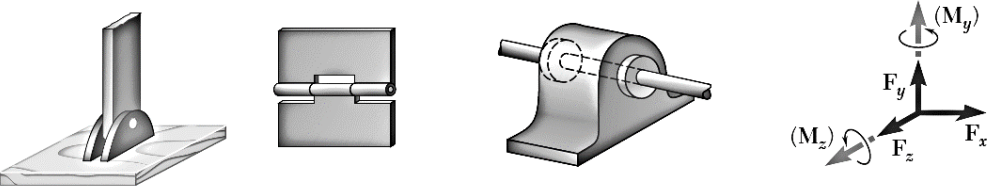




Support or Connection	Reaction	Number of Unknowns
 <p>Rollers Rocker Frictionless surface</p>	 <p>Force with known line of action</p>	1
 <p>Short cable Short link</p>	 <p>Force with known line of action</p>	1
 <p>Collar on frictionless rod Frictionless pin in slot</p>	 <p>Force with known line of action</p>	1
 <p>Frictionless pin or hinge Rough surface</p>	 <p>Force of unknown direction</p>	2
 <p>Fixed support</p>	 <p>Force and couple</p>	3



 <p>Ball Frictionless surface</p> <p>Force with known line of action (one unknown)</p>	 <p>Cable</p> <p>Force with known line of action (one unknown)</p>
 <p>Roller on rough surface Wheel on rail</p> <p>Two force components</p>	
 <p>Rough surface Ball and socket</p> <p>Three force components</p>	
 <p>Universal joint</p> <p>Three force components and one couple</p>	 <p>Fixed support</p> <p>Three force components and three couples</p>
 <p>Hinge and bearing supporting radial load only</p> <p>Two force components (and two couples)</p>	
 <p>Pin and bracket</p> <p>Hinge and bearing supporting axial thrust and radial load</p> <p>Three force components (and two couples)</p>	