29. Each side of the trough exerts a normal force on the crate. The first diagram shows the view looking in toward a cross section. The net force is along the dashed line. Since each of the normal forces makes an angle of 45° with the dashed line, the magnitude of the resultant normal force is given by $N_r = 2N\cos 45° = \sqrt{2}N$. The second diagram is the free-body diagram for the crate (from a "side" view, similar to that shown in the first picture in Fig. 6-36). The force of gravity has magnitude mg, where m is the mass of the crate, and the magnitude of the force of friction is denoted by f. We take the $+x$ direction to be down the incline and $+y$ to be in the direction of $\vec{N}_r$. Then the x component of Newton's second law is $mg\sin\theta - f = ma$ and the y component is $N_r - mg\cos\theta = 0$. Since the crate is moving, each side of the trough exerts a force of kinetic friction, so the total frictional force has magnitude $f = 2\mu_k N = 2\mu_k N_r/\sqrt{2} = \sqrt{2}\mu_k N_r$. Combining this expression with $N_r = mg\cos\theta$ and substituting into the x component equation, we obtain $mg\sin\theta - \sqrt{2}mg\cos\theta = ma$. Therefore $a = g(\sin\theta - \sqrt{2}\mu_k\cos\theta)$.