

科目：普通物理

適用：土木系二

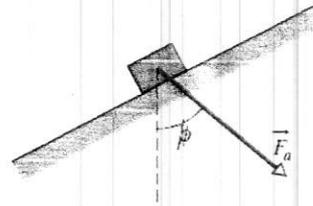
編號：322

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

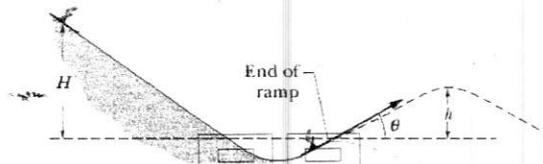
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1. In the right figure, a constant force \vec{F}_a of magnitude 82.0 N is applied to a 3.00 kg shoe box at angle $\phi=53.0^\circ$, causing the box to move up a frictionless ramp at constant speed. How much work is done on the box

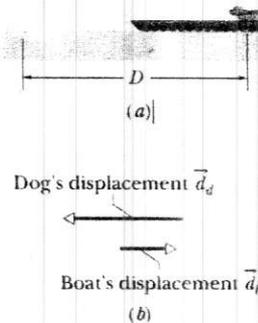


by \vec{F}_a when the box has moved through vertical distance $h=0.20$ m? (25%)

2. A 60 kg skier starts from rest at height $H=20$ m above the end of a ski-jump ramp (Figure below) and leaves the ramp at angle $\theta=28^\circ$. Neglect the effects of air resistance and assume the ramp is frictionless. What is the maximum height h of his jump above the end of the ramp? (25%)



3. In right Fig. a, a 4.5 kg dog stands on an 18 kg flatboat at distance $D=6.1$ m from the shore. It walks 2.4 m along the boat toward shore and then stops. Assuming no friction between the boat and the water, find how far the dog is then from the shore. (Hint: See Fig. b) (25%)



4. In Fig., one end of a uniform beam of weight 100 N is hinged to a wall; the other end is supported by a wire that makes angles $\theta=30.0^\circ$ with both wall and beam. Find (a) the tension in the wire and the (b) horizontal and (c) vertical components of the force of the hinge on the beam. (10%+10%+5%)

