

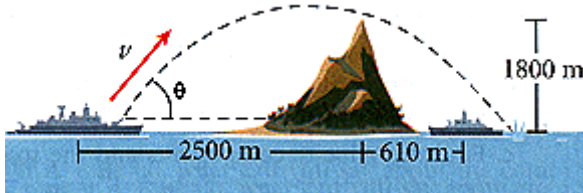
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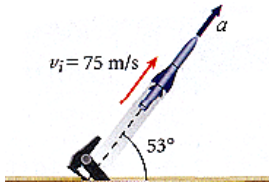
Projectile Motion III

1. A ship maneuvers to within 2500 m of an island's 1800 m high mountain peak and fires a projectile cannonball at an enemy ship 610 m on the other side of the peak, as illustrated in the figure below. If the ship shoots the projectile with an initial velocity of 261 m/s at an angle of 76° above the horizontal,
 - a. How close to the enemy ship does the projectile land?



- b. By how much does the cannonball clear the peak?

2. A toy rocket is launched at an angle of 53° above the horizontal with an initial speed of 75 m/s , as shown in the figure below. It accelerates by its own fuel for 30 seconds, and accelerates at 23 m/s^2 in a straight line. At this time its fuel runs out and the rocket proceeds to move as a free body in angled projectile motion..
- a. What is the rocket's maximum altitude? (*Hint: Look back to the rocket problems we completed earlier. Your answer should be between 25,000 and 30,000 meters*)



- b. What is the rocket's total time of flight? (*Your answer should be between 2 and 3 minutes*)
- c. What is the rocket's horizontal range? (*Your answer should be between 70,000 and 80,000 meters*)