

# EXTRA PROJECTILES

Assume no frictional effects.

- A projectile is fired at such an angle that the vertical component of its velocity is 49 m/s. The horizontal component of its velocity is 60 m/s.
  - How long does the projectile remain in the air?  $\rightarrow (10s)$
  - What horizontal distance does it travel?  $\odot$   $\leftarrow (600m)$  *What is angle and  $V_i$ ?  
71.5 m/s [39.2 angle of elevation]*
- A projectile is fired with a speed of 196 m/s at an angle of  $60^\circ$  with the horizontal. Calculate
  - the vertical velocity and the horizontal velocity of the projectile.  $(V_{ix} = 98 \text{ m/s } V_{iy} = 169.7 \text{ m/s})$
  - the time the projectile is in the air.  $(34.6 \text{ sec})$
  - the horizontal distance the projectile travels.  $(3.39 \text{ km})$
- A projectile is fired at an angle of  $53^\circ$  with the horizontal. The speed of the projectile is 200 m/s. Calculate
  - the time the shell remains in the air.  $(54.2 \text{ sec})$
  - the horizontal distance it travels.  $(10.8 \text{ km})$
- While standing on an open bed of a truck moving at 35 m/s an archer sees a duck flying directly overhead. The archer shoots an arrow at the duck and misses. The arrow leaves the bow with a vertical velocity of 98 m/s. The truck maintains a constant speed of 35 m/s and does not change its direction.
  - How long does the arrow remain in the air?  $(20s)$
  - Where does the arrow finally land?  $(\text{MITS THE ARCHER})$
  - What horizontal distance does the arrow travel while it is in the air?  $(700m)$
- A golf ball is hit at an angle of  $45^\circ$  with the horizontal. If the initial velocity of the ball is 50 m/s, how far will it travel horizontally before striking the ground?  $(254.7m)$