NAME KEY

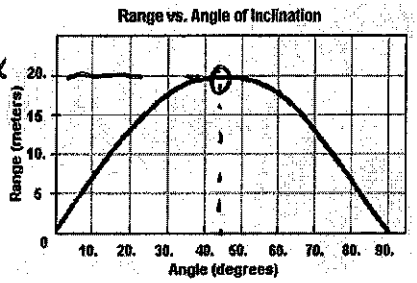
PROJECTILE PRE-TEST

1. A A book is pushed with an initial horizontal velocity of 5.0 meters per second off the top of a desk. What is the initial vertical velocity of the book?

V_{oy} =

a) 0 m/s
b) 2.5 m/s
c) 5.0 m/s
d) 10. m/s

2. ___Projectiles are fired from different angles with the same initial speed of 14 meters per second. The graph shows the range of the projectiles as a function of the original angle of inclination to the ground, neglecting air resistance. The graph shows that the range of the projectiles is



a) the same for all angles
b) the same for angles 20.° and 80.°
c) greatest for an angle of 45°
d) greatest for an angle of 90.°

3. ___A projectile is fired from a gun near the surface of Earth. The initial velocity of the projectile has a vertical component of 98 meters per second and a horizontal component of 49 meters per second. How long will it take the projectile to reach the highest point in its path?

a) 5.0 s
b) 10. s
c) 20. s
d) 100. s

$V_f = V_o + at$ (only vertical motion) $t = ?$
$0 = 98 - 9.8(t_{peak})$

4. ___A ball is thrown at an angle of 38° to the horizontal. What happens to the magnitude of the ball's vertical acceleration during the total time interval that the ball is in the air?

a) It decreases, then increases.
b) It decreases, then remains the same.
c) It increases, then decreases.
d) It remains the same. $= -9.81 m/s^2$

$a_y = -9.81 m/s^2$ all the time ...

5. ___Projectile *A* is launched horizontally at a speed of 20. meters per second from the top of a cliff and strikes a level surface below, 3.0 seconds later. Projectile *B* is launched horizontally from the same location at a speed of 30. meters per second.

Horiz speed does not affect time down.

The time it takes projectile *B* to reach the level surface is

a) 4.5 s
b) 2.0 s
c) 3.0 s
d) 10. s

6. Calculate the distance traveled for a car that takes off from a horizontal cliff (height = 45 m) at 35 m/s.

$V_x = 35 m/s$ $V_{oy} = 0$

45 m

$d_x = V_x \cdot t$
$d_x = 35 m/s (t)$
$d_x = 35 m/s (3) = 105 meters$

$d_y = \frac{1}{2} a t^2$
$-45 = \frac{1}{2}(-9.8) t^2$
$t = 3.0 sec$