Physics Chapter 3 - What's on the test?

1. Adding vectors graphically. Don't need to be triangles. Just follow the paths.
   Also, vectors can be treated like algebra. Ex. A – E + 2D – A = 2D – E
   Ex. 2: A + B – A – B = 0m (you came back to your starting place).

2. Vocabulary: components; resolve; resultant; vector; scalar; range (Website study help)
   Ex. 24 newtons at 34 degrees: magnitude = 24 N; direction = 34 degrees.

3. Know that the kinematic equations work in 1 dimension only. Meaning that the velocities, acceleration, etc, must be at the same angle or you have to resolve you vectors.

4. Identify the following as 1. projectile motion; 2. free-fall; 3. other.
   a. I drop an egg straight down. – 2
   b. I throw the egg toward a wall – 1
   c. I throw an egg toward the ground – 2 (free-fall – no Vx)
   d. I throw the egg horizontally – 1 (freefall with Vx)
   e. I tie an egg to a string and pull the string with an acceleration at 45 degrees – 3

5. What is the shape of projectile motion? – a parabola

6. In the real world do projectiles follow a parabolic path?
   No – because in the real world there is air friction; in a parabola both sides have to be mirror images of each other. Air friction slows it down and destroys downward side of the parabola.

7. Problem Types:
   A. Projectile Motion where $\Delta y = 0$ m.
   B. Projectile Motion where $\Delta y \neq 0$ m. (Could be pos or neg.)
   C. Specific situations of projectile motion: how high does it go, etc.
   D. Objects accelerating at an angle. Not projectile motion – use kinematics at the angle given, then resolve for the information requested.

8. Adding vectors -
   A. Be able to recognize the directions (S of W, etc) and the implications (which components are negative).
   B. Understand that some vectors given may not need to be resolved.
   C. Please remember to take all angles from the x-axis (so $\theta = \tan^{-1}(y/x)$).

9. Bellwork information to know:
   A. Thermodynamics (how heat moves; conduction; convection; radiation)
   B. Body Systems – basics
   C. Basic Rock cycle information

To practice for test – do the examples on the site. One of them is how to do a projectile motion problem with variables, only. It is difficult, but if you can do it, every projectile motion problem becomes easy. The key for this one is on the site under "Holt problem and Test Review Problems" or something.