The terrible TWOs

1. TWO separate objects moving to a common destination
2. TWO separate objects separating from a common point
3. One object that hands off to object TWO's motion.
4. One object with TWO (or more) stages of its motion
5. One object with TWO or more variables to find. (find V_f, find t)
6. One object, with same motion analyzed TWO different ways.

A tiger chases a rat. They start XX meters apart. If the tiger runs at YY, and the rat runs at ZZ m/s, how long until the rat is caught?

A Car leaves Chicago traveling south at XX m/s. one hour later, another car travels the same path at YY m/s, where will the first car be overtaken by the second?

A lacrosse player in front of a wall throws a ball towards it at a constant speed of XX. If the ball rebounds back at YY m/s, and the journey takes ZZ seconds, how far was she from the wall?

A Car leaves Chicago traveling north at XX m/s. one hour later, another car travels south at YY m/s. 3 hours after the first car left, what will be the distance between the cars?

A rock is dropped from XX m into the ocean, the echo is heard YY seconds later. If the speed of sound is 340m/s, how high is the cliff?

A bullet is fired from a gun at XX m/s. at the same time, the gun recoils backwards at YY m/s. after 1 second, how far are they apart?

A rocket car uses boosters to accelerate at XX m/s/s for 10 seconds, and then uses a parachute to decelerate at YY m/s/s to a stop. How far did the car go?

A baseball player pitches a ball at XX m/s. If he hears the ball hit the bat YY seconds later and the speed of sound is 340 m/s, how far apart are the batter and the pitcher?

A runner runs his first lap on a 400m track at XX m/s. He runs the second lap at YY m/s. What will be the runner's ending time? What will be the runner's average speed?

A ball is thrown vertically at XX m/s and caught at the same height. What is the landing velocity of the ball? What is the average speed?

A freight train is moving at a constant XX m/s. If the last cart detaches, and accelerates at -YYm/s/s, how far apart will they be after ZZ seconds?

A base jumper jumps off of a XXm cliff. He will start from rest, freely accelerate for YY seconds, and then open his parachute. If he strikes the ground ZZ seconds later, what is the constant speed of his parachute?