Related rates examples

Example 1   You are the camera operator for a movie production. For a particular scene, you will be filming from the edge of a cliff top as a stunt person falls past you having jumped from a helicopter far above. The stunt person will pass by you 100 meters away with a vertical speed of 55 m/s. Your camera is mounted on a tripod and you will be rotating the camera vertically to keep it aimed at the stunt person. How fast will you be rotating the camera at the time the stunt person is level with the camera? Would it be easy or hard to rotate the camera at this rate?

Example 2   A softball player is running straight from first base to second base at 6 feet per second. The shortstop is running straight toward second base from the direction of third base at 4 feet per second. Based on your intuition, is the distance between the two players increasing or decreasing when the runner is 12 feet from second base and the shortstop is 5 feet from second base? Based on a calculation, how fast is the distance between the two players changing?

Next, consider a variation of this situation in which the only change is that the shortstop is running *away* from second base. Based on your intuition, is the distance between the two players increasing or decreasing when the runner is 12 feet from second base and the shortstop is 5 feet from second base? Based on a calculation, how fast is the distance between the two players changing??