

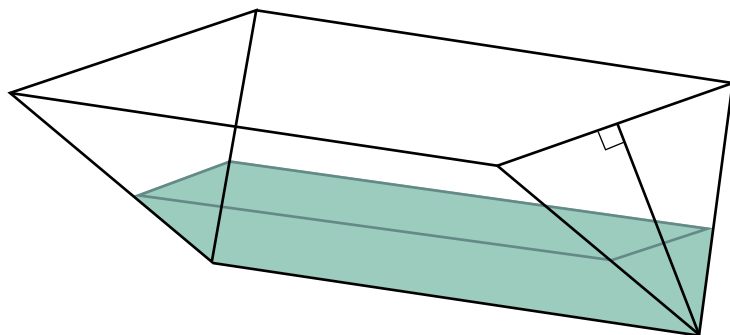


Practice – 1

Once you feel confident with Related Rates: Related Motion, complete problems 1 to 4. Check your answers by going to the Solutions tab in Moodle.

Instructions: Answer each of the following practice questions on a separate piece of paper. Step by step solutions are provided under the Solutions tab. You will learn the material more thoroughly if you complete the questions before checking the answers.

1. At 10:00 am, a plane travelling east at 100 km/h is 500 km west of a jet travelling south at 200 km/h. At what rate is the distance between them changing at noon?
2. A 3 m post is leaning against a vertical wall. If the top of the post begins to slide down the wall at a rate of $\frac{1}{2}$ m/s, how fast is the bottom of the post sliding away from the wall when it is 2 m from the base of the wall?
3. A trough has two ends, each in the shape of an equilateral triangle. The trough is 9 m long and it is 2 m wide at the top. Water is pumped in at a rate of $3 \text{ m}^3/\text{min}$. How fast does the water level rise when the deepest point is $\frac{1}{2}$ m?



4. If you are moving a 2 m tall vertical post away from a light source located 6 m above the ground at a rate of $\frac{3}{2}$ m/s, at what rate is the end of the shadow of the post moving along the ground?