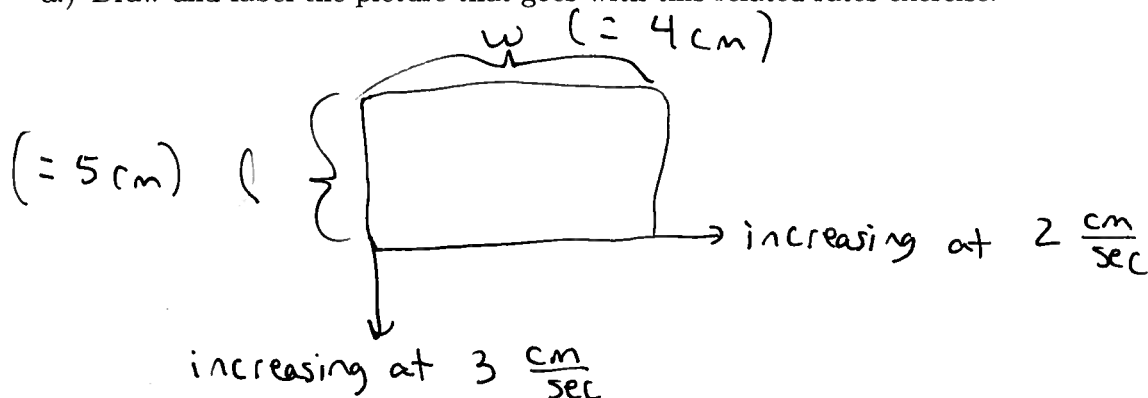


Name: KEY

Show all work, clearly and legibly, to receive full credit. Correct spelling, organization of your solution, and proper use of mathematical notation all count. You may use a stand-alone graphing calculator, but not any internet-based calculators. No notes, books, or other additional resources are permitted. Good luck!

1.) (6 pts.) The width of a rectangle is increasing at a rate of 2 cm/sec, and its length is increasing at a rate of 3 cm/sec. At one point in time, the rectangle's width is 4 cm and its length is 5 cm.

a.) Draw and label the picture that goes with this related rates exercise.



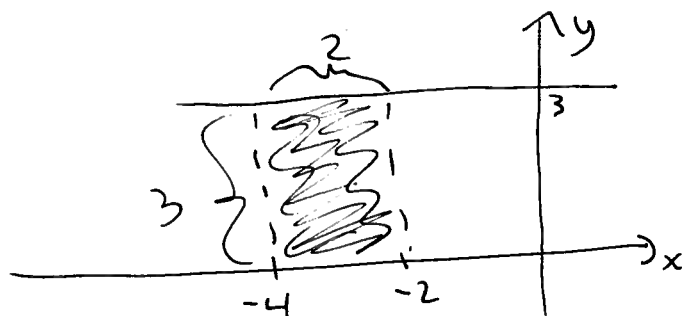
b.) Indicate the numbers that are known in general, that is, the numbers that stay valid beyond one specific moment in time.

$$\frac{dl}{dt} = 3 \frac{\text{cm}}{\text{sec}} \quad , \quad \frac{dw}{dt} = 2 \frac{\text{cm}}{\text{sec}}$$

c.) Indicate the numbers that are known at one specific moment in time.

$$l = 5 \text{ cm}, \quad w = 4 \text{ cm}$$

2.) (4 pts.) Use a graph and geometry to compute $\int_{-4}^{-2} 3 dx$.



$$\int_{-4}^{-2} 3 dx = (3)(2) = \boxed{6}$$