train #1 is traveling at 90 mph. train #2 is traveling at 95 mph. if the distance traveled is 462.5 miles, how long will it take before the 2 trains meet

First train distance:

$$S_1 = v_1 t$$

Second train distance:

$$S_2 = v_2 t$$

$$S = S_1 + S_2 = v_1 t + v_2 t = (v_1 + v_2)t \rightarrow t = \frac{S}{v_1 + v_2}$$

$$t = \frac{462.5\ miles}{90mph + 95mph} = 2.5h$$

Answer: $t = 2.5h$