- Josh and Mike live 13 miles apart. Yesterday Josh started to ride his bicycle toward Mike's house. A little later Mike started to ride his bicycle toward Josh's house. When they met, Josh had ridden for twice the length of time as Mike and at four-fifths of Mike's rate. How many miles had Mike ridden when they met?

(A) 4 **(B)** 5 **(C)** 6 **(D)** 7 **(E)** 8

2005 AMC 10 A, Problem #7— "Use d=rt."

- **Solution (B)** Because (rate)(time) = (distance), the distance Josh rode was $(4/5)(2) = 8/5$ of the distance that Mike rode. Suppose Mike rode m miles. Then the number of miles between their houses is

$$13 = m + \frac{8}{5}m = \frac{13}{5}m.$$

Thus $m = 5$.

Difficulty: Medium-hard

NCTM Standard: Connections Standard: Recognize and apply mathematics in contexts outside of mathematics.

Mathworld.com Classification:
Calculus and Analysis > Calculus > Differential Calculus > Derivative