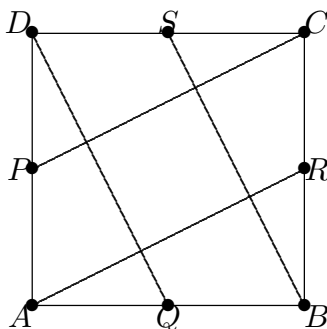


The Algebra Symposium: Roma Olympiade

From **Math Olympics - Rome**, March 21, 1997:

1. Two cars traveling at constant speed on a track are side by side every 56 minutes. If, with the same speeds, one of the cars were traveling in the opposite direction, the two cars would meet every 8 minutes. How long does it take the faster car to complete one lap on the track?
2. In the square $ABCD$ the points P, Q, R, S are the midpoints of the sides. What is the ratio between the area of the smaller square and the area of the square $ABCD$?



- (A) $1/2$
- (B) $1/4$
- (C) $1/5$
- (D) $1/6$
- (E) $1/8$
3. One and only one of the following numbers is the square of a natural number. Which one?
- (A) 181 056 454 541 232
- (B) 114 769 004 000 875
- (C) 178 974 001 444 060
- (D) 100 000 010 000 001
- (E) 100 000 020 000 001