What is the minimum possible product of three different numbers of the set $\{-8, -6, -4, 0, 3, 5, 7\}$?

(A) -336 **(B)** -280 **(C)** -210 **(D)** -192 **(E)** 0

2000 AMC 8, Problem #7—

"The only way to get a negative product using three numbers is to multiply one negative number and two positives or three negatives."

Solution

Answer (B): The only way to get a negative product using three numbers is to multiply one negative number and two positives or three negatives. Only two reasonable choices exist: $(-8)\times(-6)\times(-4) = (-8)\times(24) = -192$ and $(-8)\times 5\times 7 = (-8)\times 35 = -280$. The latter is smaller.

Difficulty: Medium-hard

NCTM Standard: Number and Operations Standard for Grades 68: use factors, multiples, prime factorization, and relatively prime numbers to solve problems.

Mathworld.com Classification: Number Theory > Arithmetic > Multiplication and Division