EULER'S TOTIENT FUNCTION

CROSSROADS ACADEMY
AMC–8 PREPARATION

I) How many positive integers less than 12 are relatively prime to 12?

II) How many positive integers less than 16 are relatively prime to 16? What about 25?

III) How many positive integers less than 3 are relatively prime to 3? What about 9? 27? 81?

IV) Can you formulate a general rule for the number of integers less than 3^n that are relatively prime to 3^n?

V) Can you formulate a general rule for the number of integers less than $2^m 3^n$ that are relatively prime to $2^m 3^n$?

a) Compute the divisors of 15:

b) For each divisor in part a) compute the number of positive integers less than (or equal to) the divisor that are relatively prime to the divisor.

c) What is the sum of the integers you computed in part b)?

d) Compute the divisors of 30:

e) For each divisor in part d) compute the number of positive integers less than (or equal to) the divisor that are relatively prime to the divisor.

f) What is the sum of the integers you computed in part e)?