

**MASSACHUSETTS MATHEMATICS LEAGUE  
CONTEST 3 - DECEMBER 2011  
ROUND 5 ALG 1: RATIO, PROPORTION OR VARIATION**

**ANSWERS**

A) ( \_\_\_\_\_ , \_\_\_\_\_ )

B) \_\_\_\_\_ gal

C) \_\_\_\_\_

A) Determine the ordered pair  $(x, y)$  on  $4x - 3y = 12$  for which the  $x$  and  $y$  values are integers and in a ratio of either  $2 : 1$  or  $1 : 2$ .

B) A full tank holds about 4.0 gallons of liquid propane (LP).  
Suppose the percent of LP used is directly proportional to the grilling time. If I start with a full tank and use 5% of the LP in 24 minutes of continuous grilling, to the nearest tenth, how many gallons of LP remain in the tank after 3 hours of grilling?

C) If  $xy = 2010$  and  $\frac{x+z}{x-z} = -2011$ , compute  $yz$ .