

**MASSACHUSETTS MATHEMATICS LEAGUE**  
**CONTEST 4 - JANUARY 2016**  
**ROUND 5 GEOMETRY: SIMILARITY OF POLYGONS**

**ANSWERS**

A) \_\_\_\_\_

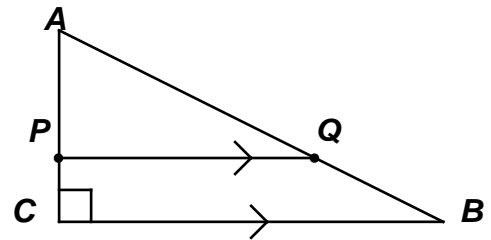
B) \_\_\_\_\_ : \_\_\_\_\_

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

A) Given: Right triangle  $ABC$ , with  $AB = 17$ ,  $BC = 15$

$\overline{PQ} \parallel \overline{BC}$ ,  $AP : PC = 3 : 1$

Compute the area of the trapezoid  $PQBC$ .



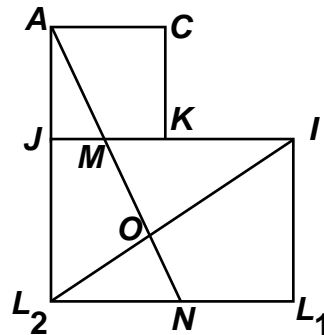
B)  $JACK$  is a square with side 2

$JL_1L_2$  is a  $3 \times 6$  rectangle, where  $JL_2 < L_2L_1$

Point  $M$  is the midpoint of  $\overline{JK}$ .

Points  $A$ ,  $M$ ,  $O$ , and  $N$  are collinear.

Compute the ratio  $\frac{NO}{MO}$ .



C) In  $\triangle ABC$ ,  $\overline{DE} \parallel \overline{BC}$ ,  $AD = x + 2$ ,  $AE = \frac{x^2}{2}$ ,  $DE = 3x - 2$ ,

$DB = 2x + 1$  and  $EC = x^2 - 4$ .

Compute  $BC$ .

