MASSACHUSETTS MATHEMATICS LEAGUE
DECEMBER 2004
ROUND 5 ALG 1: RATIO PROPORTION VARIATION

ANSWERS

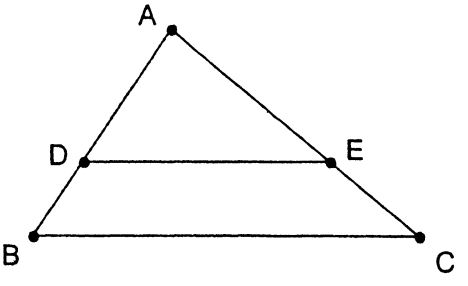
A)_____**lbs**

B)_____

C)_____**pm**

A) The safe load limit for a beam varies jointly as the thickness and the square of the depth of the beam and inversely as the length between the supports. The safe load limit is 2500 lbs for a beam 18 feet long, 6 inches thick, and 15 inches deep. What is the safe load limit for a beam of the same material but half as long, half as thick, and half as deep?

B) If the area of ΔABC is exactly 2.5 times the area of trapezoid DECB and AB=82.175 find AD rounded to the nearest thousandth.



C) It would take Sue 6 hours to rake her entire yard by herself. She began at 11:00 a.m. At noon Rana joined her and they raked together for an hour. Sue then finished the job herself, ending at 4:24 p.m. When would they have finished if Rana had stayed and they worked until the job was done?