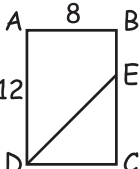# Warm-Up 13

1. _____ students   A teacher usually divides his class into six groups of n students each. However, on Monday, three of the students were absent, so the teacher divided the remaining students into seven groups of m students each. On Tuesday, four students were absent, so he went back to n students per group, but there was one fewer group than he usually has. How many students are in the class?

2. _____ sq units   There are two squares placed on sides of a right triangle, as shown to the right. The area of square B is 100 square units, and the area of square C is 64 square units. What is the area of right triangle A?
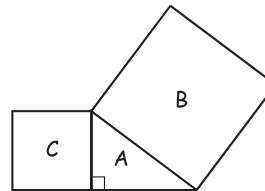
3. _____ sq units   In rectangle ABCD, point E lies on segment BC such that BE = $\frac{1}{3}$ BC. If AB = 8 units and DA = 12 units, what is the area of triangle ECD?

4. _____ sq units   What is the area of the region enclosed by the graphs of the lines $y = -2x - 3$, $y = 2x - 3$ and the x-axis? Express your answer as a decimal to the nearest tenth.

5. _____   A math field day's budget consists of $432 to pay problem-writers and $$x$ per Mathlete for food, drinks, copying costs and trophies. A math field day for 100 Mathletes costs exactly half what a math field day for 248 Mathletes costs. What is the value of x?

6. _____ units   The radius of a particular circle inscribed in an equilateral triangle is 2 units. What is the perimeter of the triangle? Express your answer in simplest radical form.

7. _____ units   Triangle ABC has a perimeter of 2007 units, and the sides have lengths that are all integers with AB ≤ BC ≤ AC. What is the positive difference between the largest possible length of segment AB and the smallest possible length of segment AB?

8. _____   What is the probability that in a group of three friends no two of them were born on the same day of the week? Express your answer as a common fraction.

9. _____ students   Ten percent of the male students at James HS are over six feet tall. The number of female students who are taller than six feet is equal to 10% of the number of male students over six feet tall. At James HS there are 250 female students and 20% more male students than female students. How many female students are taller than six feet?
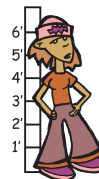
10. _____ values   A sequence of positive integers is formed by first selecting any positive two-digit integer as the first term of the sequence. Each term after the first term is the sum of twice the tens digit and twice the ones digit of the previous term. If the second term of the sequence is 16 and the third term is 14, how many values are possible for the first term?