

Name: _____

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Quiz 2 MAA 3200

Fall 2009

1. (12 pts) Let a and b be positive integers. Let T denote the set of common multiples of a and b . That is

$$T = \{c \in \mathbf{N}^* \mid a|c, b|c\}.$$

(a) (4 pts) Show that T is nonempty.

(b) (8 pts) By (a) and the Least Natural Number Principle, the set T has a least element. Denote this least element by m . (It is called the **least common multiple** of a and b and is often denoted $\text{lcm}(a, b)$.) Prove that for any element $c \in T$, $m|c$.

2. (10 pts) Find all integer solutions (if any) of the equation

$$6x - 15y = 12.$$