To run Euclid's algorithm on all the desired pairs of numbers, you just have to change the initial predicate to

$$(x \in 1\,..\,M) \land (y \in 1\,..\,N)$$

To check the result, you have to add new variables, let's call them $x0$ and $y0$ to remember the initial values of x and y. You can do this by conjoining to the initial condition the formula

$$(x0 = x) \land (y0 = y)$$

and then conjoining to the next-state action a formula asserting that the values of $x0$ and $y0$ are always left unchanged. You can then change the invariant to assert that $x = y$ implies $GCD(x, y) = GCD(x0, y0)$.

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