

UW Math Circle

January 23, 2014

Homework

1. Which is greater, 333333×444444 or 222222×666667 ? By how much?
2. Use the Euclidean Algorithm to find $\gcd(13,41)$. If you had one egg timer that measures 13 minutes, and one egg timer that measures 41 minutes, how could you use them together to measure 1 minute? How about 3 minutes?
3. Is it possible to cut off exactly 27 inches from a 144 inch ribbon without a ruler or any other measuring device?
4. Show that if the squares of a 5×5 checkerboard are arbitrarily colored black and white, then there are four squares of the same color that form the corners of a rectangle.
5. Show that if a , b , and c are integers for which $a + b + c$ is divisible by 6, then $a^3 + b^3 + c^3$ is divisible by 6, too.