

## PLOTS OF GCD, LCM, REMAINDER, AND QUOTIENT

Below are 3D plots of the greatest common divisor, least common multiple, remainder, and integer quotient functions of nonnegative integers  $x$  and  $y$ . These plots were produced by Mathematica. For each function, two plots are shown, one for a word size of three bits and the other for a word size of five bits.

This material was suggested by Guy Steele.

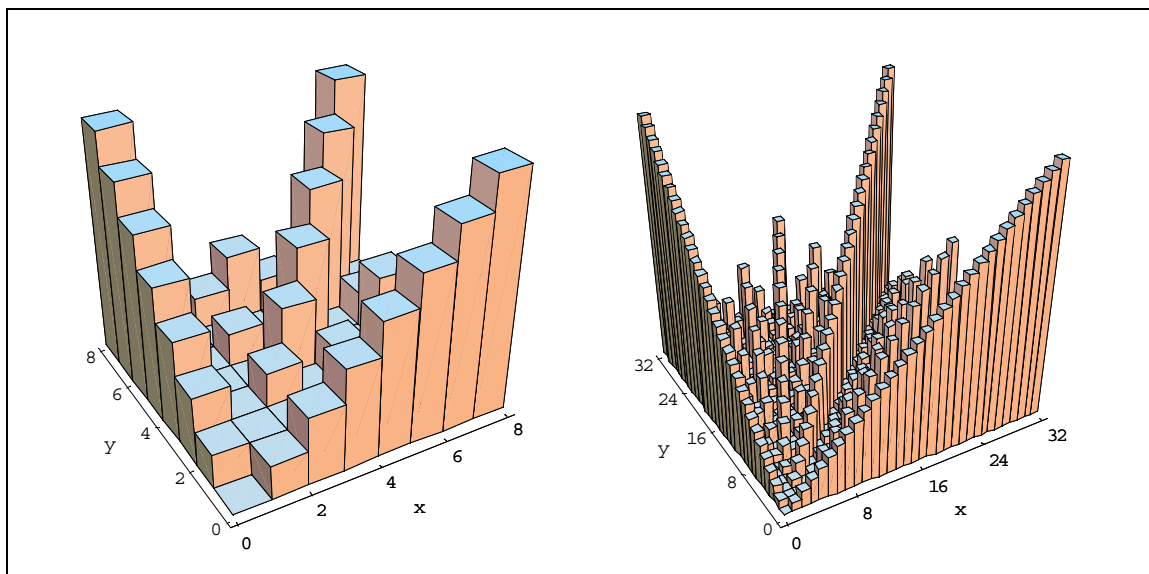


FIGURE 1. Plots of the greatest common divisor function  $\text{GCD}(x, y)$ .

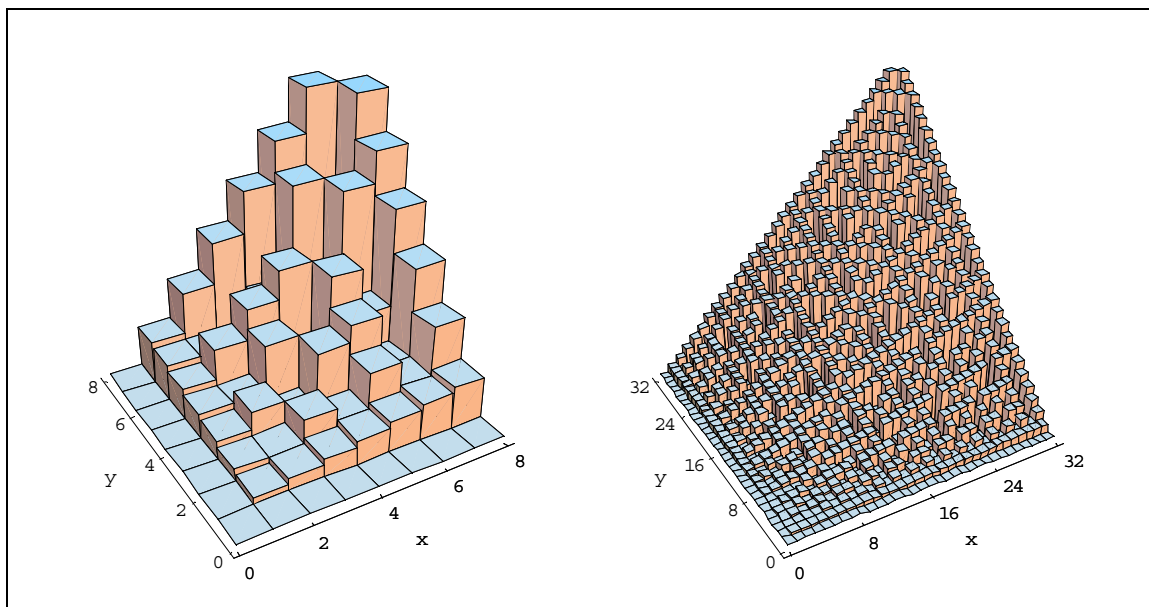


FIGURE 2. Plots of the least common multiple function  $\text{LCM}(x, y)$ .

In Figure 2, the vertical scales are compressed; the highest peaks in the left figure are of height  $\text{LCM}(6, 7) = 42$ .

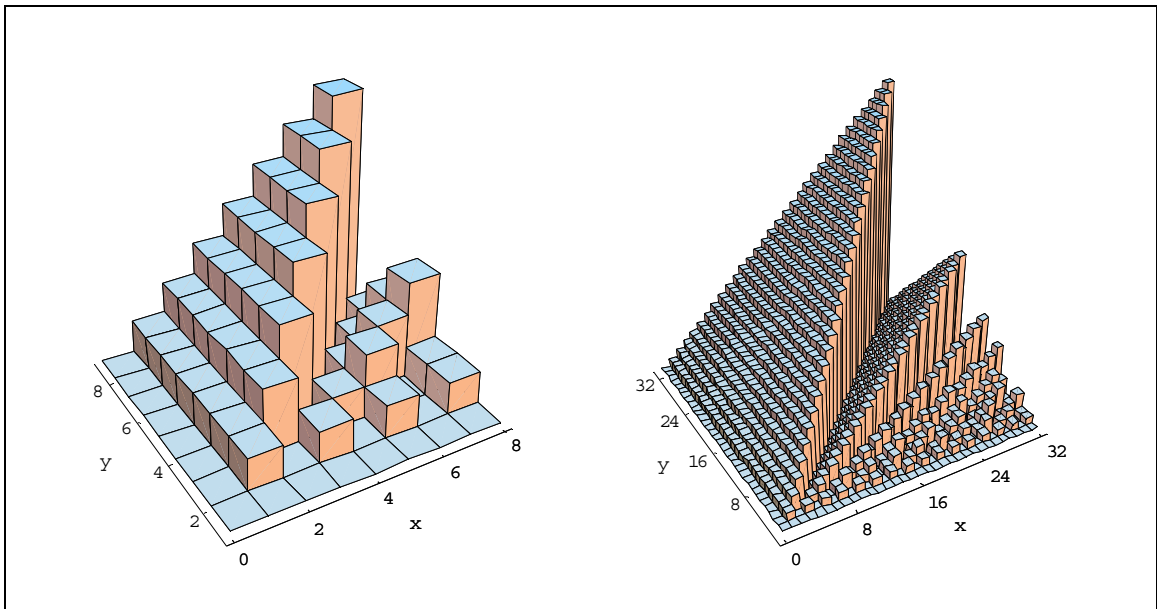


FIGURE 3. Plots of the remainder function  $\text{rem}(x, y)$ .

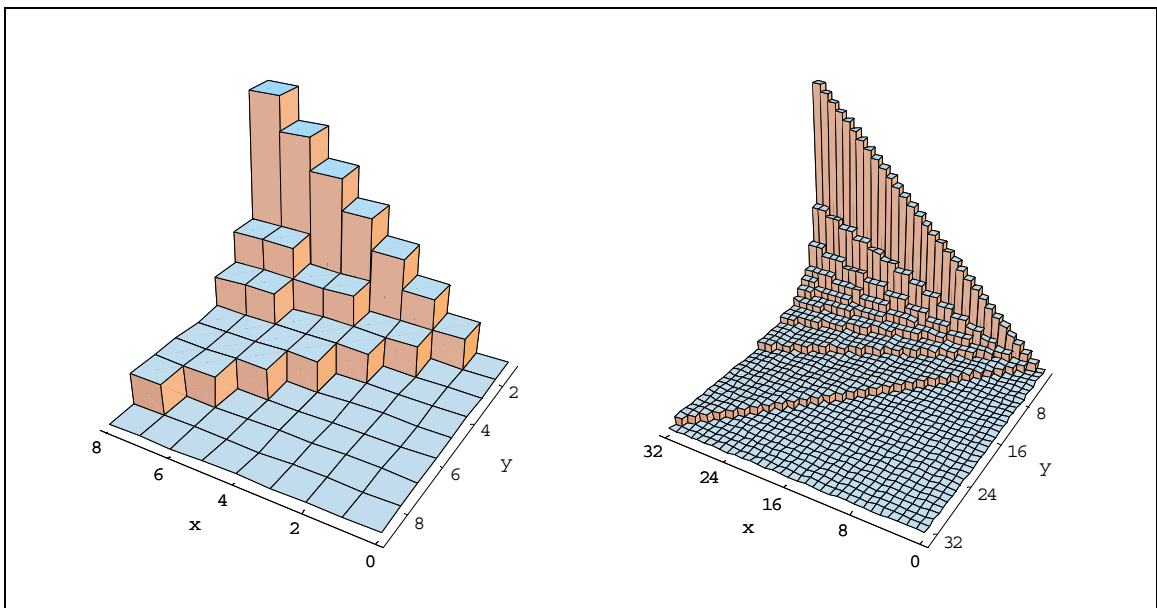


FIGURE 4. Plots of the integer quotient function  $x \div y$ .

Figure 4 is shown from a viewpoint different from that of the other figures.