Questions are numbered as in Gallian, pp. 23–24.

2. Determine $\gcd(2^4 \cdot 3^2 \cdot 5 \cdot 7^2, 2 \cdot 3^3 \cdot 7 \cdot 11)$ and $\mathrm{lcm}(2^3 \cdot 3^2 \cdot 5, 2 \cdot 3^3 \cdot 7 \cdot 11)$.
8. Suppose a and b are integers that divide the integer c. If a and b are relatively prime, show that ab divides c. Show, by example, that if a and b are not relatively prime, then ab need not divide c.
12. Let a and b be positive integers, and let $d = \gcd(\mathrm{a}, \mathrm{b})$ and $m = \mathrm{lcm}(\mathrm{a}, \mathrm{b})$. If t divides both a and b, prove that t divides d. If s is a multiple of both a and b, prove that s is a multiple of m.
16. Use the Euclidean algorithm to find $\gcd(34, 126)$ and write it as a linear combination of 34 and 126.
22. Prove that $2^n 3^{2n} - 1$ is always divisible by 17.