Jill's Solutions

1. Read Section 4.3. Summarize in 1-2 sentences.

   This section describes some of the number theory in Euclid's Elements.

2. Write the prime factorizations of 6120 and 14850.

   $6120 = 2^3 \cdot 3^2 \cdot 5 \cdot 17$ and $14,850 = 2 \cdot 3^3 \cdot 5^2 \cdot 11$

3. Use the prime factorization you found above to determine the greatest common divisor of 6120 and 14850. (i.e. $\gcd(6120, 14850)$.

   $\gcd(6120, 14850) = 2 \cdot 3^2 \cdot 5 = 90$.

4. Use the Euclidean Algorithm (description page 174, example page 175) to find the greatest common divisor of 6120 and 14850.

$$\begin{aligned} 14850 &= 2(6120) + 2610 \\ 6120 &= 2(2610) + 900 \\ 2610 &= 2(900) + 810 \\ 900 &= 810 + 90 \\ 810 &= 9(90) \end{aligned}$$

5. Give examples of positive integers a, b, and c such that a divides c and b divides c but ab does not divide c.

   Choose $a = 4$, $b = 6$, and $c = 12$.

6. Find a and b so that $19a + 13b = 1$.

   $1 = 3 \cdot 13 - 2 \cdot 19$