Problem Set 2   **Foundations**   **Due 1/23/23**

Four of these problems will be graded (our choice, not yours!), with each problem worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but you must write up your own final submission without reference to any sources other than the textbook and instructor.

For the problems below, assume $a, b, c, n, p, q, r \in \mathbb{Z}$.

1. If p divides q, then p divides $q + r$.

2. If p divides q and q divides r, then p divides $q + r$.

3. If $p|q$, then $p|qr$.

4. If $p|q$ and $p|r$, then $p^2|qr$.

5. If $a \equiv_n 0$ and $b \equiv_n c$, then $a + b \equiv_n c$.

6. If $a \equiv_n b$, then $a + c \equiv_n b + c$.

7. If $a \equiv_n 0$ and $b \equiv_n 1$, then $a \cdot b \equiv_n 1$.

8. Do the WeBWorK "Preliminaries" assignment, available via

https://webwork.coe.edu/webwork2/MTH-215/