**Solutions:**

**S1)** Proof for Finite Summation: ()

Proof for Infinite Summation: ()

**S2)** Since , , , so .

**S3)** Let *an* denote the number of bricks Jimmy built on the *nth* day, and let *bn* denote the number of bricks Leo

built on the *nth* day. It is easy to observe that and that . Then, the summation functions will be and . Adding them together, we get . It is easy to observe that , so ***n* = 14**.