

473: Notes on Day 4 slides:

Slides 1-9 are copies Day 3 slides, so any notes should be in the Day 3 slide notes document

Slide 12: Induction Review

Stamps: Proof is by strong induction.

Five base cases: $24 = 7*2+5*2$, $25=5*5$, $26=7*3 + 5$, $27=7 + 4*5$, $28 = 4*7$

Induction step: Let k be any number that is > 28 . Show that if for all $j < k$, we achieve

j cents using 5 and 7 cent stamps, then we can achieve k cents using 5 and 7 cent stamps.

In particular (by the induction assumption) $j=k-5$ can be achieved with 5 and 7-cent stamps.

Add one more 5-cent stamp to get k cents.

Slide 17: Trominoes Continued (induction proof)

Place the first tromino so that it covers 3 of the 4 center squares, the three that are not in the lower-right quadrant.

Now all of the four quadrants are deficient rectangles of size 2^k by 2^k . So by induction, we can tile them.

Slide 19: A property of EBTs

Place the first tromino so that it covers 3 of the 4 center squares, the three that are not in the lower-right quadrant.

Now all of the four quadrants are deficient rectangles of size 2^k by 2^k . So by induction, we can tile them.