

You must show your work to get full credit.

Assume that we can buy McNuggets in packages of size 2 and size 5. Show that for any $n \geq 6$ it is possible to buy exactly n McNuggets.

To start note

$$6 = 2 + 2 + 2$$

$$7 = 2 + 5$$

$$8 = 2 + 2 + 2 + 2$$

$$9 = 2 + 2 + 5$$

So these give us a base case(s) which shows we can get exactly 6, 7, 8, or 9.

Induction step:

Assume we have packs of McNuggets which give us exactly n McNuggets, with $n \geq 9$.

Case 1 One of our packs has 5 McNuggets. Take it out and add in 3 packs of size 2.

This gives $n - 5 + 2 + 2 + 2 = n + 1$ McNuggets.

Case 2 There are no packs of size 5. Then all packs are of size 2. As $n \geq 9$ there are at least 2 packs of size 2. Take out 2 size 2 packs and add in a size 5 pack to get

$$n - 2 - 2 + 5 = n + 1 \text{ McNuggets.}$$

This finishes the induction step (we can always get one more McNugget.)