

can stacking





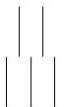

The following are the requirements for a stack of cans to be neat:

- The stack of cans has at least two rows
- The stack of cans is piled so that each new row has one less can than the row below it

The goal of this lesson is to answer the question: What numbers can be neatly stacked? Use the space below to explore the problem or turn your page over if you would like some guidance through the process. Come up with ways of convincing someone of the certainty of your ideas.

can stacking — guided problem solving

1. For each of the following numbers draw a neat stacking with that number of cans or put a cross when a neat stack cannot be created. The first row has been completed for you

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| 7 | 8 | 9 | 10 | 11 | 12 |
| | | | | | |
| 13 | 14 | 15 | 16 | 17 | 18 |
| | | | | | |

2. Using the table above as a guide, answer the following questions. You will often need to experiment with stacks of cans with more than 18 cans to test your ideas.
- Can all odd numbers of cans greater than one be neatly stacked? Show an example of one that can't or convince me that all can.
 - Can all even numbers of cans greater than one be neatly stacked? Show an example of one that can't or convince me that all can.
 - Can all numbers of cans which are multiples of three be neatly stacked? Show an example of one that can't or convince me that all can.
 - What numbers of cans cannot be stacked?