Arrays and combinations in multiplication   name:_____
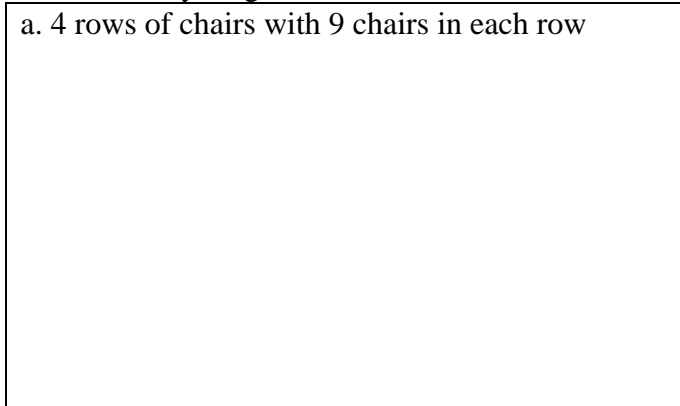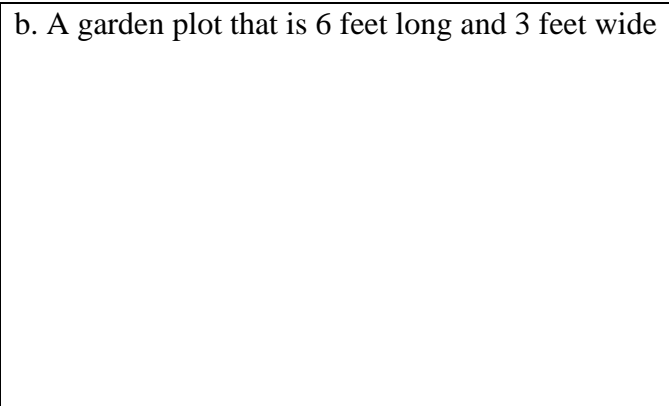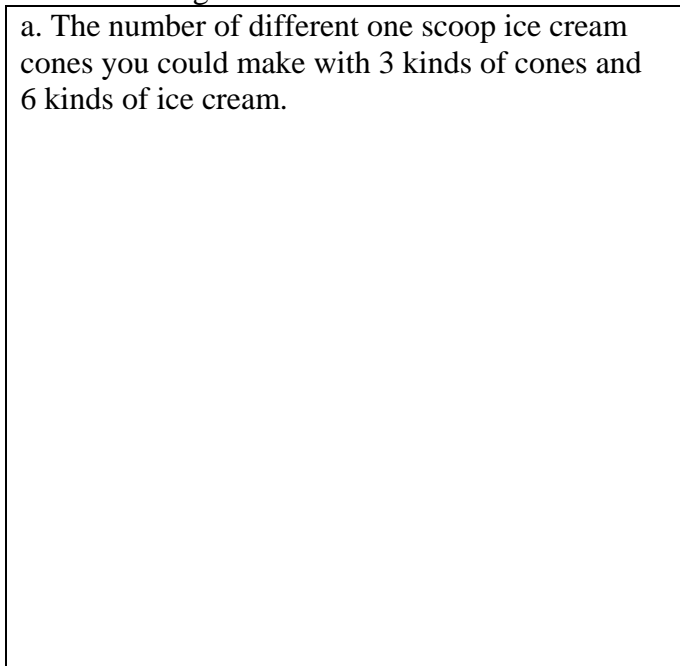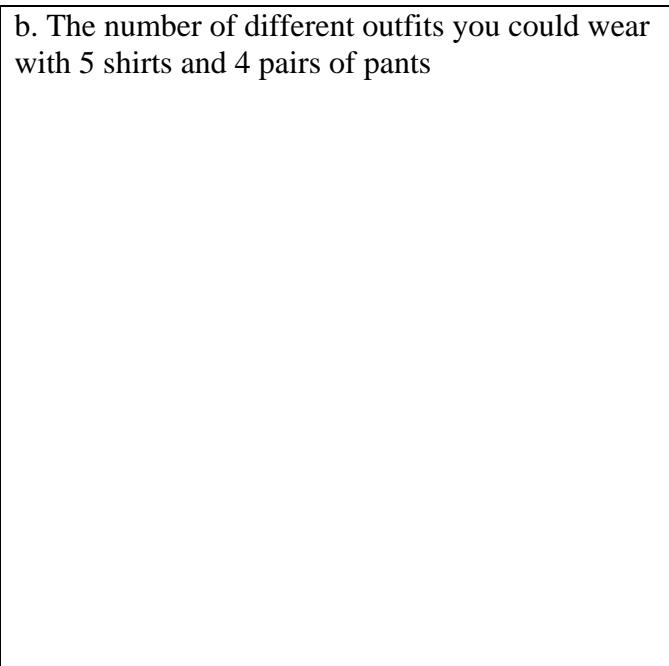
1. Draw array diagrams for these situations:

a. 4 rows of chairs with 9 chairs in each row	b. A garden plot that is 6 feet long and 3 feet wide

c. 4×6

2. Draw a diagram for these situations:

a. The number of different one scoop ice cream cones you could make with 3 kinds of cones and 6 kinds of ice cream.	b. The number of different outfits you could wear with 5 shirts and 4 pairs of pants

3. Write a combination word problem similar to the problems in number 2.

4. Explain why the commutative property isn't obvious to a second grader (you may wish to choose a numerical example to illustrate your explanation).

5. a. Explain, using an appropriate, well labelled diagram and sentences, why it works and makes sense that $4 \times 6 = 6 \times 4$ (without counting or multiplying to find the total)

b. What is the name of this property (spelling counts)

6. In the pattern below, we are looking for the number of squares at each step. Find a geometrically simple way of putting a loop around an array to show the multiplication part of the pattern. Explain the multiplication part of your pattern in a " ___ rows and ___ columns" sentence. Explain any added parts of your pattern.