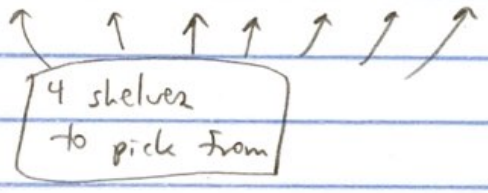
Ex:

1) How many ways can you distribute 7 distinct books (meaning none are identical) to 4 shelves on a bookcase? (We won't set the books in order, yet).

Answer:

For each book, choose a shelf.

7 books _ _ _ _ _ _ _



So, $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = \boxed{4^7}$.

2) How many ways can you distribute 3 distinct books to 5 shelves, where there is at most 1 book on the bottom shelf?

Cases: 0 books on bottom;	1 book on bottom
so 3 books to 4 shelves:	→ Pick book for bottom (3)
	→ 2 books for 4 shelves
_ _ _	bottom _ _
$4 \cdot 4 \cdot 4 = 4^3$	$3 \quad 4 \; 4 \rightarrow 3 \cdot 4 \cdot 4$

Total

$\boxed{4^3 + 3 \cdot 4^2 = 112}$