

More and More Buckets - by Rajeev Kumar

If there are up to 5 litres of water and 4 buckets then there would be 5 combinations

The rule is $\frac{5!}{4!((5-4)!)}$

If there are 5 litres of water and 3 buckets, then the combinations are 10

$\frac{5!}{3!((5-3)!)} = 120/12 = 10$

- 123, , 124, ,125, 134, 135, 234, 235, 345, 245, 541
- 6 litres and 5 buckets would have a combination of 6
- 6 litres and 4 buckets would have a combination of 15
- 7 litres and 6 buckets would have a combination of 7
- 7 litres and 5 buckets would have a combination of 21
- 7 litres and 4 buckets would have a combination of 35
- 7 litres and 3 buckets would have a combination of 35
- 7 litres and 2 buckets would have a combination of 21
- 7 litres and 1 bucket would have a combination of 7
- With 12 litres and 6 buckets it would be 924 combinations
- With 13 litres and 6 buckets it would be 1716 combinations

If you look at **Pascal's** triangle below then you can also get this answer:

The second cell in each row represents the litres and the number of cells you move horizontally counting also the second cell represents the number of buckets. So if there are 13 litres and 5 buckets , you go to the row which has 13 as the 2nd cell and count 5 along the row from 13 and you will get 1287, so there are 1287 combinations. And $13! \div (5!((13-5)!)) = 1287$



