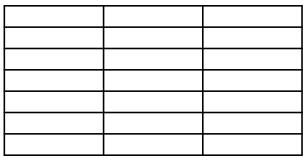
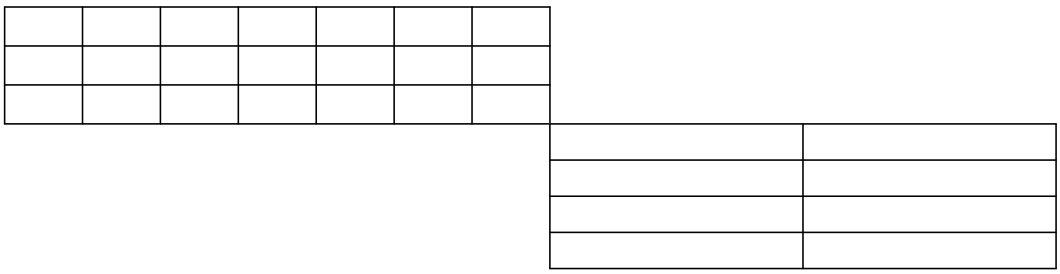
How many different routes?

a)



b)



Evaluate:

a) $\frac{4!\,9!}{8!}$

b) $\frac{10!}{4!3!}$

c) $\frac{423!}{420!}$

Express as a factorial.

a) $17 \times 16 \times 15 \times \ldots \times 1$

b) $11 \times 10 \times 9$

Simplify:

a) $\frac{(n+1)!}{(n)!}$

b) $\frac{(n-2)!}{(n-1)!}$

Evaluate:

a) $\frac{n!}{(n-1)!} = 4$

b) $\frac{(n+2)!}{5(n+1)!} = 4$

Evaluate:

$$\frac{n!}{(n-1)(n-3)!} = 15$$

Evaluate without using the "$_{n}C_{r}$" and "$_{n}P_{r}$" buttons.

a) $_{50}C_{48}$

b) $_{50}P_{48}$

Ten boys and eight girls have signed up for a trip. Only 5 students will be selected to go on the trip. Determine the probability that only boys will be on the trip.

How many 6 person committees can be formed from a group of 7 teachers and 6 students if there must be exactly 4 students on the committee?

There are 10 boys and 15 girls in a class. A group of 7 students is needed to work on a project. If at least 4 boys are needed, how many different groups of 5 students are possible?

Twenty-five Boomerang leaders are signing up for training courses that have a limited number of spaces.

Course	Number of people
1	6
2	4
3	8
4	7

How many ways can the 25 leaders be placed in the four courses?