

Question

#63 Simplify the ratio of factorials YOU MUST SHOW AT LEAST TWO STEPS!

$$\frac{4!}{6!}$$

Answer

Method 1 $\frac{4!}{6!} = \frac{4!}{6 \cdot 5 \cdot 4!} = \frac{1}{6 \cdot 5} \cdot \frac{4!}{4!} = \frac{1}{30}$

Method 2 $\frac{4!}{6!} = \frac{4 \cdot 3 \cdot 2 \cdot 1}{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = \frac{1}{6 \cdot 5} \cdot \frac{4 \cdot 3 \cdot 2 \cdot 1}{4 \cdot 3 \cdot 2 \cdot 1} = \frac{1}{30}$

Question

#65 Simplify the ratio of factorials YOU MUST SHOW AT LEAST TWO STEPS!

$$\frac{10!}{8!}$$

Answer

$$\text{Method 1 } \frac{10!}{8!} = \frac{10 \cdot 9 \cdot 8!}{8!} = \frac{10 \cdot 9}{1} \cdot \frac{8!}{8!} = 90$$

$$\text{Method 2 } \frac{10!}{8!} = \frac{10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = \frac{10 \cdot 9}{1} \cdot \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = 90$$

Question

#67 Simplify the ratio of factorials YOU MUST SHOW AT LEAST TWO STEPS!

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

Answer

Method 1
$$\frac{(n+1)!}{n!} = \frac{(n+1) \cdot n!}{n!} = \frac{n+1}{1} \cdot \frac{n!}{n!} = n+1$$

Method 2
$$\frac{(n+1)!}{n!} = \frac{(n+1)(n)(n-1)(n-2)\dots\dots\dots 2 \cdot 1}{(n)(n-1)(n-2)\dots\dots\dots 2 \cdot 1} = \frac{n+1}{1} \cdot \frac{(n)(n-1)(n-2)\dots\dots\dots 2 \cdot 1}{(n)(n-1)(n-2)\dots\dots\dots 2 \cdot 1}$$

$= n+1$