Factorial Notation

n-Factorial: the product of the positive integer n and all the positive integers less than n.

For any natural number n,

$$n! = n(n-1)(n-2)...(3) \cdot (2) \cdot (1).$$

For the number 0.

Practice Exercises

0! = 1.

A. Evaluate.

- 1. 6! 2. 4! + 5!
- 3. 9! 4!
- 4131

B. Simplify by factorization.

- 7! 6!
- 6! + 4!
- 7! + 6! 5!

- 6 7! 6! 2. 6!
- $\frac{31}{8!-6!}$

C. Simplify the following.

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

 $\overline{(n-1)!}$

(n+1)! + n! - (n-1)!

Problem Set

(n+1)!

A. Evaluate.

- 1. 7! 2. 3! + 5!
- 3. 8! 6!

B. Simplify by factorization.

- 6! 5!5 8! – 7!

- 7!
- 60 9! 5!
- C. Simplify the following.
- n! $\overline{(n-1)!}$ (n-1)!
- (n+2)! $\overline{(n+1)!}$ (n-1)!
- (n+1)! n! + (n-1)!

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- 7! + 6! 5!

C. Simplify the following.

- n! n (n+1)!
- (n+2)!
- (n+1)! + n! (n-1)!

Problem Set

A. Evaluate.

- 1. 7! 2. 3! + 5!
- 3. 8! 6!9! - 3!
- 8! 5!4!

B. Simplify by factorization.

- 6! 5! $\frac{5}{8! - 7!}$
- 7! + 5!
- 6! + 5! 4!

C. Simplify the following.

- n! $\overline{(n-1)!}$ (n-1)!
- (n+2)! $\overline{(n+1)!}$ (n-1)!

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

(n+1)! - n! + (n-1)!

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$$n! = n(n-1)(n-2)...(3) \cdot (2) \cdot (1).$$

0! = 1.

For the number 0.

Practice Exercises

- A. Evaluate.
- 241 + 51
- 3. 9! 4!

5.
$$\frac{0!}{4!3!}$$

- B. Simplify by factorization.
 - 7! 6!
- 6! + 4!
- $\frac{6}{7! 6!}$ 6!
- C. Simplify the following.
- n!n
- (n+2)!
 - $\frac{n!}{(n+1)!}$
- 5. (n+1)! + n! (n-1)!

7! + 6! - 5!

Problem Set

(n+1)!

- A. Evaluate.
- 1. 7! 2. 3! + 5!
- 3. 8! 6!
- B. Simplify by factorization.
 - 6! 5! $\frac{5}{8! - 7!}$
- 60 9! 5!

n!

 $\overline{(n-1)!}$

(n-1)!

- C. Simplify the following.
 - (n+2)! $\overline{(n+1)!}$
 - (n-1)!
- 5. (n+1)! n! + (n-1)!

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For the number 0,

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Practice Exercises

A. Evaluate.

- 1. 6! 2. 4! + 5!
- 3. 9! 4!
- B. Simplify by factorization.
- 7! 6!

61

- 7! + 6! 5!
- C. Simplify the following.
- n! n (n+1)!
- (n+2)!
- (n+1)! + n! (n-1)!

Problem Set

A. Evaluate.

2. 3!+5!

1. 7!

- 3. 8! 6!
 - 9! 3!
- 8! 5!4!
- B. Simplify by factorization
- 6! 5!5 8! – 7!
- 7! + 5!
- 6! + 5! 4!
- C. Simplify the following.
 - $\overline{(n-1)!}$ (n-1)!
 - (n+2)!(n+1)!(n-1)!

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

- (n+1)! n! + (n-1)!