

## Multiplication and Subtraction

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**Proposition 0.1.** Let  $n, m, k$  be natural numbers such that  $n \geq m$ .  
Then  $(n - m) \cdot k = (n \cdot k) - (m \cdot k)$ .

*Proof.* We have

$$\begin{aligned} & ((n - m) \cdot k) + (m \cdot k) \\ &= ((n - m) + m) \cdot k \\ &= n \cdot k \\ &= ((n \cdot k) - (m \cdot k)) + (m \cdot k). \end{aligned}$$

Hence  $(n - m) \cdot k = (n \cdot k) - (m \cdot k)$ . □

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**Corollary 0.2.** Let  $n, m, k$  be natural numbers such that  $n \geq m$ .  
Then  $k \cdot (n - m) = (k \cdot n) - (k \cdot m)$ .