Solutions to Warmup 6

1. $3! - 2! = 3 \cdot 2 - 2 = 6 - 2 = 4$

2. $\frac{3!}{2!} = \frac{3 \cdot 2}{2} = 3$

3. $\binom{7}{3} = \frac{7!}{3!(7-3)!} = \frac{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{4 \cdot 3 \cdot 2 \cdot 3 \cdot 2} = 35$

4. How many ways can you choose 2 objects from among 5?

   $\binom{5}{2} = \frac{5!}{2!(5-2)!} = \frac{5 \cdot 4 \cdot 3 \cdot 2}{2 \cdot 3 \cdot 2} = 10$

5. How many ways can you choose 4 objects from among 4? 1 (see rules, Slide 6)

6. $\sum_{i=1}^{5} X_i$, where X_i are the first 5 positive integers

   $1 + 2 + 3 + 4 + 5 = 15$

7. $\prod_{i=1}^{5} X_i$, where X_i are the first 5 positive integers

   $1 \times 2 \times 3 \times 4 \times 5 = 120$