1. One factor at a time (OFAT) designs...

   - cannot account for more than one experimental factor.
   - cannot detect or estimate interactions.
   - often require more resources, such as time, energy, and material.
   - Are better when sample sizes are smaller.
   - produce estimates of treatment effects that are less precise than those produced by an appropriately designed experiment.

2. Factorial designs are experimental designs that consist of two or more treatment factors.

   - True
   - False

3. Any factorial design always includes experimental units in all possible factor level combinations.

   - True
   - False

4. A $2^4 \times 3^2 \times 5^2$ factorial design is a design with two factors of four levels, three factors with two levels, and five factors of two levels.

   - True
   - False

5. A 2^2 factorial design (with factors τ and α) can help researchers answer which of the following questions:

   - Are the effects of factor τ significant?
   - Are the effects of α significant?
   - Do τ and α interact?