



## Procedure

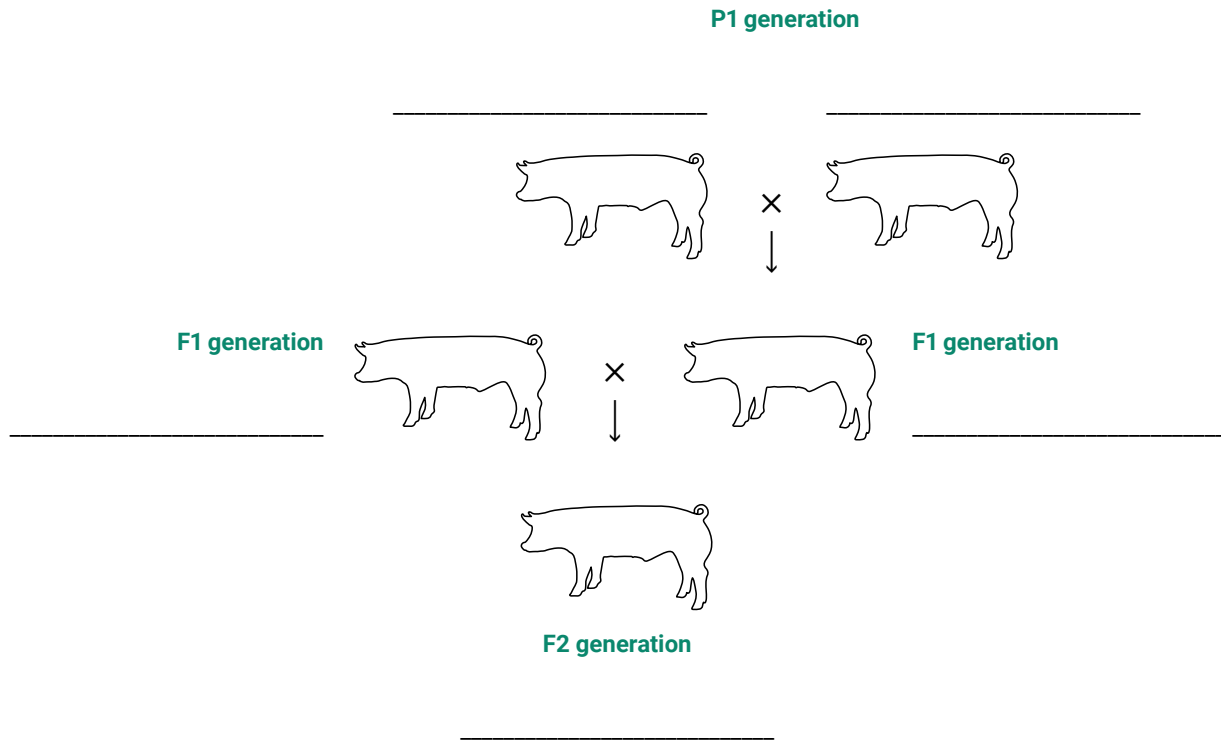
1. Review the eight common pork breeds and their traits. Fill these traits into the table below.

| Pork breed    | Breed traits |
|---------------|--------------|
| Berkshire     |              |
| Chester White |              |
| Duroc         |              |
| Hampshire     |              |
| Landrace      |              |
| Poland China  |              |
| Spotted       |              |
| Yorkshire     |              |

2. Carefully review the pork breed traits and read your assigned scenario. Select the pork breeds that best match the traits described in the scenario.
3. Create a breeding diagram showing how the selected breeds are crossed to produce a market hog. Clearly label each breed in the diagram.

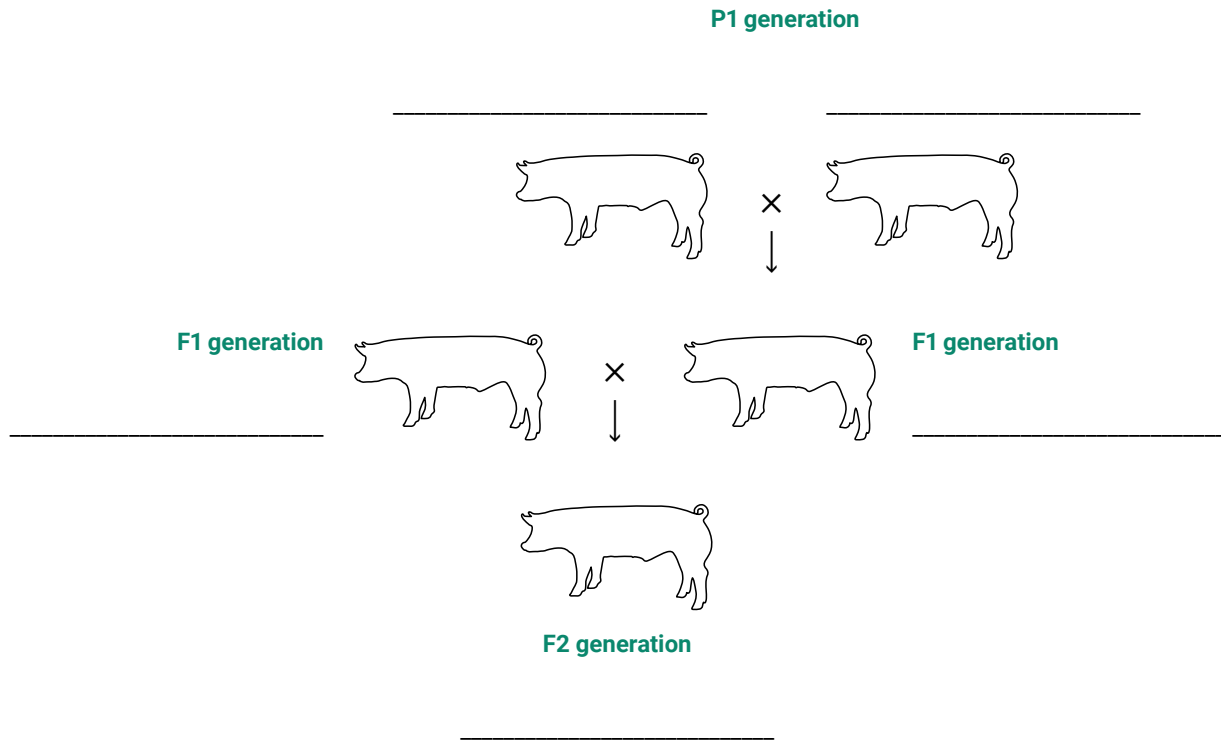
4. Explain which traits each breed contributes and how they help meet the requirements of the scenario. Make sure your final crossbred market hog fits all traits outlined in the scenario.

a. Create a female crossbred with **durability, fast growth, and good mothering ability**.



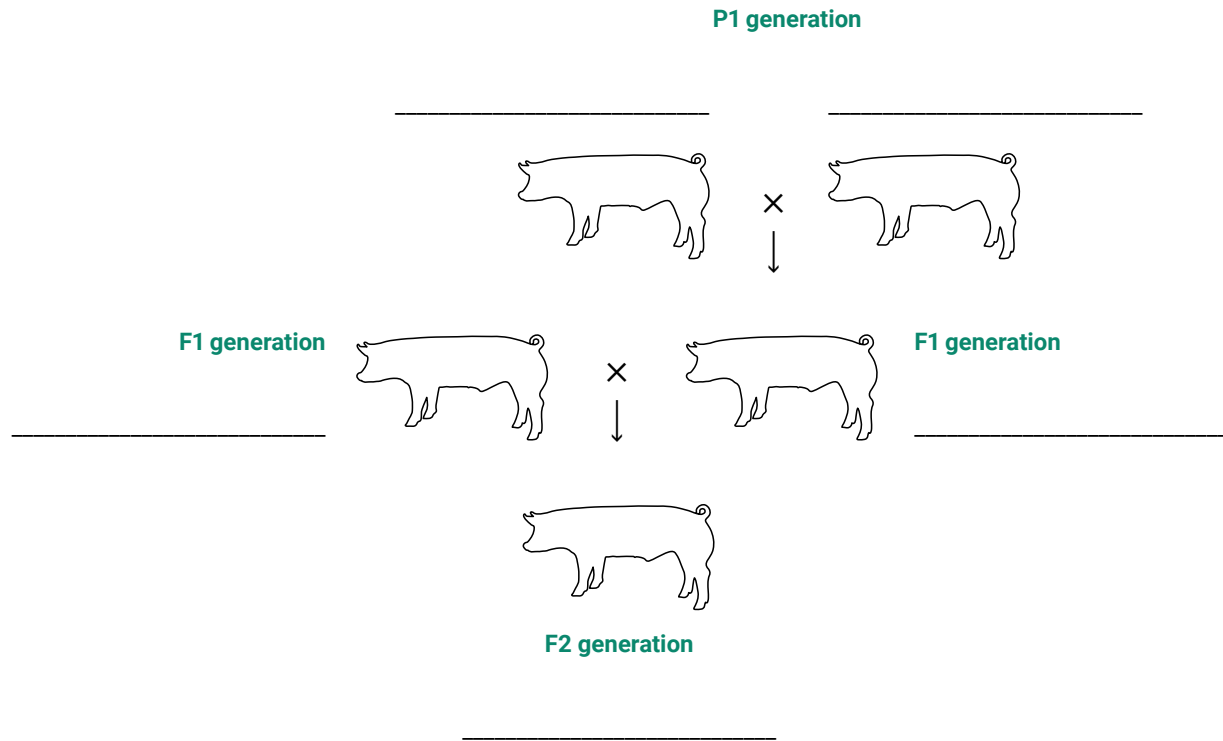
- Why did you use these breeds in this breeding scenario?

b. Create a female crossbred with **good carcass yield, leanness, muscle, and docility**.



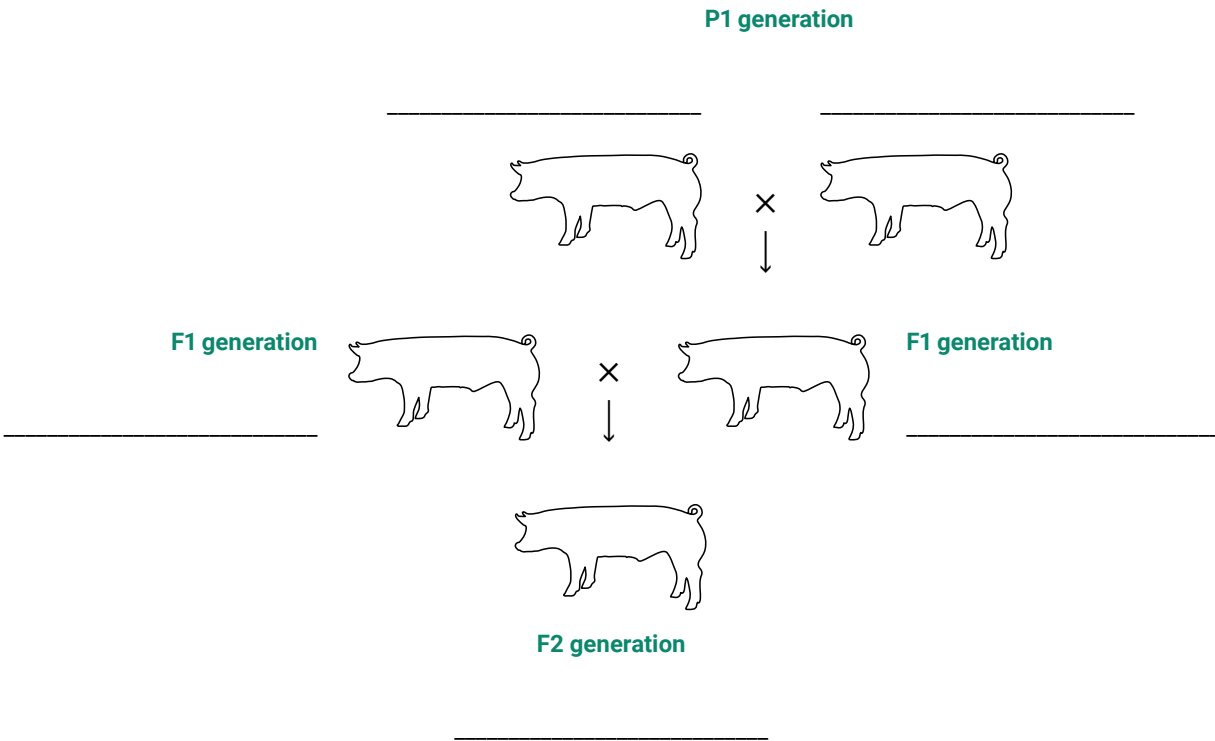
- Why did you use these breeds in this breeding scenario?

- c. Create a female crossbred with **low backfat, meat flavor, long body, and ideal carcass finish.**



- Why did you use these breeds in this breeding scenario?

- d. Create a female crossbred with **three traits that you consider to be necessary in market hog production.**



- Why did you use these breeds in this breeding scenario?

## Reflection

1. Why is it important to breed the crossbred female to a terminal purebred male line?
2. What happens to hybrid vigor if you breed a male crossbred to a female crossbred?
3. Which alleles are responsible for each of the traits in the breeds? Why do only some show up in the offspring?
4. What are the limitations of using heterosis in agriculture? What other techniques may be used to achieve more precise results?

## Rubric for self-assessment

| Skill  | Yes | No | Unsure |
|--|-----|----|--------|
| I can describe the benefits and drawbacks of heterosis.  |     |    |        |
| I can describe why the F2 generation has 100% heterosis after crossing with the terminal line. |     |    |        |
| I can connect specific breed traits to underlying genetic variation and protein expression.    |     |    |        |
| I can describe how genetic diversity from different breeds leads to hybrid vigor.              |     |    |        |
| I can justify the reasoning for using the chosen breeds to obtain desired traits.              |     |    |        |