

Stickleback Crosses

Background

Traits may be influenced by genetic or environmental factors. Natural selection acts only on heritable traits—genetic traits that pass from parent to offspring. For heritable traits, offspring tend to resemble their parents.

Experiment

Researchers wanted to know how the number of lateral plates in stickleback offspring compares to the number of lateral plates in parents. They set up several crosses between pairs of sticklebacks and collected data about the offspring.

Questions

Get a data card for one cross and use it to answer the questions.

1. What is the cross number at the top of your card?

2. How many plates do the parents have?

Mother	5
Father	6
Total	11

3. What is the mean number of plates for the parents?

$$\frac{\text{total number of plates}}{2 \text{ parents}} = 5.5$$

4. Fill in the data table:

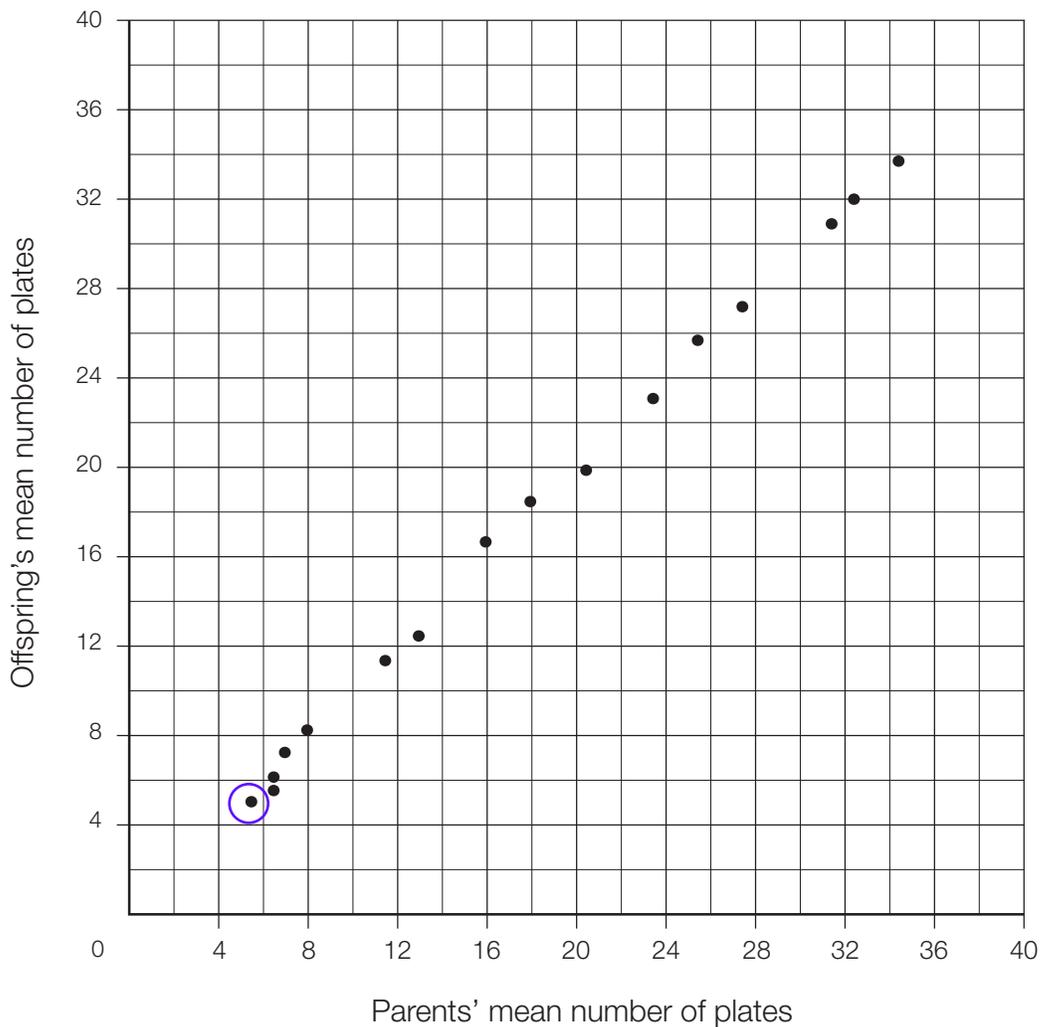
Number of Plates	Number of Offspring		Plates × Offspring
4	× 2	=	8
5	× 5	=	25
6	× 3	=	18
	×	=	
	×	=	
	×	=	
10			51
total number of offspring			total number of plates on all offspring

5. What is the mean number of plates for the offspring?

$$\frac{\text{total number of plates in all offspring}}{\text{total number of offspring}} = 5.1$$

6. All of the data points for the experiment have been plotted on the graph below. Find and circle the point on the graph that represents your data (x-axis = the parents' mean number of plates, and y-axis = the offspring's mean number of plates).

Mean Plate Number in Stickleback Parents and Offspring



Data simplified from Hagen, D. W. (1973). Inheritance of numbers of lateral plates and gill rakers in Gasterosteus aculeatus. Heredity, 30(3), 303-312.