Flamingos

Flamingos are large birds with long legs. They wade in shallow water looking for algae and small animals, like insects and brine shrimp, to eat.

OBSERVATION

You visit flamingos at several zoos and rescue centers. You notice their feathers vary in color from pale pinks to bright pinks, oranges & reds.

EXPERIMENT

You collect 6 pairs of flamingos: 3 pairs that are pale pink, and 3 pairs that are bright colors. You raise them in the same environment and give them the same types of food. Each pair has a chick, which you also raise in the same conditions. Once the chicks grow up, you observe their colors.

RESULTS							
Pair #	Parent Color	Offspring Color	Color in flamingos is:	heritable			
1	pale	medium	Evidence:	acquired			
2	pale	medium					
3	pale	medium					
4	bright	medium					
5	bright	medium					
6	bright	medium					

Parakeets

Parakeets (or budgies) are small, colorful birds often kept as pets.

OBSERVATION

In your local pet store, you notice that parakeets have different color combinations. The two most common colors are green and blue.

EXPERIMENT

You buy 6 pairs of parakeets: 3 pairs that are mostly green, and 3 pairs that are mostly blue. You raise each pair in a separate cage, but you give them the same food and make sure all the other conditions are the same. Each pair has chicks, which you also raise in the same conditions. You observe the colors of the chicks.

RESULTS							
Pair #	Parent colors	Offspring colors	Color in parakeets is:	heritable			
1	green	3 green 1 blue	Evidence:	acquired			
2	green	4 green					
3	green	5 green 1 blue					
4	blue	5 blue					
5	blue	4 blue					
6	blue	6 blue					

Lupin

Lupin (LOO-pin) is a type of bushy plant that makes tall cones of flowers.

OBSERVATION

You observe lupin flowers in many gardens across a large area. You notice that different plants have flowers that are different colors, including blue, pink, and white.

EXPERIMENT

You gather seeds from plants with different flower colors. You plant the seeds in pots with the same type of soil and grow them in the exact same conditions. When the young plants make flowers, you observe their colors.

Parent flower color	Offspring flower color	
blue	blue	
blue	mostly blue; a few white	
pink	mostly pink; a few white	
pink	pink	
white	white	
white	white	

Flower color in lupin is:	heritable acquired	

Hydrangea

Hydrangea (hye-DRAYN-juh) is a type of shrub that makes big, puffy flower clusters.

OBSERVATION

You observe hydrangea flowers in many gardens across a large area. You notice that different plants have flowers that are different colors, including blue, pink, and white.

EXPERIMENT

You gather seeds from plants with different flower colors. You plant the seeds in pots with the same type of soil and grow them in the exact same conditions. When the young plants make flowers, you observe their colors.

Parent flower color	Offspring flower color	Flower color in hydrangea is:	heritable acquired
blue	purple	Evidence:	
blue	purple		
purple	purple		
purple	purple		
pink	purple		
pink	purple		

Manx cats

Most house cats have long tails. But on Britain's Isle of Man, many cats have short tails or no tails at all.



You notice four types of tails on these cats: full-length, a short stump, a minimal bump, and no tail at all.

EXPERIMENT

You adopt 6 pairs of Manx cats from the Isle of Man: 3 pairs with full-length tails, and 3 pairs with no tails. You raise each pair separately and observe the tails of their kittens.

Pair #	Parent tail type	Offspring tail type	Tail length in Manx cats is:	heritable
1	full-length	4 full-length		acquired
2	full-length	5 full-length	Evidence:	
3	full-length	3 full-length 1 minimal bump		
4	no tail	2 short stump 2 no tail		
5	no tail	1 short stump 1 minimal bump 1 no tail		
6	no tail	2 minimal bump 1 no tail		

American Cocker Spaniel dogs

The American Cocker Spaniel is a breed of medium-sized dog with long, wavy hair.



In your community, you notice that some Cocker Spaniels have full-length tails and others have just a short stump of a tail.

EXPERIMENT

You adopt 6 pairs of American Cocker Spaniel dogs: 3 pairs with full-length tails, and 3 pairs with short tails. You raise each pair separately and observe the tails of their puppies.

Pair #	Parent tail type	Offspring tail type	Tail length in Cocker Spaniels is:	heritab acquire
1	full-length	5 full-length	Evidence:	
2	full-length	4 full-length		
3	full-length	3 full-length		
4	short	4 full-length		
5	short	5 full-length		
6	short	4 full-length		

Kentucky Bluegrass

Kentucky bluegrass is a type of turf grass used in lawns. Usually it is kept short. But if it is left uncut, it can grow up to 70 cm (28 inches) tall.

OBSERVATION

You sample Kentucky bluegrass plants from many lawns across a large area. You notice the plants from different lawns have different amounts of roots.

EXPERIMENT

You take 5 cm x 5 cm samples of grass from 5 lawns with different root amounts. You remove the tops, then dry and weigh the roots to get the dry root mass. You gather seeds from the lawns, plant them small plots, and grow them in the exact same conditions until they form a dense lawn. You collect a 5 cm x 5 cm sample of grass from each plot and measure their dry root mass.

Parent plant	Dry root mass of parent (g)	Dry root mass of offspring (g)	Root mass in Bluegrass is: heritable acquired
1	36.2	23.9	Evidence:
2	29.5	20.5	
З	24.3	22.8	
4	21.7	21.2	
5	15.2	23.5	

Wheat is a type of grass that's grown for food. Its large seeds are ground into flour for making bread and other foods.

OBSERVATION

You sample wheat plants from many farms across a large area. You notice the roots of wheat plants from different farms have different lengths.

EXPERIMENT

You choose 5 plants with different root lengths. You measure the total length of each plant's roots. Then you gather their seeds, plant them, and grow them in the exact same conditions. When the plants grow up, you measure their total root length. Then you average the lengths together to get an average root length of the offspring from each parent plant.

RESULTS						
Parent plant	Root length: parent (cm)	Avg. root length: offspring (cm)	Root length in wheat is:	heritable acquired		
1	930	960	Evidence:			
2	1505	1480				
3	1970	2010				
4	2995	2875				
5	3275	3250				