## *Penguin Journeys*

Name _____

Is your original penguin ☐ big or ☐ small?

Does it have extra feathers? ☐ yes or ☐ no

### *Simulation One: Travel to a Tropical Island*

Step 1. Take a class census. Count the number of each type of penguin in your class. Record the number on your data table.

Step 2. Can you survive the summer? Each member of the group will roll the die. The die roll tells if you survive. If you live, leave your penguin face up on your desk. If you die, turn it face down.

- If you are big with extra feathers, you must roll a 1 to survive.
- If you are big with no extra feathers, you must roll a 1 or 2 to survive.
- If you are small with extra feathers, you must roll a 1 or 2 to survive.
- If you are small with no extra feathers, you must roll a 1,2,3,4, or 5 to survive.

Step 3. Reproduce. If your penguin died, you get to become an offspring (penguin baby). Look around the surviving penguins in your small group. Which type of penguin is most common? Take a "penguin offspring" card that matches that type of penguin.

If there is a tie for most common, each of the surviving penguins should roll the die. Any penguins at your table that did not survive the last round should become an offspring of the high roller.

Step 4. Take a census. Count the number of each type of surviving penguin in your class. Record the number in your data table for round one.

Step 5. Repeat steps 2, 3, and 4. Fill in your data table for round two.

Step 6. Repeat steps 2, 3, and 4. Fill in your data table for round three.

### *Data Table*

| | Big, Extra Feathers | Big, No Extra Feathers | Small, Extra Feathers | Small, No Extra Feathers |
|---|---|---|---|---|
| Starting Census | | | | |
| Round 1 | | | | |
| Round 2 | | | | |
| Round 3 | | | | |

### *Simulation Two: Fleeing to a Frozen Land*

For this journey, everyone starts again with their original penguin. The steps are the same, except this time, penguins that are big with extra feathers have the advantage.

Step 1: Take a census. Count the number of each type of penguin in your class. Record the number on your data table.

Step 2: Can you survive the winter? Each member of the group will roll the die. The die roll tells if you survive. If you live, leave your penguin face up on your desk. If you die, turn it face down.

- If you are big with extra feathers, you must roll a 1, 2, 3, 4, or 5 to survive.
- If you are big with no extra feathers, you must roll a 1 or 2 to survive.
- If you are small with extra feathers, you must roll a 1 or 2 to survive.
- If you are small with no extra feathers, you must roll a 1 to survive.

Step 3: Reproduce. If your penguin died, you get to become an offspring (penguin baby). Look around the surviving penguins in your small group. Which type of penguin is most common? Take a "penguin offspring" card that matches that type of penguin.

If there is a tie for most common, each of the surviving penguins should roll the die. Any penguins at your table that did not survive the last round should become an offspring of the high roller.

Step 4: Take a census. Count the number of each type of surviving penguin in your class. Record the number in your data table for round one.

Step 5: Repeat steps 2, 3, and 4. Fill in your data table for round two.

Step 6: Repeat steps 2, 3, and 4. Fill in your data table for round three.

### *Data Table*

| | Big, Extra Feathers | Big, No Extra Feathers | Small, Extra Feathers | Small, No Extra Feathers |
|---|---|---|---|---|
| Starting Census | | | | |
| Round 1 | | | | |
| Round 2 | | | | |
| Round 3 | | | | |

### *Reflection Questions:*

1. In the first simulation, which type of penguin survived best in the warm environment?
2. Look at your data chart. How many of the best-surviving penguins did you start with at the beginning of the game? How many did you have after round three?
3. What caused the change in the number of penguins of different types?
4. What changes in penguin body type did you see in the second simulation? Describe what caused those changes to occur.
5. Did the penguins in these simulations get to choose what changes would happen in the population? How do you know?