Name: _____

SIMULATE A WOLF POPULATION

In "The Wolves of Isle Royale" (p. 20), you read about how scientists are helping a wolf population. In this activity, you will play a game to model how random events can have a large impact on an isolated population.

HOW TO PLAY

1. Your pack will start with 5 wolves: 2 adults and 3 pups. You will roll two dice. Each roll of the dice represents the passage of one year. Use the numbers you roll and the table below to determine what happens to your pack that year.

If you roll . . .	This happens to your pack . . .	It causes this change in your pack numbers . . .
Double 1s	Disease kills half the pack	Divide by 2
Double 2s, 3s, 4s, or 5s	One wolf dies of old age	Subtract 1
Double 6s	Two extra pups born this year	Add 2
Dice add to 3	Half the pack dies because of prey shortage	Divide by 2
Dice add to 4 (not two 2s)	Two wolves die because of a harsh winter	Subtract 2
Dice add to 5	Two pups die due to a lack of food	Subtract 2
Dice add to 6 (not two 3s)	Three wolves die of old age	Subtract 3
Dice add to 7	Pack numbers are stable that year	No change
Dice add to 8 (not two 4s)	Pack numbers are stable that year	No change
Dice add to 9	Three wolves die of old age	Subtract 3
Dice add to 10 (not two 5s)	Surplus of prey, extra pup born this year	Add 1
Dice add to 11	Surplus of prey, two extra pups born this year	Add 2

2. In the data table on page 2, record your dice rolls, the result of the roll from the table above, and the total number of wolves in your pack at the end of each year. (NOTE: Each year, you'll add three new pups to account for reproduction.) Continue rolling and recording your data 15 times, representing a total of 15 years. If your wolf population drops to zero before 15 years is up, start a new pack of 5 the following year. This represents humans re-introducing wolves to the area.

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DATA TABLE

Year	Last year's wolf total	Numbers you rolled on dice	What happened to your pack this year according to roll?	Pups added this year	Total number of wolves in pack for the year
Example	5	3, 1	Two wolves die because of a harsh winter	+3	5 − 2 + 3 = 6
1	5			+3	
2				+3	
3				+3	
4				+3	
5				+3	
6				+3	
7				+3	
8				+3	
9				+3	
10				+3	
(				+3	
12				+3	
13				+3	
14				+3	
15				+3	

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QUESTIONS

. What happened to the number of wolves over time for your
wolf pack?

2. How might these numbers affect prey numbers in your
pack's habitat?

3. Compare and contrast your results with those of another
group. What was similar? What was different?

4. What events caused the most dramatic changes in your
wolf pack's numbers?

5. By rolling dice, you simulated random events that can
affect an isolated population over time. What are the strengths
of this model? What are the limitations of this model?