



Name:

# Invasive Propagation Model Worksheet

Using this worksheet, you will develop a propagation model using facts about the Himalayan blackberry plant. To do this, you will calculate the number of seeds a Himalayan blackberry plant will generate in a year and draw a bar graph. Then, you'll calculate how far the seeds will be distributed and draw a diagram.

## Part I

Facts about the Himalayan blackberry:

- ✦ One (1) seed per drupelet
- ✦ 75 drupelets per berry
- ✦ 8 canes (vines) per entire plant
- ✦ Half the canes are new growth and half the canes are second year growth
- ✦ Only second year canes bear fruit
- ✦ Canes on average are 20 feet long
- ✦ 10 berries per foot of cane

1. How many seeds does each berry have? Show an equation to calculate seeds per berry without evaluating:
  
2. How many berries does each cane have? Show an equation for berries per cane without evaluating:
  
3. How many seeds does each entire plant have? Show an equation for the number of seeds per plant without evaluating:
  
4. Evaluate the equation to solve how many seeds an entire plant has:
  
5. How many seeds will the plant generate if only half of each second-year cane produces fruit?
  
6. How many seeds will the plant produce if there are 10 canes rather than 8?

## Part II

Facts about the Himalayan blackberry seeds:

- 1 seed per drupelet
- 75 drupelets per berry
- 8 canes (vines) per plant
- Half the canes are new growth and half the canes are second year growth
- Only second year canes bear fruit
- Canes on average are 20 feet long; only half the length productive
- 10 berries per foot of cane

Facts about how seeds are distributed:

- 25% (25/100) fall to the ground around the plant by gravity
- 40% (40/100) are eaten by songbirds, who travel  $\frac{1}{4}$  of a mile
- 20% (20/100) are eaten by elk, who travel 3 miles
- 10% (10/100) are eaten by coyotes, who travel 1 mile
- 5% (5/100) are eaten by rabbits who live in the blackberry thicket

1. How many seeds does this plant generate in a year (show equation and result)?

2. How many seeds are:

distributed by song birds? \_\_\_\_\_

distributed by elk? \_\_\_\_\_

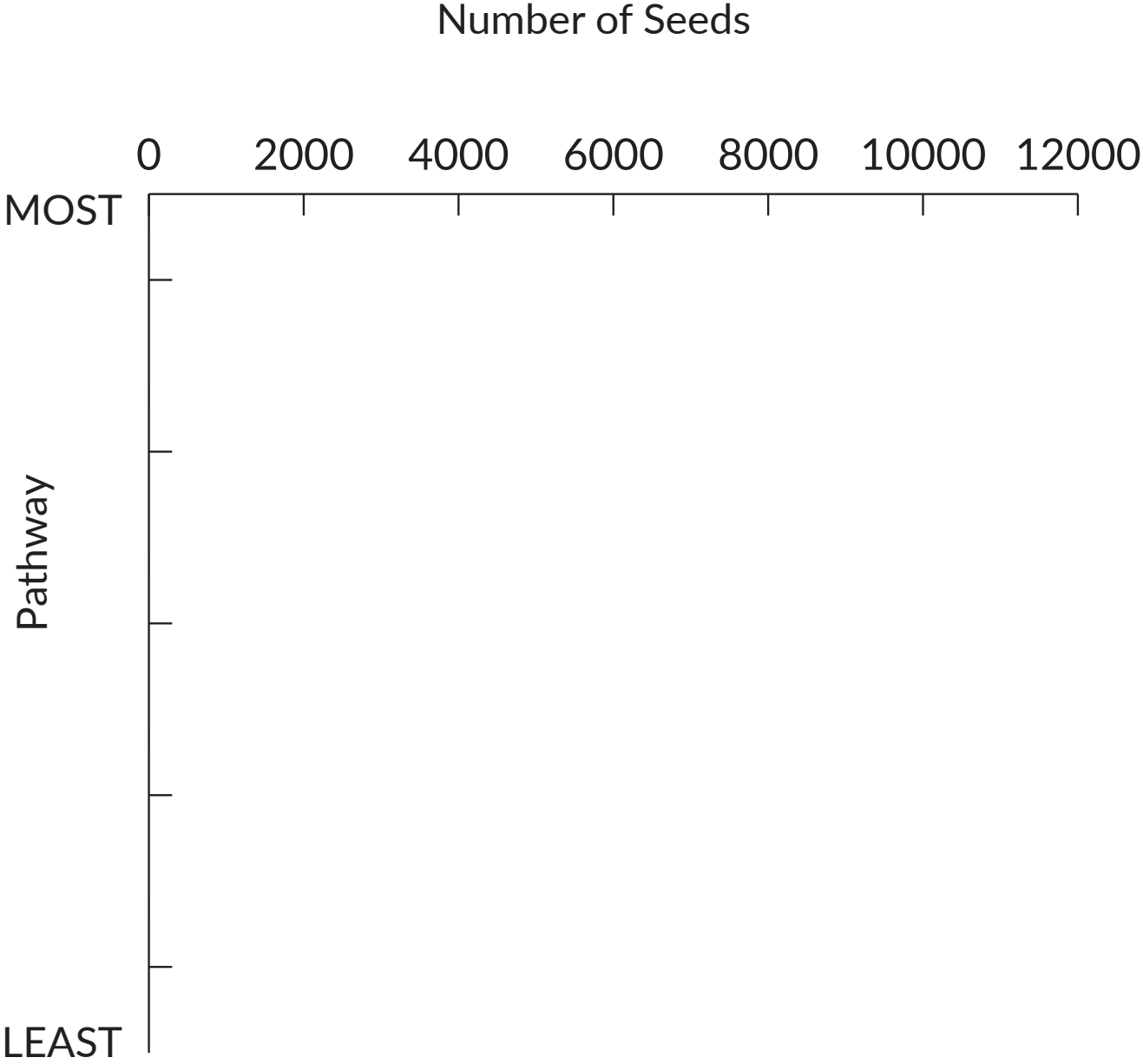
distributed by coyotes? \_\_\_\_\_

distributed by rabbits? \_\_\_\_\_

distributed by gravity? \_\_\_\_\_

**Part III**

Draw a bar graph to represent seed distribution by pathway



## Part IV

Draw a diagram on the arrow below, showing where the seeds end up (in feet) away from the plant.

Remember:

- 25% (25/100) fall to the ground around the plant by gravity
- 40% (40/100) eaten by songbirds + travel  $\frac{1}{4}$  mile
- 20% (20/100) eaten by elk + travel 3 miles
- 10% (10/100) eaten by coyotes + travel 1 mile
- 5% (5/100) eaten by rabbits who live in the blackberry thicket

Mark the scale along the path, where the seeds end up, and the number of seeds at each spot.

