S6.1

MOOSE BY THE NUMBERS

1. In 1988, there were 15–20 moose in Adirondack State Park. By 1993, there were 25–30 moose. Make an appropriate graph representing this information. Be sure to label your axes carefully.

2. Use your graph to draw the lines having the greatest and least possible slopes that are still consistent with the given population information.

3. Calculate the slopes of the two lines you drew in Item 2. Then use your understanding of slope to explain what those numbers tell you about the moose situation. Be as specific as possible.

If there are only 25–30 moose, with six million acres of land in the park, the chance that a moose can get a date on a Saturday night may be slim. The moose may never get together to mate! In addition, the facts in the reading indicate that it is more likely that the migrating moose are all (or mostly) male. Therefore you might assume that no moose births will occur if no additional moose are brought into the park. For simplicity, you might also assume that there are no deaths. Thus, you are assuming that all future change in the moose population will occur by migration.

4. What do you need to know about the migration in order to be able to predict future moose populations?

5. Make reasonable assumptions and computations to obtain the information you identified in Item 4 as being necessary. Remember, keep things simple.

S6.1

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6. Complete the second and third steps of the modeling cycle with these assumptions. Express the consequences of the assumptions in several forms: graphs, equations (recursive and closed-form, words, etc.). Each representation you make is a model. Which form(s) seems best? Why?

7. Apply your model to describe the situation if 100 additional moose were brought into the park.

8. Complete the first cycle of the modeling process: evaluate your model by checking it against other information at your disposal.