

Thinking about Models

NAME: _____ DATE: _____

Part 1 – Physical models

1. Fill in the table below to show what other physical models you are aware of. A line for Big Tarp is filled in for you as an example.

Model	Phenomena it is modeling or used for
<i>Big Tarp</i>	<i>Water flow across a landscape with topography</i>

2. ♦ Fill in the table below with your ideas about the pro's or advantages, and con's or limitations of physical models like Big Tarp.

Pro's, advantages or strengths	Con's, disadvantages or limitations

Part 2 – Discretization

3. Why do we divide the area into smaller cells to make a computational model?
4. What are the advantages and disadvantages of using a larger number of smaller cells?
5. Do the cells need to be the same size? Explain.

Part 3 – Parameterization and algorithms

6. 💧 What features or variables of the surface in the computational model determine how water will flow over the landscape? Explain your reasoning for each variable you list.

7. What rules might you establish to govern what will happen to water at each cell in the computational model? Explain your reasoning.

Part 4 – Thinking about boundaries

8. 💧 Why is it important to think about what happens at boundaries in a computational model?