Stream Table Lab

Name: _____

Date: _____

Class: _____

The stream's ability to transport materials depends on its **gradient**, **discharge**, and **velocity**. Typically a stream erodes more near its headwaters where its gradient is highest. These factors change as the stream approaches its mouth or base level.

Objective: To compare the effects of stream slope and speed on erosion and deposition and to recognize patterns of erosion and deposition.

Materials: metal cake pan, sediment, water, plastic water reservoir, textbooks, 2 plastic cups.

Procedure
1. Set up the stream table as instructed. Clean up any water spills IMMEDIATELY.
2. Set up the stream table creating a slope by placing one textbook under the upstream (top) end of the tray. Pack the sediment into the top half of the tray. Be sure the sand is smooth, gently sloping towards the downstream end of the tray.
3. Fill your cup with water. Keep your finger over the hole on the bottom to ensure that none leaks out of the cup. Hold the cup an inch and a half to 2 inches above the sediment at the top of the tray and release the water. Be sure that there is a bucket under the discharge hose at the downstream end of the stream table.
4. As the water drains and flows downslope make note of how it moves. Go get more water from the sink and fill the cup again before it runs out.
5. Carefully observe the changes produced by the stream flow. Watch how the stream channel changes over time. Note where sediment is being picked up and where they are deposited (dropped) by the stream.

Question: Which sizes of sediments are moving faster and farther?
_____ Which sediments move very little of not at all?
_____

Part 1: The effects of stream gradient
Let the water run for two minutes. Then stop the flow. Take a picture of the stream channel and paste it at the bottom of this document in notability. Outline the main channel and any smaller channels. Include arrows to show the direction of stream flow. Mark the places where sediment is being eroded and where it is being deposited. Create a key for the colors you use. Use this key for all your sketches for this lab.

Let the water run for 2 more minutes then stop the flow. Once again take a picture and paste it at the bottom of this document. Draw the same things on your picture that you did after the first 2 minutes. Drain the excess water from the downstream end of the stream table. Repack the sediment at the upstream end. Raise the slope of the stream table to an elevation of two textbooks. Run the water for 5 minutes.

Observe the differences in the stream speed, erosion, and deposition of sediment compared to the first part of the investigation. Include other observations regarding tributaries, meandering, etc. List these observations below:

Speed:

erosion:

deposition

Other observations

Part 2: The effect of discharge
Let the water run for two minutes using cup number 2 this time and only 1 textbook. Take a picture of the stream channel and paste it at the bottom of this document in notability. Once again, draw in the stream channel and any smaller channels. Include arrows to show the direction of stream flow. Mark the places where sediment is being eroded and where it is being deposited.

Let the water run for 2 more minutes then stop the flow. Once again take a picture and paste it at the bottom of this document. Draw the same things on your picture that you did after the first 2 minutes. Drain the excess water from the downstream end of the stream table.

Compare the amount erosion in part 2 with the erosion from the part 1 of the experiment where we used 1 book and cup number 1.

Speed:

erosion:

deposition:

Other observations

Final Questions:
1. Look at your pictures and describe what changes happened to your stream over time.

2. Label the headwaters and the mouth on each of the diagrams. Where does erosion seem to occur most at the headwaters or at the mouth (base level)? _____ Where does deposition

occur at the headwaters or mouth?_____

3. Areas of erosion are called cutbanks point one cutbank on your last diagram. Areas of deposition along a meander create point bars (deposits of sandy material) Point to one point bar on your last diagram by drawing an arrow.

4. As slope increases the velocity_____

5. As slope increases the rate of erosion _____

6. As slope increases the amount of deposition _____

7. In general what size sediment does a stream carry? _____

8. Sediments tend to be (eroded/deposited?) _____ on the outside of a meander bend and _____ on the inside of meanders in stream channels.