Name _____

Date _____

PROJECT IDEAS

- Can you build a model of a nearby park or other local area?
- Visit a museum and find out how they use models in their exhibits.
- What happens if you set up a stream-table investigation using other combinations of earth materials, such as gravel or coarse-grained sand?
- What happens if you set up a stream-table investigation using layers of different types of earth materials?
- What happens if you set up a stream-table with pebbles of different sizes buried in the earth materials?
- What happens if you use a longer tray for your stream table?
- Can you invent a different type of water-delivery system for your stream table so that you can control how fast the water flows? What happens if you use a very slow drip and observe the stream table over several days?
- Look at *FOSS Science Stories* or other books in the library for ideas about projects you might like to present to the class.
- Find out what kinds of landforms are most common in your region. Collect photographs and maps that show the different landforms.
- Get a topographic map of your area. Find out what kinds of symbols are used on the map and what the contour interval is, and draw a profile for part of the area.
- Take photographs of a stream-table investigation as though you were in an airplane flying above it. Compare your photos to the ones from Mt. Shasta, Death Valley, and the Grand Canyon.
- Find out how topographic maps were drawn 20 years ago and how they are drawn today.
- Interview a surveyor and find out what he or she had to learn to become a surveyor and what equipment surveyors use.
- Can you make a device that will help you measure the elevation of the land in your schoolyard? Use this information to draw a topographic map of the schoolyard.
- Is there an orienteering club in your area? Find out what they do and join in one of their activities if possible.
- What different types of aerial photographs are available?

Name _____

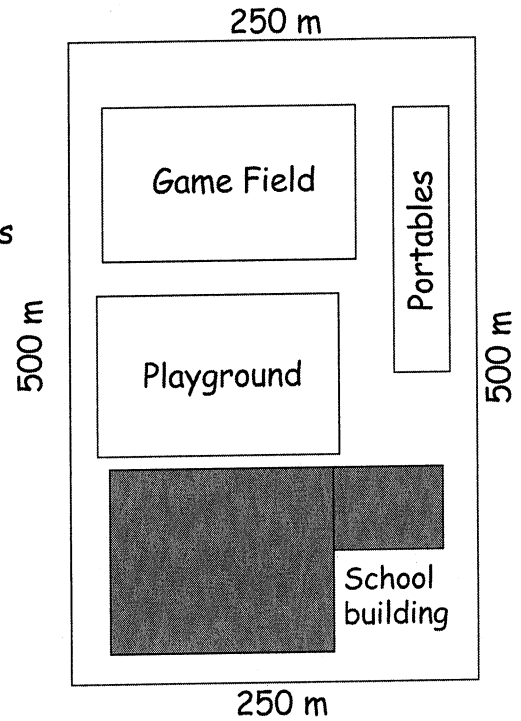
Date _____

MATH EXTENSION—PROBLEM OF THE WEEK

INVESTIGATION 1: SCHOOLYARD MODELS

Jessie's group decided they wanted to make a map of their schoolyard on a larger sheet of paper. The largest sheet of paper they could use was a square measuring 100 cm on a side. They used a trundle wheel to measure the lengths of the school boundaries. The following sketch shows their measurements.

Schoolyard measurements



Think about the size of paper they have to draw their map.

In order for Jessie to fit the whole schoolyard on this sheet of paper, how many meters should each centimeter equal on the map? Show your work.

Use the drawing to estimate the length of the longest side of the game field.

Name _____

Date _____

MATH EXTENSION—PROBLEM OF THE WEEK

INVESTIGATION 2: STREAM TABLES

Mr. Burns's class had finished several stream-table investigations. One student noticed that most of the clay had washed out of the earth material and into the basin. She asked Mr. Burns if that was a problem. Mr. Burns looked in the FOSS teacher guide and read that they needed to add clay to the earth material after several uses. The question was how much clay to add.

It appeared that only the clay had washed into the basin. Most of the sand they started with was still in the stream table. Mr. Burns said that they started with 1.2 liters of earth material in each stream table. The ratio of sand to clay was 5:1.

What was the volume of sand used in the original earth material?

_____

What was the volume of clay in the original earth material?

_____

The students let the water settle in the basin overnight. Then they poured off the water, leaving deposited clay and sand in the basin. The total volume of earth material in the basin was 0.2 liters. They found that the ratio of sand to clay in the basin was 1:3.

Use this information to figure out how much clay they should add to the earth material left in the stream table. Show your work.

Name _____

Date _____

MATH EXTENSION—PROBLEM OF THE WEEK

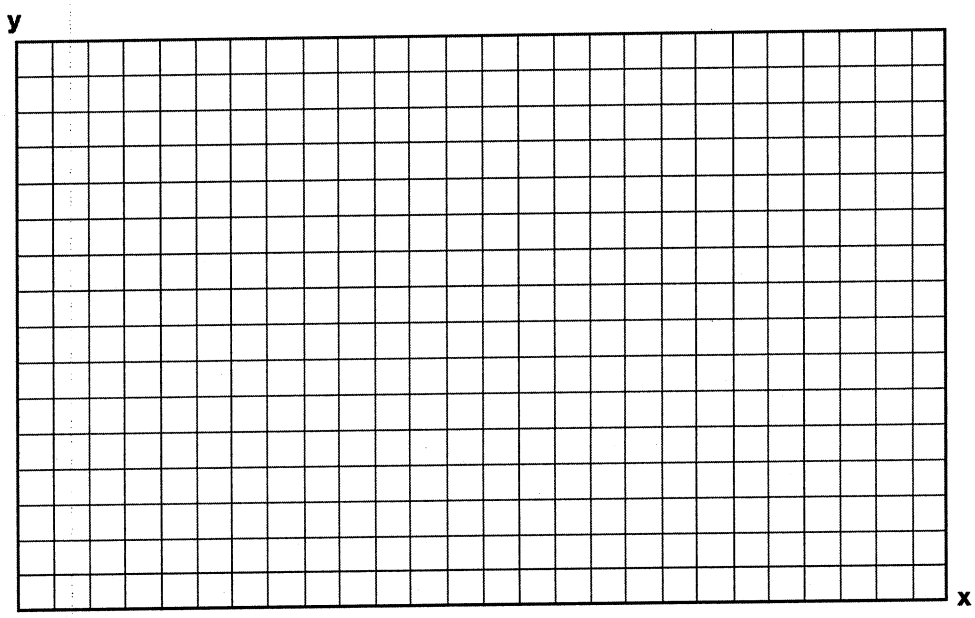
INVESTIGATION 3: GO WITH THE FLOW

Ms. Hayden's class investigated how the slope of the stream table affected deposition. Each group tested the same four slopes by elevating the end of the tray 2, 3, 4, and 5 cm. They measured the length of the delta after each test. The results are in the data table.

Calculate the average length of the deltas formed. Round your answers to the nearest 0.1 cm.

Slope height	2 cm high	3 cm high	4 cm high	5 cm high
Group 1	4.0 cm	5.2 cm	6.3 cm	7.5 cm
Group 2	4.2 cm	5.6 cm	6.4 cm	7.6 cm
Group 3	3.8 cm	5.4 cm	6.1 cm	7.3 cm
Group 4	3.8 cm	5.2 cm	6.1 cm	7.2 cm
Group 5	4.8 cm	5.2 cm	6.6 cm	8.0 cm
Group 6	5.0 cm	5.7 cm	6.9 cm	7.9 cm
Group 7	4.0 cm	5.1 cm	6.4 cm	7.6 cm
Group 8	4.4 cm	5.3 cm	6.5 cm	7.5 cm
Average				

Prepare a graph of the average delta lengths.



Predict the length of the delta if the tray were elevated 1 cm. _____

Name _____

Date _____

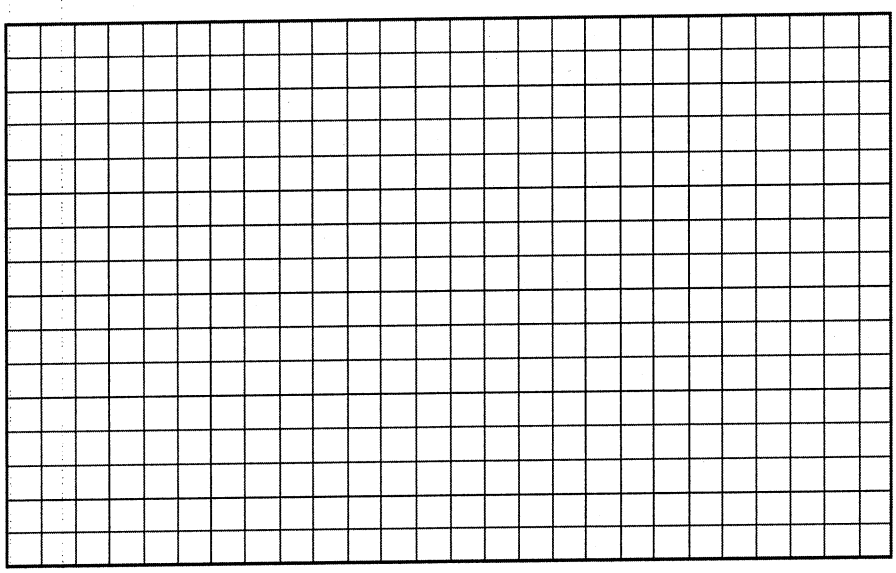
MATH EXTENSION—PROBLEM OF THE WEEK

INVESTIGATION 4: BUILD A MOUNTAIN

Keshia's class was planning a hike on a trail in the local state park. Her teacher asked them to figure out where the steepest part of the trail was. They looked at a topographic map of the park and figured out the distances between stops and the elevation of each stop. They recorded their data on the table you see here.

Use the data in the table to draw a slope graph for the trail.

Stop #	Distance (km)	Elevation (m)
Start	0.0	492
1	1.0	500
2	1.8	485
3	2.5	472
4	3.2	508
5	4.1	510
6	5.0	521
7	5.6	518
8	6.3	530



Between which two stops is the trail the steepest? _____

Between which two stops is the trail the least steep? _____

Use the back of this sheet to explain how you came up with these answers.

Name _____

Date _____

MATH EXTENSION—PROBLEM OF THE WEEK

INVESTIGATION 5: BIRD'S-EYE VIEW

Marilyn bought two different maps for the same state park when she was at the park's visitor center. One of the maps was older and on sale "as is" because part of the bottom had been torn off. The older map included a larger area than the new map, but the scale was on the part that was torn off. She found a trail on the map that she wanted to hike, but couldn't figure out how long a hike it was.

The new map had a scale but didn't include the trail she wanted to hike. The scale on the new map was 1:25,000. She found the same road on both maps. When she measured it on the new map, she found it was 10 cm long. When she measured it on the old map, she found it was 5 cm long.

How long is the road in the real world?

_____

What is the scale for the old map?

_____

Marilyn then measured the trail she wanted to hike on the old map and found it was 10 cm long on the map.

How long is the trail in the real world?

_____

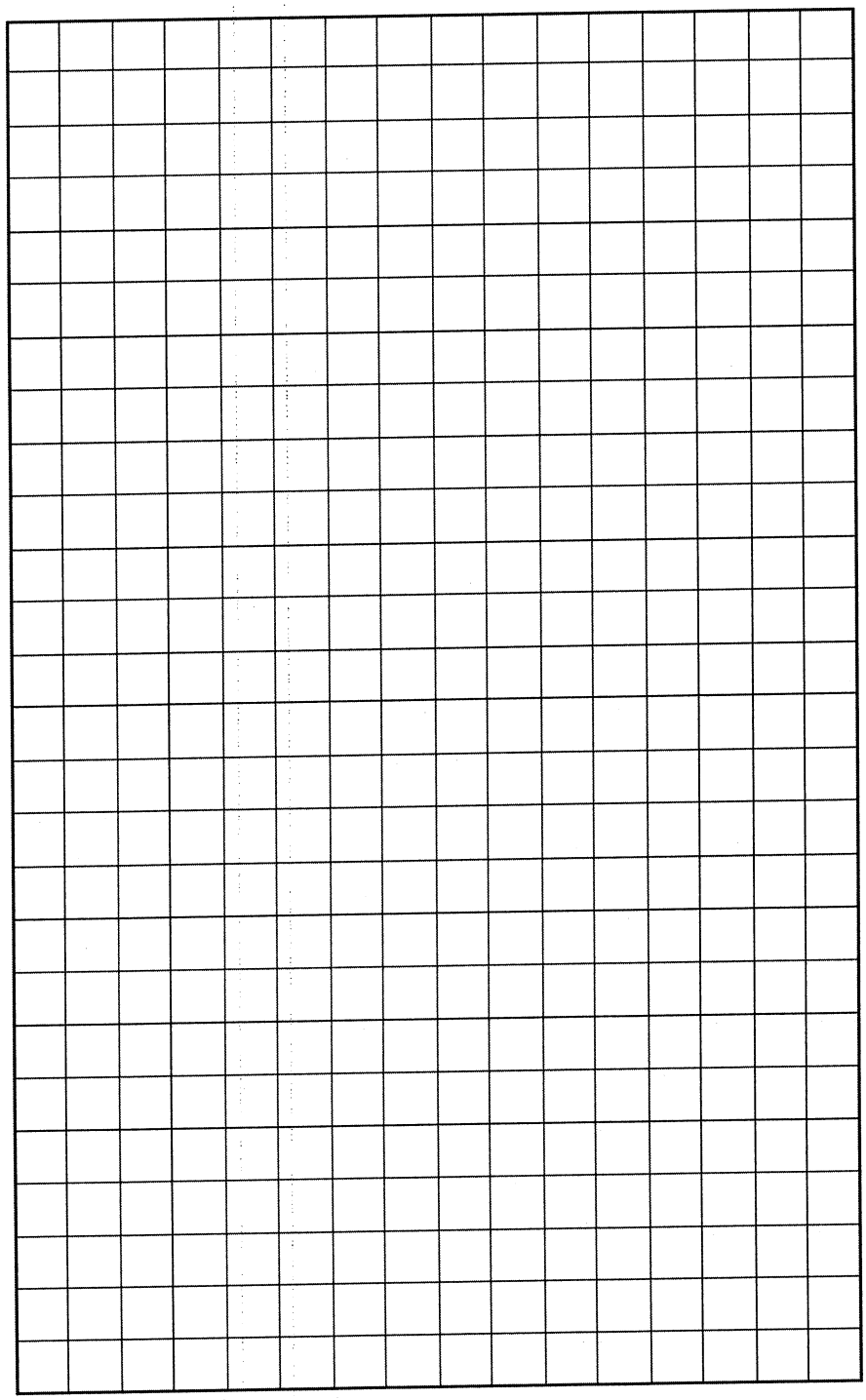
Name _____

Date _____

HOME/SCHOOL CONNECTION

INVESTIGATION 1: SCHOOLYARD MODELS

Use the grid below to draw a map of your home. Include a key in the space on the right. Draw and label two escape routes from the room where you sleep that you could take if there were a fire in your kitchen.



Name _____

Date _____

HOME/SCHOOL CONNECTION

INVESTIGATION 2: STREAM TABLES

Landform Inventory

Begin a list of the different types of landforms you see in your community and during your travels. Refer to the *Landforms Vocabulary* student sheet for some ideas of what to look for. You will probably see other landforms that are not included on the vocabulary sheet. Make sure you include them, too. If possible, take photographs of the landforms and organize the photos in an album.

Type of landform	Location

Name _____

Date _____

HOME/SCHOOL CONNECTION

INVESTIGATION 3: GO WITH THE FLOW

Watch television newscasts, read newspapers or magazines, and/or browse the Internet for information about landforms and the natural or human-caused processes that create or change landforms. Some ideas might include floods, hurricanes and storm surges, earthquakes, landslides, and dams.

Record in the space below the following information about the news story:

- The details of the event.
- The kinds of landforms that were affected by the event.
- How the event changed or created the landform(s).
- Where the event occurred. Look up the location on a map so you can point it out to someone else.
- If possible, include a copy of the newspaper or magazine article.

Name _____

Date _____

HOME/SCHOOL CONNECTION

INVESTIGATION 4: BUILD A MOUNTAIN

Find a highway map for the city, county, or region where you live. One source of maps is a motorist's club, such as AAA.

Scan the map for the following information.

Names of landforms

_____

_____

_____

_____

_____

_____

Symbols for landforms

Review your *Landform Inventory*. Highlight or circle any of the landforms from your list that you find on your map.

If a landform from your inventory is not on the map, mark and label its location on the map.

Plan a trip with your family to one or more of the landforms you have not seen. Take photos to share with your class.