Student Activities
Overview of Student Activities

Teacher Notes

Icebreaker (teacher demonstration)

Notes: See notes page 5. THIS IS NOT A STUDENT ACTIVITY - IT IS A TEACHER DEMONSTRATION DUE TO POTENTIAL DANGER FROM BROKEN GLASS. Fill a glass jar of water to the brim and seal tightly with a lid. Place it in 1 or 2 strong resealable plastic bags then place in the freezer overnight. Carefully remove from freezer to show class that the glass has shattered.

Tour’osion (written activity)

Notes: See notes page 23. You may need to go through one example of longitude and latitude to remind the students. The starting point for the activity is Townsville, from which the answers are calculated, however you could use your own town but you will need to determine the new answers.

How Would You Like To Be Remembered? - The effects of acid rain on buildings (practical activity)

Notes: See notes page 8. A follow-up excursion for this activity could be a visit to a cemetery. Even if you don’t live in a big city, with lots of air pollution, as long as you have access to an old cemetery you can look at the effect of weathering on tombstones. Although acid rain isn’t a large problem here in Australia, if you live in Sydney or Melbourne you may be able to observe some of these effects on the older tombstones and use the dates on the tombstones to give an idea about the speed of weathering.
You drip! Part 1

TEACHER INSTRUCTIONS: Buy a salt block/brick from a pet store. Set up a constant drip system in the classroom. Use a retort stand if you have one or otherwise find a way to suspend a small container of water to drip onto the salt block (this will simulate erosion in your classroom).

1. What is erosion? (Write your or your class’s definition here)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Draw and fully label the salt block and apparatus your teacher has set up.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Predict what you think will happen to the salt block.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
4. Each day, for six days you are to observe what has happened to the salt block and record your observations in the table below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
You drip! Part 2:

1. Collect 25 ml of the water that is being dripped onto the salt block and collect 25 ml of the run off liquid from around the salt block. Place in petrie dishes (or shallow plastic containers) and allow to evaporate.

2. Predict what you think will happen in the dishes.

Water dish:

Run-off dish:

3. Make observations of the dishes after evaporation and record them in the table below.

<table>
<thead>
<tr>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
</tr>
<tr>
<td>Run-off</td>
</tr>
</tbody>
</table>

4. Finish the following sentence:

If water drips against a salt block for a long period of time
5. Describe examples of where water acts in a similar way in the natural world.
Icebreaker

(Teacher demonstration)

**Aim:**
To determine if freezing water causes weathering or erosion.

**Materials:**
- 1 glass jar
- water
- small towel
- zip lock plastic bag large enough to fit over the jar

**Method:**
1. Fill the jar completely with water and seal it with the lid.
2. Wrap the jar in a resealable plastic bag with a towel around it and place it in a freezer overnight.

Predict what you think will happen to the jar.

3. Unwrap the jar carefully and observe what has happened.

**Results:**
What happened to the jar after the water inside it had been frozen?
Conclusion:

1. When water freezes it **expands** OR **contracts** (circle correct answer).

   How do you know this?

   ________________________________________________________________

   ________________________________________________________________

   ________________________________________________________________

2. When water freezes in cracks in rocks, the expansion may cause the rock to

   ________________________________________________________________

   ________________________________________________________________

3. In which parts of Australia do you think this type of ‘freeze-thaw process’ may take place?

   ________________________________________________________________

   ________________________________________________________________

   ________________________________________________________________
Agent erosion

Notes: See notes page 9. This is an assignment to be done in groups of four.

Your name: _______________________________________________________________

Agent: ___________________________________________________________________

Group members: __________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

Instructions

Your group will be assigned one ‘agent of erosion’ from the following list: *running water, waves, glaciers and wind*. Each group is a top secret government department and your task is to compile a dossier on your ‘secret agent’. This file should contain the following information:

**Statistics** on agent - size of particles, speed of process, where found in the world, etc.

**Modus operandi** of the agent - how the secret agent actually causes erosion.

**Thwart potential** - an imaginative way that an agent may be stopped (or can they be stopped?). Discuss ways in which this type of erosion agent interferes with human’s plans and ways to prevent its interference.

**Scene of the crime** - drawings and pictures of the scene of the erosion agent, where it operates and areas it causes problems.

It is recommended that each person in the group should research ONE of the above four topics.

Assessment

Your group will have to decide how to divide up the work equally.

The following will be assessed:

- A written report no longer than 500 words. Include only the most important information.
- A presentation to the class - include one or two pictures that really demonstrate your type of erosion and the most important information/facts from your written report. Your presentation should include any props or demonstrations that help you to explain information to the rest of the class. This should not be longer than 5 – 7 minutes.

Due date: _______________________________________________________________
Factors affecting physical and chemical weathering

Aim:
To describe and give examples of factors which affect the rate of physical and chemical weathering.

Materials:
- Water
- 3 sugar cubes
- 3 small jars with lids
- Eye dropper

Method:
1. Place one sugar cube in each of the jars
2. Put 5 drops of water onto the sugar cube in the first jar. Observe what happens and write your observations in the table.
3. Cover the second jar tightly with the lid. Shake the sugar cube vigorously for 10 seconds. Observe what happens and write your observations in the table. (DO NOT place any water in this jar.)
4. Place 5 drops of water on the sugar cube in the third jar. Cover the jar tightly with the lid. Shake the jar vigorously for 10 seconds. Observe what happens and write your observations in the table.

Results:

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Sugar cube and water</td>
<td></td>
</tr>
<tr>
<td>b) Sugar cube and shake</td>
<td></td>
</tr>
<tr>
<td>c) Sugar cube, water and shake</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion:

1. Which method resulted in the most weathering of the sugar cube?

_________________________________________________________

Explain why this method was the most destructive.

_________________________________________________________

_________________________________________________________

2. What types of weathering (physical, chemical) are illustrated by the experiment in each jar?

Jar 1) ______________________________________________________

Jar 2) ______________________________________________________

Jar 3) ______________________________________________________

3. Where might you find examples of the same types of weathering as this experiment demonstrates?

_________________________________________________________

_________________________________________________________

_________________________________________________________
Rates of weathering

**Aim:**
To identify factors which affect the rate of weathering.

**Hypothesis:**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Time taken (seconds)</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broken tablet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole tablet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusion:

1. Which tablet had the largest area of surface touching the water – the broken or the whole tablet?

2. What is the relationship between surface area and the speed it takes for the tablet to dissolve?

3. How does this relationship apply to weathering in nature?
Tour’osion

Ella and Kai are planning to tour Australia and visit a variety of geological features, all of which have been affected by weathering and erosion. They have been given a map reference and a description of the places they are to visit. They need to mark these places on the map provided to enable them to plan their trip.

a) Mark in and label your home town on the map.

b) Read the description about each site and use latitude and longitude to mark where they are located on the map of Australia.

<table>
<thead>
<tr>
<th>Location</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULURU (Ayers Rock)</td>
<td>25.20 S</td>
<td>131.02 E</td>
<td>The sediments that formed Uluru began their life 550 million years ago as alluvial fans deposited sediments from ancient mountains that have now eroded away. Erosion has worn away the surrounding softer limestone and sedimentary rocks to leave the more resistant Uluru.</td>
</tr>
<tr>
<td>TWELVE APOSTLES</td>
<td>38.5 S</td>
<td>143 E</td>
<td>The ‘Apostles’ are under attack from the sea, sea spray and rain as well as wind and water carrying sand and gravel that act as abrasives. They are undercut by the waves pounding the cliffs and caves are formed. As time progresses the caves widen into arches that can collapse to form each ‘Apostle’.</td>
</tr>
<tr>
<td>KARLWEKARLWE</td>
<td>21.5 S</td>
<td>134 E</td>
<td>These ‘marbles’ weathered as water penetrated the rock, splitting it into rectangular blocks of 3-7 metres square. Further weathering in the cracks and the peeling of the outside of each rock rounded the corners of the boulders. The surface soil was eroded away to reveal the rounded boulders that we see today.</td>
</tr>
<tr>
<td>REMARKABLE ROCKS</td>
<td>36 S</td>
<td>137.5 E</td>
<td>The seaward side of these dome-shaped granite boulders are particularly weathered. Sea-spray is a contributor to its cavernous appearance. All the boulders have pits and hollows formed on their underside. These have most likely formed from salt crystallising on the rock surface.</td>
</tr>
<tr>
<td>FRASER ISLAND</td>
<td>25 S</td>
<td>153 E</td>
<td>Fraser Island is 125km long and over 160 000 hectares in area. It was formed during the last Ice Age when the prevailing winds transported vast quantities of sand from New South Wales and deposited it along the coast of Queensland, forming Fraser Island. It is the largest coastal dune system and largest sand island in the world.</td>
</tr>
<tr>
<td>CRADLE MOUNTAIN</td>
<td>41.5 S</td>
<td>146 E</td>
<td>The area where Cradle Mountain is located was glaciated during the last Ice Age (about 10 000 years ago) when a 6 km wide ice cap formed and glaciers flowed from its edges, carving the landscape into dramatic shapes. It is characterised by a range of glacial formations - tarns, glacial lakes, moraine deposits, U-shaped valleys and waterfalls.</td>
</tr>
<tr>
<td><strong>PURNULULU (Bungle Bungles)</strong></td>
<td><strong>WAVE ROCK</strong></td>
<td><strong>WARRUMBUNGLES</strong></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>The ‘Beehive’ landforms have formed from mechanical weathering and the physical removal of grains of sandstone, mainly by running water but also by wind, rain, plants and animals.</td>
<td>Wave Rock is a granite cliff, 14 m high and 110 m long. Its overhanging curve was caused by weathering and water erosion. The vertical streaks have been caused by rain washing down its face and leaving behind chemical deposits.</td>
<td>Over time, the forces of weathering and erosion have carved away at this volcano that formed 13 million years ago. The more easily weathered rocks have all but gone, leaving only the most resistant parts – the plugs, dykes and domes (the “veins and arteries” of the volcano).</td>
<td></td>
</tr>
</tbody>
</table>
Your task

Ella and Kai will travel in an *anticlockwise* direction around the country starting in their home town of Townsville in far north Queensland. You need to plan their tour of the erosion features using the shortest possible route. They will be travelling in a plane.

Once you have marked all the places on the map you need to measure the distance between each place to enable you to plan the shortest possible route. You will need a ruler to measure in centimetres then use the scale on the map to convert to kilometres. Alternatively use the edge of a piece of paper to mark the distance then use the scale bar to convert to kilometres.

Fill in your details on the table below:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townsville</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Conclusion**

(You will need to read the description of each site to answer these questions.)

1. Is there one main agent of erosion for all the sites?

2. Which of the sites were affected by chemical erosion?

3. List all the types of weathering and erosion mentioned.

4. Research the aboriginal story of the formation of one of the sites and compare this with the scientific view on its formation by weathering and erosion.

**Extension:** Discuss the view that without weathering and erosion overseas tourists would have little reason to come to see the natural environment in Australia.
How would you like to be remembered?

**Aim:**
To determine what tombstone/gravestone rock type would be most affected by acid rain in a cemetery.

**Hypothesis:**
Acid rain coming into contact with some tombstones will...

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**Materials (per group):**
- Small pieces of limestone, marble, granite, sandstone
- 8 small glass jars with lids
- Dilute HCl or vinegar
- Tap water
- Marker pen or masking tape
- Safety goggles

**Method:**
1. Put a piece of each of the four types of stone into a separate jar.
2. Half fill these jars with dilute HCl.
3. Label the jars with the name of the tombstone material and the liquid that they are in. For example limestone and HCl.
4. Place the remaining stones into separate jars then half fill them with water and label each jar.
5. Observe the initial effects of acid and tap water on the building materials in each jar. Record these observations in the table.
6. Record observations again after 20 minutes.
7. Let the jars sit overnight or until the next lesson then record your last observation.
Results:

<table>
<thead>
<tr>
<th></th>
<th>HCl</th>
<th>Tap water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limestone</td>
<td>Initial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Next day</td>
<td></td>
</tr>
<tr>
<td>Marble</td>
<td>Initial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Next day</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>Initial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Next day</td>
<td></td>
</tr>
<tr>
<td>Sandstone</td>
<td>Initial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Next day</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions:

1. Which rock was most affected by the acid?

2. Were any rocks substantially affected by the water?

3. What evidence is there that a chemical change has taken place in some of the jars?

4. Rain naturally contains chemicals that make it acidic. What can you conclude about the effect of acid rain on rock types?

5. Which rock type would you choose to build you tombstone out of? Give your reasons.
Erosion in action

**Aim:**

To develop an appreciation of the factors which contribute to rates of erosion.

**Materials:**

- Five shoe boxes or trays or possibly large plastic drink bottles - trimmed to five centimetres deep, v-notched at one end, and lined with plastic if needed (plastic should extend several centimetres beyond notched end). These should all be the same size.
- Water
- Sprinkling cans or containers
- Measuring device or graduated cylinders
- Filter paper or paper towel
- Funnel
- Electronic scales or balance
- ‘Grass sod’ (indoor/outdoor carpet, discarded carpet, terry towelling cloth)
- Soil (enough for the five trays to be filled with the same soil)

**Method:**

1. Fill one erosion tray or box with moist soil about 3 cm deep and pack down tightly.
2. Fill one erosion tray or box with moist soil about 2 cm deep and then place a layer of sod, carpet, or cloth over the top of the soil and pack down tightly.
3. Fill one erosion tray or box with moist soil about 3 cm deep and, using your finger, make shallow trenches across the slope (contouring), i.e., across the tray.
4. Fill one erosion tray or box with moist soil about 3 cm deep and, using your finger, make shallow trenches up and down the slope, i.e., the long direction of the tray.
5. Fill one erosion tray or box with moist soil about 3 cm deep and using a ruler, make steps across the slope (terracing), i.e. across the short direction of the tray.
6. Line up the boxes on an incline with the v-notch at the lower end; place catch cans, measuring cups, or some type of drip pan under the v-notch; place the cup or can close enough to the v-notch to prevent splashing.
7. Have one student from each group simultaneously sprinkle a measured amount of water (300ml) on each soil tray from a height of about thirty centimetres above each box. The same amount of water should be sprinkled on each tray; pour steadily.
8. Have one student from each group record the length of time from the beginning of the sprinkling until water first starts running out of the v-notch; similarly, record the total length of time water continues to flow out of the v-notch of each tray.
9. Let the water in the measuring cups or catch cans settle and measure the sediment in each cup. Filter the outflow from each box through a filter. Dry the filter paper and measure the mass the amount of sediment that was washed from each box. You can also measure the amount of water that ran off, compared to the amount of water applied.

Hypothesis:

Predict which tray will have the most and least amount of erosion

Most _____________________________ Least _____________________________

Results table:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Tray 1 none</th>
<th>Tray 2 sod/carpet</th>
<th>Tray 3 contour</th>
<th>Tray 4 long trench</th>
<th>Tray 5 terrace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time for water to begin running</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total time for water to run out of tray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume of water that was applied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume of water (mL) that &quot;ran off&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry mass (g) of solid that &quot;eroded&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusions:

1. Which soil surface had the greatest amount of runoff? _____________________________

2. Which soil surface lost the least soil? ___________________________________________

3. In which soil surface did the runoff/erosion appear first? In which soil condition did the runoff last the longest?

____________________________________

____________________________________

4. Farmers can affect the amount of soil erosion on their farms. Which land management methods were most effective in controlling erosion in this experiment? Explain why.

____________________________________

____________________________________

5. Why should you pour the same amount of water for the same amount of time on each of the soil conditions?

____________________________________

____________________________________

____________________________________
Answer sheets
You drip! Part 2:

1. Collect 25 ml of the water that is being dripped onto the salt block and collect 25 ml of the run off liquid from around the salt block. Place in petrie dishes (or shallow plastic containers) and allow to evaporate.

<table>
<thead>
<tr>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
</tr>
<tr>
<td>Run-off</td>
</tr>
</tbody>
</table>

- Run-off: *Salt crystals are left behind.*

4. Finish the following sentence:

   If water drips against an object for a long period of time it will erode the surface it is dripping on.

5. Describe examples of where water acts in a similar way in the natural world.

   *Caves, rivers, creeks, coastal areas.*
Icebreaker

(Teacher demonstration)

**Results:**

What happened to the jar after the water inside it had been frozen?

*The glass cracked.*

**Conclusion:**

Circle the correct answer and answer the rest of the question

1. When water freezes it **expands** OR **contracts** (circle correct answer).

   How do you know this?

   *The frozen water cracked the glass because it took up more space than the liquid water.*

2. When water freezes in cracks in rocks, the expansion may cause the rock to **crack even further.**

3. In which parts of Australia do you think this type of ‘freeze-thaw process’ may take place?

   *Snowy Mountains, Antarctica.*
Factors affecting physical and chemical weathering

Results:

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Sugar cube and water</td>
<td></td>
</tr>
<tr>
<td>b) Sugar cube and shake</td>
<td></td>
</tr>
<tr>
<td>c) Sugar cube, water and shake</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion:

1. Which method resulted in the most weathering of the sugar cube?

   (c) sugar cube, water and shake

   Explain why this method was the most destructive.

   The combination of both chemical and physical weathering.

2. What types of weathering (physical, chemical) are illustrated by the experiment in each jar?

   Jar 1) chemical
   
   Jar 2) physical
   
   Jar 3) chemical and physical

3. Where might you find examples of the same types of weathering as this experiment demonstrates?

   Rivers, oceans where rocks are in water (chemical weathering) and being tumbled about (physical weathering).
Rates of weathering

Conclusion:

1. Which tablet had the largest area of surface touching the water – the broken or the whole tablet?  
   
   *Broken*

2. What is the relationship between surface area and the speed it takes for the tablet to dissolve?  
   
   *The larger the surface area the faster the reaction can take place.*

3. How does this relationship apply to weathering in nature?  
   
   *Small stones, rocks, etc, weather much faster than large rocks. Also, pitted and cracked rock faces, with large surface area, will weather faster than smooth rock faces with smaller surface areas.*
Tour’osion

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(Given answers have been rounded to nearest half cm measurement)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.7 cm = 750km</td>
</tr>
<tr>
<td>Townsville</td>
<td>Karlwekarlwe</td>
<td>5 cm = 1389km</td>
</tr>
<tr>
<td>Karlwekarlwe</td>
<td>Purnululu</td>
<td>3.5 cm = 972 km</td>
</tr>
<tr>
<td>Purnululu</td>
<td>Uluru</td>
<td>3.5 cm = 972 km</td>
</tr>
<tr>
<td>Uluru</td>
<td>Wave Rock</td>
<td>5.5 cm = 1528 km</td>
</tr>
<tr>
<td>Wave Rock</td>
<td>Remarkable Rocks</td>
<td>7.5 cm = 2083 km</td>
</tr>
<tr>
<td>Remarkable Rocks</td>
<td>Twelve Apostles</td>
<td>3 cm = 833 km</td>
</tr>
<tr>
<td>Twelve Apostles</td>
<td>Cradle Mountain</td>
<td>1 cm = 278 km</td>
</tr>
<tr>
<td>Cradle Mountain</td>
<td>Warrumbungles</td>
<td>4 cm = 1111 km</td>
</tr>
<tr>
<td>Warrumbungles</td>
<td>Fraser Island</td>
<td>3 cm = 833 km</td>
</tr>
<tr>
<td>Fraser Island</td>
<td>Townsville</td>
<td>3.5 cm = 972 km</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>39.5 cm = 10 972 km</td>
</tr>
</tbody>
</table>

\[
\frac{39.5}{2.7} \times 750 = 10 972
\]

**Conclusion**

1. Is there one main agent of erosion for all the sites?

   *Yes, water.*

2. Which of the sites visited were affected by chemical erosion?

   *Wave rock*

3. List all the types of weathering and erosion mentioned.

   *Physical weathering, chemical weathering, soil erosion, wave erosion, wind erosion, glacial erosion.*
How would you like to be remembered?

Conclusions:

1. Which rock was most affected by the acid?

   *Marble and limestone were both affected by the acid.*

2. Were any rocks substantially affected by the water?

   *No real noticeable effect.*

3. What evidence is there that a chemical change has taken place in some of the jars?

   *Bubbles are given off the rocks that are dissolving.*

4. Rain naturally contains chemicals that make it acidic. What can you conclude about the effect of acid rain on rock types?

   *The effect of the acid will depend on the type of rock. Different rocks are composed of different minerals, all of which have different solubilities in the acid. Some dissolve easily, some are more resistant to the acid.*
Conclusions:

1. Which soil surface had the greatest amount of runoff? *Tray 1*

2. Which soil surface lost the least soil? *Sod/carpet (Tray 2)*

4. Farmers can affect the amount of soil erosion on their farms. Which land management methods were most effective in controlling erosion in this experiment? Explain why.

   *Sod/carpet as the sod covered the soil and meant water was moving slower through it.*

   *Contours are also an effective method in controlling erosion. The contours slowed the process of runoff through the soil cover.*

5. Why should you pour the same amount of water for the same amount of time on each of the soil conditions?

   *To ensure consistency and allowing for comparisons to be drawn between each experiment.*