Science Rocks!!

Homework
Homework 1

1. Copy and complete the following sentence:

   The three main types of rocks are igneous, _________________
   and sedimentary.

2. Copy and complete the following table to show two examples of igneous
   and sedimentary rocks.

<table>
<thead>
<tr>
<th>Igneous Rocks</th>
<th>Sedimentary Rocks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Using the information below, draw a bar graph showing the % composition
   of different compounds in granite.

<table>
<thead>
<tr>
<th>Compound in granite</th>
<th>% Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon dioxide</td>
<td>65</td>
</tr>
<tr>
<td>Aluminium oxide</td>
<td>15</td>
</tr>
<tr>
<td>Potassium oxide</td>
<td>10</td>
</tr>
<tr>
<td>Sodium oxide</td>
<td>5</td>
</tr>
<tr>
<td>Other compounds</td>
<td>5</td>
</tr>
</tbody>
</table>
Research a Mineral - ICT

There are many minerals that man-kind have been using for hundreds and thousands of years. They have been used because of many important properties. These properties might include how hard they are, how pretty they are etc. Your task is to carry out some research on a mineral that you like.

Produce a poster, power point or information leaflet that includes the following information:

1. What is the name of the mineral?

2. What is the chemical composition (that means what are the chemical elements and compounds that make it up)?

3. Find out about how the hardness of a mineral is measured and what the hardness of your mineral is.

4. What is the appearance, describe it and draw it/print off a picture.

5. What is the mineral used for?

6. Try and link its’ properties to its’ uses.

7. In which countries do you find it naturally occurring.

8. How expensive is it? Very expensive minerals are often described as gemstones. Could yours be described as a gemstone?

9. You might find some fascinating facts about it. Some people think certain minerals have magic properties, often there are strange superstitions attached to gemstones. Try and find out.
1. Linda and Bernie were on The Science Rocks Topic at Holy Cross High School when their teacher, Mrs Best, gave them a rock sample and asked them to carry out the following tests:

- check the hardness of the rock sample
- check whether or not the rock sample reacts with acid

Describe how the girls could carry out these tests.

(Hint: remember to include a labelled diagram of the apparatus)

2. Write a few sentences to describe how each of the three types of rock, igneous, sedimentary and metamorphic, were formed.

To help in your description make sure you include these words:

Pressure    Weathering    Heat    Cooling    Temperature
Molten       Underground   Transporting   Sedimentation   Magma

3. Copy and complete the following sentence that describes an igneous rock by selecting the correct word underlined.

Granite is a classic igneous rock because it is **hard/soft**, **can/cannot** be easily scratched with a knife and contains many sparkling **grains/crystals**.
Homework 4

1. Copy and complete the following paragraph using two of the words in the box below.

   Potassium      Gold Ores      Non-metals

   Some metals are chemically unreactive and are found by themselves, for example __________. However, most metals are so reactive they react with other elements to form compounds called __________.

2. Ravenscraig was a local steel works that was closed down a number of years ago. Inside Ravenscraig there was a Blast Furnace. What is the purpose of a Blast Furnace?

3. Give a use for each of the following metals and give a reason why it is suited to that use.
   - Aluminium
   - Iron
   - Copper

4. If 200 tonnes of iron ore contains 20% iron, calculate how many tonnes of iron that is?
1. When planning an investigation, it is important to be fair.
   a. What is unfair about the experiment described below:

   **Aim**: To find out what affect altering the concentration of acid has on the speed of reaction between acid and magnesium.

   **Method**
   1. Measure 50 cm³ of 2Molar (concentration of acid) hydrochloric acid using a beaker.
   2. Add the acid to a 2cm strip of magnesium.
   3. Time how long it takes the magnesium strip to disappear.
   4. Repeat this experiment with 4 Molar sulphuric acid.

   b. Looking carefully at the experiment method, how could you have improved the accuracy of the experiment?

2. Magnesium metal is made by electrolysis. The process can make 40 tonnes of metal an hour. How many hours would it take to make 100 tonnes?

3. Use the passage to answer all of the questions below.

   Stone is a good building material. It is strong and lasts a long time. However, it is not often used to build new houses. It is expensive to make into blocks and it costs a lot to transport. Many houses are built from bricks. Bricks are made from clay. Wet clay is easy to press into the shape of a brick. The wet bricks are put into a special oven called a kiln. The kiln dries the bricks making them strong and hard.

   Mortar is used to join bricks together. It is made from cement, water and sand. The cement is made from clay by heating it with limestone and crushing it into a powder. Concrete is a mixture of cement, sand, water and gravel. It is used to make the foundations of houses.

   a. Give one reason why stone is not used to build new houses.

   b. Why are bricks dried in a kiln?

   c. cement  sand  water  gravel
      Which one of these substances is in concrete but not in mortar?
4. Chips of rock called gravel are used to make concrete. The strength of a concrete mix depends on the size of the gravel used in making the concrete.

a. What is the strength of a concrete mix with a gravel size of 10 mm?
   ___________________ units

b. What two sizes of gravel could be used to give concrete with a strength of exactly 60 units?
   _______________ mm and _______________ mm

c. Predict the strength of a concrete mix which uses gravel of size 40 mm.
   _______________ units