**Solutions**

1. Igneous Sedimentary Metamorphic

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| --- | --- |
| Colour | Name of the process |
|  | Pressure |
|  | Weathering/erosion |
|  | Heating/Melting |
|  | Cooling/solidification |
|  | Compaction/cementation |

![A picture containing different, several

Description automatically generated]()I have taken metamorphic for the last one above also due to the shitty photocopy quality

IGNEOUS

SEDIMENTARY

METAMORPHIC

IGNEOUS

SEDIMENTARY

IGNEOUS

1. Magma is under the surface of the Earth, lava is on the surface of the earth.
2. B is intrusive, A cools quickly, magma cools quickly to trap gas in bubbles/doesn’t have time for crystals to form. Some have just given extrusive rock at b)...accept it.
3. Weathering breaks rocks down to small pieces, erosion carries them away.

Weathering is the process by which rocks are broken down into smaller pieces, whereas erosion is when larger chunks of rocks break loose and move to a different location.

1. Rocks are made of minerals (1). Minerals are chemicals of a certain composition (1)
2. D is the oldest (1) it is at the bottom, with other layers on top (1) sedimentary (1) because it has layers (1) or organic material (1)
3. Students’ answers will vary. Award 1 mark for each logical step for a maximum of 5 marks.

· Identify scratch test

· Logical sequence to their description

· Use mineral A to scratch minerals B and C and record the results.

· Use mineral B to scratch A and C and record the results.

· Use mineral C to scratch A and B and record the results.

· The hardest mineral will be able to scratch the other two without being scratched by either.

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| |  |  |  | | --- | --- | --- | | **Observations -** Describe what you see | | **\_\_\_ / 3 Marks**  ½ mark each | | Grain size | approx. 1mm or less |  | | Grain shape | Cubish |  | | How close the grains are apart? | Very close together |  | | Are the grains cemented together? | Yes |  | | Overall shape of the sample | Cube |  | | State of Matter (Solid, liquid, gas) | S |  |   **Step 1: Examine the sugar cube with a hand lens** |

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| **Conclusion - Relate your observations to the Rock Cycle** | **\_\_\_ / 3 Marks** |
| What rock type does this represent?  Sedimentary  Explain why  Individual grains (rocks) (1) cemented together (1) | \_\_\_ / 1 Mark  \_\_\_ / 2 Marks not sure of 2 marks |

**Step 2: Place sugar cube on white paper square and use the back of the tongs to crush part of the cube into a powder.**

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| **Observations -** Describe what you see | | **\_\_\_ / 3 Marks**  ½ mark each |
| Grain size | Less than 1mm |  |
| Grain shape | irregular |  |
| How close the grains are apart? | Far apart, spread out |  |
| Are the grains cemented together? | no |  |
| Overall shape of the sample | irregular |  |
| State of Matter (s,l,g) | S |  |

**Step 3: Fold the edges of the foil over to make a small bowl. Pour the crushed sugar into the foil bowl.**

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| **Conclusion - Relate your observations to the Rock Cycle** | **\_\_\_ / 2 Marks** |
| What process in the Rock Cycle does the **movement** from place to place, of the crushed sugar represent?  Erosion  Explain why and how:  Moving the particles from one place to another | \_\_\_ / 1 Mark  \_\_\_ / 1 Mark |

**Step 4: Use the metal tongs to hold the bowl over the candle flame. Write down what your observations are as the sugar begins to melt.**

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| **Observation - Relate your observations to the Rock Cycle** | **\_\_\_ / 3 Marks** |
| What process in the Rock Cycle does this replicate?  Melting  Explain **how** this comes about in the Rock Cycle:  Rock is forced beneath the crust into the mantle (1) where temperatures are high enough to melt rock (1) | \_\_\_ / 1 Mark  \_\_\_ / 2 Marks |

**Step 5: Set the foil bowl aside and let the sugar cool and harden. Write down what your observations are as the liquid begins to cool.**

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| **Observations -** Describe what you see by completing the boxes below. Are there grains present? | | **\_\_\_ / 1 Mark**  ½ mark each |
| Grain present? | No |  |
| Overall shape of the sample | Irregular, shape of the container |  |

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| --- | --- |
| **Observation - Relate your observations to the Rock Cycle** | **\_\_\_ / 3 Marks** |
| What process in the Rock Cycle does this replicate?  Cooling of magma  Explain **how** this comes about in the Rock Cycle:  When magma is forced to the surface of the Earth and becomes lava it cools, becoming hard  Igneous rock is formed | \_\_\_ / 1 Mark  \_\_\_ / 2 Marks |

**Step 6: Break the hardened sugar into pieces by crumpling the cooled foil a little. Write down what your observations are as the sugar begins to break up.**

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| **Observation - Relate your observations to the Rock Cycle** | **\_\_\_ / 6 Marks** |
| What process in the Rock Cycle does this represent?  Weathering  What is produced from this process in the Rock Cycle?  Sediments  What do you notice about what you did in step 2, and what you did in step 6?  Same action, both produce sediments  What does this say about the rock cycle and the paths a rock can take?  The rock cycle is a continuous cycle  Rocks can move through different paths in the cycle | \_\_\_ / 1 Mark  \_\_\_ / 1 Mark  \_\_\_ / 2 Marks  \_\_\_ / 2 Marks |