**Student worksheet 4: The formation of igneous rocks**

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| **Process** | **How does it occur?** | |
| **In the model** | **In real life** |
| **Melting** | Heated crayon in foil tray until all colours had mixed. | The rock of the Earth’s mantle layer begins to melt in areas where it is disturbed. For example, mid ocean ridges, ocean edges, mountain belts. |
| **Cooling** | Cooled molten crayon using one of the following methods:   * poured onto ice * poured into ice water * poured into warm water | The rate at which magma cools controls the grain size of igneous rocks. More rapid cooling produces finer-grained rocks. |

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| To complete this worksheet you will need access to books and/or the internet. Some useful web links are listed below.  <https://www.geolsoc.org.uk/ks3/gsl/education/resources/rockcycle/page3446.html>  <https://www.learner.org/interactives/rockcycle/change3.html> This interactive will not work on an iPad.  <https://www.learner.org/interactives/rockcycle/types.html> This interactive will not work on an iPad. |

1. Write a description of igneous rocks.

Igneous rocks are mostly crystalline (made up of interlocking crystals), and usually hard to break. They are formed from molten rock called magma.

1. Igneous rocks can be divided into two groups, depending on where they are formed. Summarise these two groups in the table below.

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| **Group** | **Where they are formed** | **How fast they cool** | **Size of the crystals** | **Two examples** |
| Intrusive (Plutonic) | Inside the crust | Slowly | Large | Granite, gabbro |
| Extrusive (Volcanic) | On the Earth’s surface | Quickly | Small | Basalt, pumice |

1. How does the cooling rate of the molten rock affect the size of the crystals formed?

The faster the molten rock cools, the smaller the crystals/The slower the molten rock cools, the larger the crystals.