**Topic Overview: Electromagnets and Magnetism**

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|  | Ref | Outcome | Achieved | ☺ |
| Emerging | E9SpEm1.1 | Know what materials are magnetic |  |  |
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| E9SpEm2.1 | Recall that two 'like' magnetic poles repel and two 'unlike' magnetic poles attract. |  |  |
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| Developing | D9SpEm3.1 | Know that magnetic materials, electromagnets and the Earth create magnetic fields  |  |  |
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| D9SpEm4.1 |  Know that an electromagnet uses the principle that a current through a wire causes a magnetic field. Its strength depends on the current, the core and the number of coils in the solenoid. |  |  |
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| Securing | S9SpEm5.1 | Field lines flow from the north-seeking pole to the south-seeking pole |  |  |
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| S9SpEm6.1 | . Use a diagram to explain how an electromagnet can be made and how to change its strength |  |  |
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| Mastering | M9SpEm7.1 | Use the idea of field lines to show how the direction or strength of the field around a magnet varies |  |  |
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| M9SpEm8.1 | Explain the choice of electromagnets or permanent magnets for a device in terms of their properties |  |  |
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| M9SpEm9.1 | Explain the choice of electromagnets or permanent magnets for a device in terms of their properties |  |  |

**Keywords**

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| **Electromagnet:** A non-permanent magnet turned on and off by controlling the current through it. |
| **Solenoid:** Wire wound into a tight coil, part of an electromagnet. |
| **Core:** Soft iron metal which the solenoid is wrapped around. |
| **Magnetic force:** Non-contact force from a magnet on a magnetic material. |
| **Permanent magnet:** An object that is magnetic all of the time. |
| **Magnetic poles:** The ends of a magnetic field, called north-seeking (N) and south-seeking poles (S). |