**Ferromagnetic Worksheet**

1. Four circular pieces of metal were brought close to one another during a laboratory experiment. Only one of these pieces of metal is a magnet.

|  |  |
| --- | --- |
| Combination | Attraction |
| Yes | No |
| Piece 1 with piece 2 |  | ✓ |
| Piece 1 with piece 3 |  | ✓ |
| Piece 1 with piece 4 |  | ✓ |
| Piece 2 with piece 3 | ✓ |  |
| Piece 2 with piece 4 | ✓ |  |
| Piece 3 with piece 4 |  | ✓ |

Which piece of metal is a magnet?

1. The following observations were made when certain pairs of objects were brought close together.

|  |  |  |
| --- | --- | --- |
| STEP | TEST | OBSERVATION |
| 1 | Brought an iron nail near a zinc rod. | No reaction |
| 2 | Brought an iron nail near a steel rod. | Attraction |
| 3 | Brought a zinc rod near a steel rod. | No reaction |
| 4 | Brought an iron nail near another iron nail. | No reaction |

Given these observations, which of the following statements are true?

1. The iron nail is non-magnetic and the zinc rod is ferromagnetic
2. The steel rod is ferromagnetic and the zinc rod is ferromagnetic.
3. The steel rod is magnetic and the zinc rod is non-magnetic
4. The iron nail is magnetic and the zinc rod is magnetic.
5. You have two ten-cent coins, one from 1965 and the other from 1994.

To determine whether these coins are magnetic, ferromagnetic or non-magnetic, you conduct tests and note your observations.

|  |  |  |
| --- | --- | --- |
| **Step** | **Test** | **Observation** |
| 1 | Bring a magnet near the 1965 coin. | No reaction |
| 2 | Bring a magnet near the 1994 coin. | Attraction |
| 3 | Bring each coin near an iron nail. | No reaction |

Given the observations, what can you say about these coins?

|  |  |
| --- | --- |
| A) | The 1965 coin is non-magnetic and the 1994 coin is magnetic. |
| B) | The 1965 coin is non-magnetic and the 1994 coin is ferromagnetic. |
| C) | The 1965 coin is magnetic and the 1994 coin is ferromagnetic. |
| D) | The 1965 coin is ferromagnetic and the 1994 coin is magnetic. |

1. The following observations were made when certain pairs of objects were brought close together.

|  |  |  |
| --- | --- | --- |
| STEP | TEST | OBSERVATION |
| 1 | Brought a piece of iron near a piece of magnetite | Attraction |
|  2 | Brought a piece of aluminium near a piece of iron | No reaction |
| 3 | Brought a piece of tin near the piece of magnetite | No reaction |
| 4 | Brought a piece of tin near the piece of iron | No reaction |
| 5 | Brought a piece of aluminium near the piece of magnetite | Attraction |

Given the reactions seen in the table, label the piece of iron, aluminium, tin and magnetite as a magnetic, ferromagnetic or non-magnetic substance.