Answers: Extracting Metals by Reduction with Carbon

1. A black powder.

2. To ensure the different reactant particles have contact with each other.

3. To prevent oxygen from the air re-oxidising the copper.

4. Hot copper will react very quickly with oxygen in the air and will re-oxidise.

5. Copper oxide + carbon → carbon dioxide + copper

6. The copper oxide has been reduced by the reducing agent, carbon. We know this because the copper has lost oxygen. Carbon has become oxidised because it has gained oxygen.

7. $2Cu + C \rightarrow CO_2 + Cu$

8. Flecks of brown metal should be visible; this is copper metal

9. Copper is less reactive than carbon and so carbon can displace copper from copper oxide. However, because aluminium is more reactive than carbon, carbon is not able to displace aluminium from aluminium oxide.