

Name: .....

Class: .....



A special sample of Zirconium (Zr) contains only two isotopes:  
Zirconium-90 and Zirconium-92.

The mass of a Zirconium-90 atom is 90.0.

The mass of a Zirconium-92 atom is 92.0.

The relative atomic mass ( $A_r$ ) of this sample is 90.4.

Calculate the percentage abundance of Zirconium-90 and Zirconium-92 in the sample.

Let the % abundance of Zr-90 =  $y$       Then the % abundance of Zr-92 =  $100 - x$

$$90.4 = (90 \times y) + (92 \times (100 - y)) \div 100$$

$$9040 = 9200 - 2y \quad 2y = 9200 - 9040$$

$$2y = 160$$

$$y = 80$$

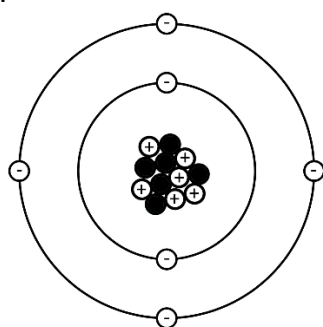
State the chemical formula for hexane.



Give the formula for an **ammonium** ion.



The diagram represents a carbon atom.  
State the number of each subatomic particle present.



Proton = 6

Neutron = 6

Electron = 6

Describe a test to show that a gas contains carbon dioxide.

**Test:** bubble the gas through limewater.

**Positive result:** if the gas is carbon dioxide the limewater will turn cloudy.

Give the electronic configuration of an  $\text{Al}^{3+}$  ion.

2, 8

Give the electronic configuration of an atom of Silicon(Si).

2, 8, 6

Explain, **in terms of bonding**, why graphite conducts electricity.

An answer to include the following:

- In graphite, each carbon atom is bonded to three other carbon atoms.
- Each carbon uses three of its four electrons in bonding.
- This leaves one delocalised electron from each atom to move and carry charge.