

## Quiz 1

1. What was the apparent significance of the paddlewheel experiment? Remember in the paddle wheel experiment, the cathode ray tube was turned on, the beam hit the paddle wheel, and the paddle wheel moved from one end of the tube to the other.
2. What particles were first observed in a cathode ray tube?
3. Which of the following subatomic particles is(are) not found in the nucleus of an atom?  
neutron                      proton                      electron
4. Nitrogen-14 and nitrogen-15 are two isotopes of nitrogen.
  - a. What do these two isotopes have in common?
  - b. What is different about the two isotopes

5. What are the charges of an electron, a neutron, and a proton?

6. Titanium is a strong metal; however, when it reacts with oxygen it becomes titanium(IV) oxide (the white pigment in paint).

a. In the oxide form, titanium has a charge of +4. The atomic number of titanium is 22.  
How many electrons does  $\text{Ti}^{4+}$  have?

b. How many electrons does a neutral titanium atom have?

7. Complete the table for the following elements

element symbol		${}_{11}^{23}\text{Na}^+$	${}_{8}^{16}\text{O}^{2-}$
number of protons	1		
number of neutrons	1		
number of electrons	1		