

Unit 2 Chemistry

The Big Idea: The kinetic molecular theory and the theory of the atom explain the behaviour of matter.

2.4 Quarks and Leptons

In this section we'll think about the following question: What holds the subatomic particles together?

Strong Interaction Video Questions

Warning: Hank Green talks very fast in his videos, I suggest you watch the video more than once or pause the video frequently.

1. What are the four fundamental forces of physics?
2. The strong force is what holds your _____ together.
3. It not only holds the atoms nucleus together it also keeps the protons and neutrons in the nucleus from _____ apart.
4. Neutrons and protons are both a type of particle called a hadron, and hadrons are made of even smaller particles called _____.
5. Quarks are a fundamental constituent of matter. Fundamental means that they cannot be broken down into other particles. Quarks and their friend's leptons, which includes electrons, are the most basic component of matter. Quarks have a type of property called "colour". Is this colour the same as the colour we see with our eyes? _____
6. Colours are how physicists describe the three different types of quantum states that quarks can exist in, these "colours" are called _____, _____ and _____.
7. Protons and neutrons are each made of _____ quarks.
8. Quarks are constantly changing _____ and the process that lets them do that is also what holds the quarks together and this is done by exchanging some awesomely powerful particles called _____.

What are Quarks Video

- This video repeats many of the same facts that the first video stated. I suggest that you sit back and watch this video from start to finish without stopping. Quarks are a very complicated concept, the main thing you need to understand about quarks are:
 - They cannot be broken down
 - They have a property called 'colour' (which is not the same as the colour we see)
 - Protons and neutrons are made of three quarks each

The Particle Adventure Online Activity

- Download the activity and follow the link to complete, hand it in to your teacher when you're done.

~ ~ ~ **Hand in section 2.4 to your teacher** ~ ~ ~