

# SUPERHERO ELEMENT WORKSHEET

**Directions:** Students will choose an element from the list below and create a superhero profile. On the first page, students will design a superhero and create a tagline that embodies the characteristics of their element including the atomic number, symbol, and name. On the second page, students will tell the origin story of their element. A superhero sidekick or nemesis may also be included, but students must choose an element that either combines well or has a violent reaction with their chosen element. Use the student example on the last page of this worksheet to help guide the class.

## Elements

calcium	bromine	lead	fluorine	magnesium
chromium	silver	uranium	neon	aluminum
iron	tin	iodine	sodium	silicon
nickel	gold	helium	carbon	phosphorus
copper	mercury	lithium	nitrogen	sulfur
zinc	potassium	arsenic	oxygen	chlorine
curium				

Students must include the following information in their superhero element profile:

1. What is your element's name, atomic number, and symbol?
2. How was your superhero element formed (supernova, human made, low mass star's death)?
3. Why is your element important? How do humans use it? Is it essential to life?
4. Is this element rare? Where can it be found?
5. How easy is it to extract and use this element?
6. Is your element found in the human body? If so, what function does it perform?
7. With what elements does it react? Are these chemical compounds beneficial or harmful?
8. Why did you choose your element's sidekick or nemesis? What makes your superhero element want to combine with or repulse this other element?

Websites to help students research their element:

- <http://ed.ted.com/periodic-videos>
- <http://www.webelements.com/index.html>
- <http://www.syngentaperiodictable.co.uk/reaction-zone.php>



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Create your Superhero Element illustration below.



# SUPERHERO ELEMENT WORKSHEET

**Write your Superhero Element origin story below.**

## Student Example of Element Origin Story

Captain Copper arose from a supergiant star. No one knows the name of this star, but we do know that it exploded, casting copper and other elements into space. Eventually, Captain Copper was born and landed himself on the Planet Earth.

When Captain Copper first came to Earth, he was put to work immediately. Copper is very important, and is used in everyday materials. Copper was the first metal used by humans in 7000 BC to make tools. Copper weapons have been found dating back all the way to 5000 BC. Because of its color, copper was also used to make jewellery and ornaments.

Today, Captain Copper is still around to help us humans. Since he is such a good conductor of electricity, copper is mostly used in electrical generators and motors, for electrical wiring, and in electrical goods, such as radio and TV sets. Copper also conducts heat well, so it is used in motor vehicle radiators and home heating systems.

Because Captian Copper does not corrode easily, it is used for water pipes. Also, its malleability means that copper pipes can be bent to go around corners easily, without breaking. Copper sulphate is used as a fungicide to stop roots from blocking drains and sewerage systems. Lastly, Captain Copper is the main ingredient to make pennies!

Even though there is only one Captain Copper, copper is not that rare/hard to find. When found in its native mineral form it is often found in small polycrystals. Although native copper is somewhat rare, large amounts are found by the Great Lakes area and were mined by ancient American Cultures. To find Captain Copper, all you have to do is go to an open pit mine, these can be found in Utah, New Mexico and Chile. Copper we use, around the world, has most probably been recycled.

Captain Copper, and copper in general, are pretty easy to us and extract. Copper can be extracted from its ore by heating it with carbon. Copper is less reactive than carbon, so it can be extracted from its ores by heating it with carbon. So, I guess you can say Captain Copper and Carbon are good companions.

When Captain Copper first stepped foot onto Earth, he was already helping the human race. Why? Because copper is in our bodies! The adult body contains between 1.4 and 2.1 mg of copper per kilogram of body weight. Hence a healthy human weighing 60 kilograms, the body contains approximately a tenth of one gram of copper. Even this small amount is essential to the overall human well-being.

Since Captain Copper has been in our Universe and on Earth for so long, he had to make a few enemies, right? Well, copper is below hydrogen in the electrochemical series and thus does not react with acids to liberate hydrogen, unless they are also strong oxidising agents. Thus, copper metal will not react with dilute sulphuric acid, hydrochloric acid, or HCl. But it reacts with nitric acid to form oxides of nitrogen.



# SUPERHERO ELEMENT RUBRIC

	Above Standard 4	At Standard 3	Approaching Standard 2	Below Standard 1
<b>Analysis of impact on human history</b>	A number of connections were made between the element and its use by humans.	At least two connections were made between the element and its use by humans.	At least one connection was made between the element and its use by humans.	No connections were made between the element and its use by humans.
<b>Big History concepts</b>	The link between the element and the star life cycle was explained thoroughly.	The link between the element and the star life cycle was identified.	The link between the element and the star life cycle was partially identified.	There was no attempt to link the element to the star life cycle.
<b>Illustration</b>	The illustration was creative and included an effective tagline and an interesting name for the superhero element.	The illustration included an effective tagline and a good representation of the element along with a name for the superhero.	The illustration included at least two out of the three requirements: tagline, name, and image.	The illustration included only one or none of the three requirements: tagline, name, and image.
<b>Creativity</b>	A high level of creativity was used to explain the origin story of the element and a lot of visuals were used to show this.	Images or a creative story were used to cover the content.	Some creativity was used in the origin story of the element.	There was no creativity in the story. The questions were simply answered, with no visuals provided.

Score: \_\_\_\_\_

Comments:

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# SUPERHERO ELEMENT WORKSHEET

 Name:  Date: 

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## Elements

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Name:

Date:

Create your Superhero Element illustration below.





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Date:

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Score: \_\_\_\_\_

Comments:

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