

# Design a Firework

Name \_\_\_\_\_

Watch the video *Fireworks! Making Color* video in class and complete the following information.

- 1) Using metal \_\_\_\_\_, **not** metals, allow fireworks to burn in different colors.
- 2) What color does each metal salt burn?

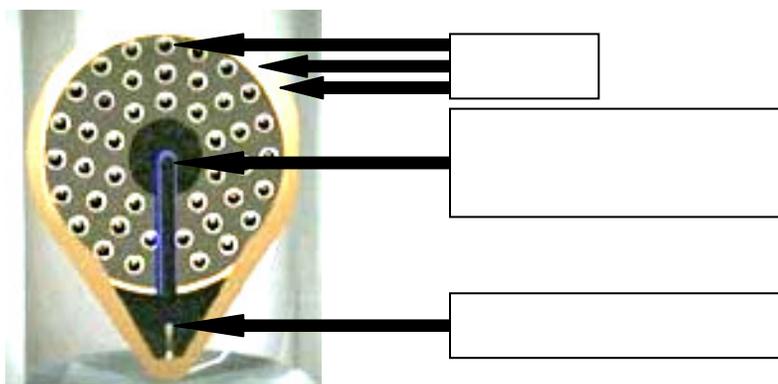
Element (Metal Salt)	Color when burned
Copper	
Strontium	
Barium	

Watch the video *Fireworks! Lifting Charge* video in class and complete the following information.

- 3) The gunpowder recipe is \_\_\_\_\_% potassium nitrate, \_\_\_\_\_% charcoal and \_\_\_\_\_% sulfur.
- 4) Today, black powder is compressed into marble-sized balls, called \_\_\_\_\_. Stars are loaded into \_\_\_\_\_ to create fireworks displays.

- 5) Label the parts of a firework.

**Chrysanthemum shell**



- 6) Types of fireworks made from round shells include \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

## Design a Firework Online Quest

Visit the Science Spot Kid Zone and follow the links “Chemistry/Matter & Atoms” → “Fireworks” → “NOVA Fireworks” to answer questions 7 & 8.

- 7) From the “fireworks” web page, click on the “**Name that Shell**” link in the center of the page. Now click on the Quick Time link on the right hand side of the page “**Go to Name that Shell using: Quick Time.**” Use your mouse and explore the different types of fireworks by clicking on the different video clips. Look through them all and try to figure out which one is which. When you are finished, exit out of this window only.

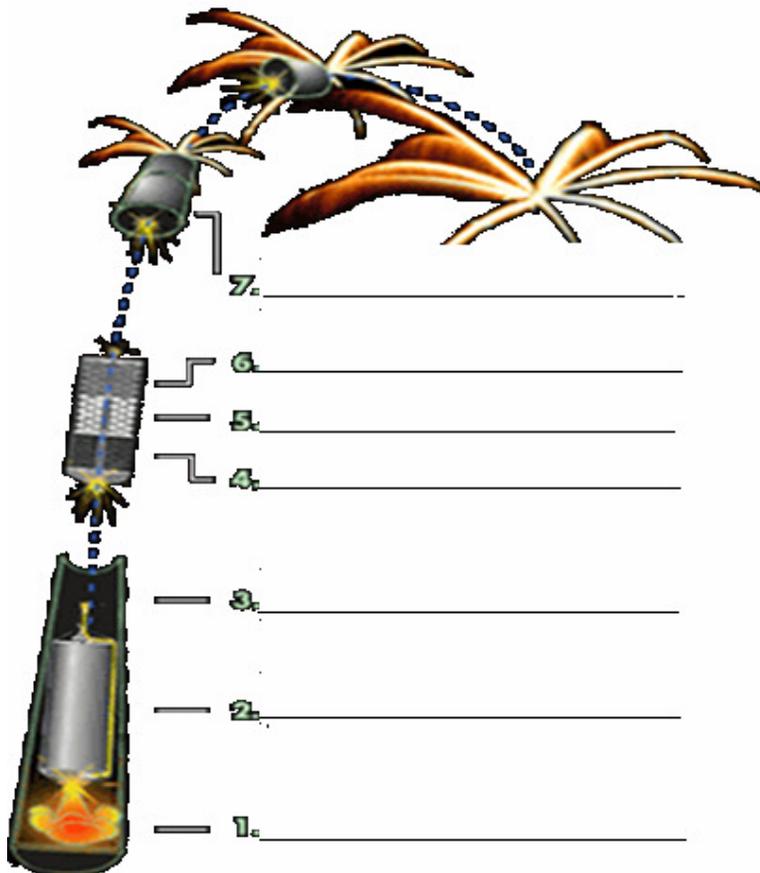
What fireworks do you see in...

Video 1? \_\_\_\_\_

Video 2? \_\_\_\_\_

Video 3? \_\_\_\_\_

- 8) From the “fireworks” web page, click on the “**Anatomy of a Firework**” link in the center of the page. Now click on the “**Anatomy of a Firework**” flash version. Use your mouse to explore the different parts of fireworks, read the accompanying text for information, and complete the diagram below with the appropriate labels. When you are finished, exit out of this window only.



# Design a Firework!

Using your knowledge of fireworks, design a firework that you would like to see made!

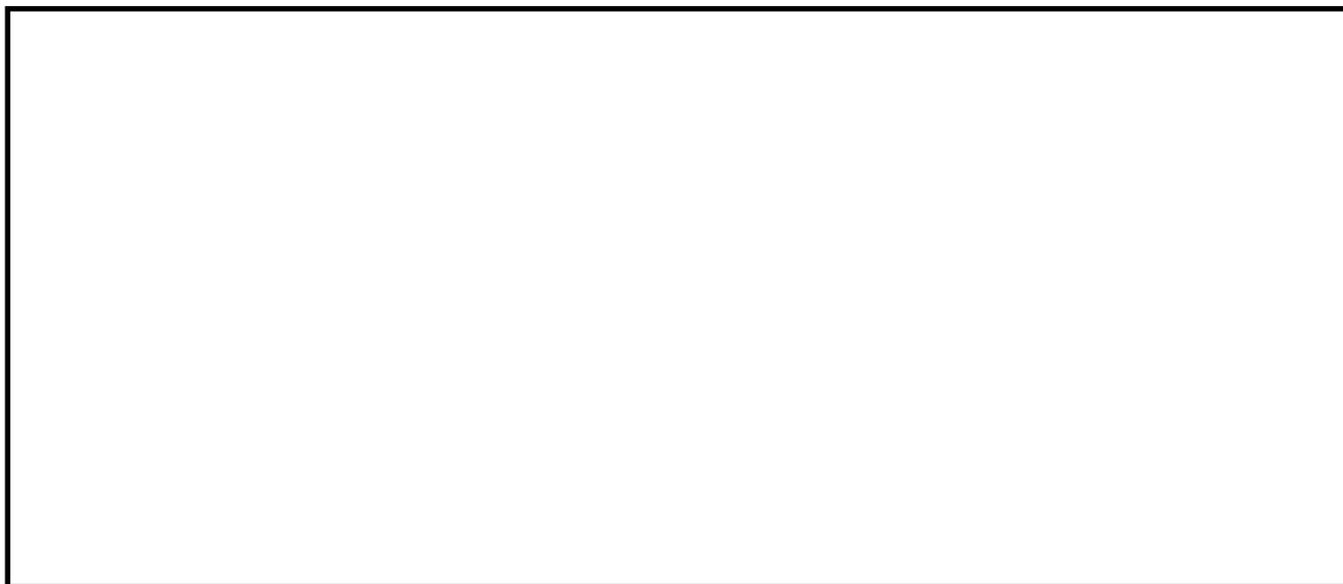
Draw a picture of your firework in its shell (pre-explosion). Label and color the following parts:

1. **stars** (what **metal salts** are in the stars to get the colors and effects you desire, **how many** are there, and **how are they arranged**?)
2. **shell** (think about what **shape** the shell should be to get your desired explosion)
3. **charges/delays/fuses** (do you want everything to explode at once or explode in stages? Give times.)
4. **black powder chambers** (where do they need to be in order to get your stars to ignite?)



Draw a picture of your firework in the air (during explosion). Label the following:

- 1) **height your firework gets to** from the ground to where it explodes
- 2) **shape of the explosion** (peony? roman candle? waterfall?)
- 3) **colors of the firework explosion** (simply draw in color)



When you are finished, check your paper with your teacher. After checking, you may visit The Science Spot Kid Zone → Chemistry/Matter & Atoms → Chemistry Games and Puzzles to play a game or puzzle of your choice.