These are the slides I start my classes with. Please note that many of them are from ScienceSpot.net and you can download her ppts and answers from her site. I do not have answer keys for any of the prompts.

www.middleschoolscience.com
What does each scientist study?

1. Weather
2. Atoms, elements, and compounds
3. Rocks & minerals
4. Animals
5. Living things
6. Planets and stars
7. Plants

Go to http://sciencespot.net/Pages/starters.html for this ppt slide
What does each scientist study?

1. Viruses
2. Water & the water cycle
3. Motion, forces, & energy
4. Microscopic organisms
5. Earthquakes
6. Blood & its diseases

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

What’s wrong? Using complete sentences, identify 6 different safety concerns shown in the picture below.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.
What does each safety symbol stand for?

Sketch the symbols in your notebook.

Using the image below, describe in complete sentences 3 observations and 3 inferences.
What is it? Sketch & name what you think the object is, number 1-5.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

What does each of these scientists study?

1. Remains of human life & civilizations
2. Fish
3. Oceans and ocean life
4. Motion, forces, & energy
5. Planets, stars, and solar system

A. Physicist
B. Astronomer
C. Paleontologist
D. Oceanographer
E. Entomologist
F. Ichthyologist
G. Archeologist
What is it? Sketch & name what you think the object is, number 1-5.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.

What does each of these scientists study?

1. Volcanoes
2. Sound and its properties
3. Butterflies & moths
4. Life forms in an ecosystem
5. Interactions between life forms in an ecosystem
6. Studies forces that change and shape the Earth

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.
Find the lengths of the following pencils in cm & mm:

______ cm
______ mm

______ cm
______ mm

______ cm
______ mm

______ cm
______ mm

______ cm
______ mm


Draw lines in your prompt notebook the same length as the pencils shown below. Write the length in cm & mm

Draw lines in your prompt notebook the same length as the bugs, antennae to feet, shown below. Write the length in cm & mm

1
2
3
4
Calculate the volume for each shape below. Show your work (using the formula) in your notebook. The unit for each measurement is cm.

The formula for the volume of a rectangular prism is: \( \text{Length} \times \text{Width} \times \text{Height} = \text{cm}^3 \)

Sketch & Identify the following lab equipment:
Identify & sketch the pieces of lab equipment: 1) Used to measure exactly 25 mL of water & 2) Used to measure about 200 mL of water

In your notebook, sketch where the riders would be on the TBB and write the total mass.
What is it? Sketch & name what you think the object is, number 1-5.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

Draw the tank in your notebook. Place the shapes into the tank of water according to their densities. Which will float? Sink?

<table>
<thead>
<tr>
<th>Density</th>
<th>Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 g/cm³</td>
<td>Star</td>
</tr>
<tr>
<td>0.89 g/cm³</td>
<td>Triangle</td>
</tr>
<tr>
<td>0.45 g/cm³</td>
<td>Cylinder</td>
</tr>
<tr>
<td>13.75 g/cm³</td>
<td>Cube</td>
</tr>
</tbody>
</table>
Draw the following shapes into your notebook. Which shapes will float in water? Write “Sink” or “Float” next to each shape and explain why.

![Shapes](image)

- Mass: 15.9 g  
  Volume: 20 mL
- Mass: 1,400 g  
  Volume: 50 mL
- Mass: 2,257.5 g  
  Volume: 5,000 mL
- Mass: 8.5 g  
  Volume: 200 mL

Look carefully at the photos below. In your notebook create a T-Chart describing 4 differences in Photo A vs B. (more than 4 answers possible)

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide
Help the King find a new gold crown for his Queen. All the crowns have the same mass, but he wants one made of gold. Identify the metals used for each crown, be sure to show your work!

**Densities of Metals**
- **Lead** – 11.34 g/cm³
- **Gold** – 19.3 g/cm³
- **Silver** – 10.5 g/cm³
- **Platinum** – 21.4 g/cm³
- **Copper** – 8.9 g/cm³

The mass of each crown is 500 g

Draw the Cartesian Diver into your notebook.

Use the following terms to describe why the diver floats and sinks (3-5 sentences):

1. air
2. density
3. water
4. volume
5. mass
6. float
7. sink
Can you unscramble all the words below? Write the questions and the answers next to each.

**Hint:** They all start with the letter A.

<table>
<thead>
<tr>
<th>I D A C</th>
<th>1. I have a pH less than 7.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R A I</td>
<td>2. I am composed mostly of nitrogen.</td>
</tr>
<tr>
<td>M A O T</td>
<td>3. I am made of protons, neutrons, and electrons.</td>
</tr>
<tr>
<td>N U A T T O S A</td>
<td>4. I like my space.</td>
</tr>
<tr>
<td>M N S I A L A</td>
<td>5. Zoologists study us.</td>
</tr>
</tbody>
</table>

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

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Can you unscramble all the words below? Write the questions and the answers next to each.

**Hint:** They all start with the letter B.

<table>
<thead>
<tr>
<th>C A E R T B I A</th>
<th>1. I can make you sick.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L O B O D</td>
<td>2. I flow through your body.</td>
</tr>
<tr>
<td>O B L I O G S I T</td>
<td>3. I study living things.</td>
</tr>
<tr>
<td>S E B A</td>
<td>4. I have a pH over 7.</td>
</tr>
<tr>
<td>N O B E S</td>
<td>5. We support your body.</td>
</tr>
</tbody>
</table>

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.
What is it? Sketch & name what you think the object is, number 1-5

Go to http://sciencespot.net/Pages/starters.html for this ppt slide

R A B C N O
1. I’m an element with 6 protons.

O M A S P C S
2. I can help you if you’re lost.

R N I A R C O V E
3. I eat other animals.

L O D U C
4. You’ll have to look up to see me.

I L C A I
5. I help things move.

Can you unscramble all the words below? Write the questions and the answers next to each.

Hint: They all start with the letter C.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide
1. I’m called nature’s recycler.

2. I can help you make a decision.

3. This happens in a solution.

4. You might label me.

5. How loud can you be?

Can you unscramble all the words below? Write the questions and the answers next to each.

EDCMOPSEOR 1. I’m called nature’s recycler.

ATDA 2. I can help you make a decision.

SIDLOEV 3. This happens in a solution.

EDEBEISL 4. You might label me.

EDCBEISL 5. How loud can you be?

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.

Sketch the image below into your notebook. Use circles to represent the water molecules shown. Write 2-3 sentences describing the densities of each layer of water and why is the iceberg floating?
Sketch the images below into your notebook. *Name the phase shown for each and describe how the atoms are moving* (3 total sentences).

(a) ![Image](image1.png)
(b) ![Image](image2.png)
(c) ![Image](image3.png)

Sketch the image below into your notebook. *Describe two chemical reactions or changes that took place.*

![Image](image4.png)

Making S’mores...yummy!
Sketch the images below into your notebook.

*In which order will the candles burn out? Explain why.*

All three candles are the same size, and were lit then covered by an upside down jar at the same time.

Sketch, label, and color both images of the candles.

*Make a T-Chart listing 3 comparisons between a candle burning on Earth vs. a candle burning in Space during an experiment on a Space Mission.*

Image from NASA
What is it? Sketch & name what you think the object is, number 1-5

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide

Sketch & Identify the images of E, C, M's and write the answer next to each image:

A ____________________
B ____________________
C ____________________
D ____________________
Sketch the images below into your notebook. It shows a zoomed in view of the molecules inside each color.

Why aren’t there any **green** or **purple** molecules? Explain in 3-5 sentences.

Look at the Chromatography photo to answer the questions below.

Write and answer each question in complete sentences.

1. Did any of the strips begin with a primary color? Explain.
2. Name some similarities between strips A & B.
3. In which strip did the colors travel the farthest? Explain.
4. Was this a physical or chemical change? Why?
Create the chart shown on the right into your notebook.

Use a ruler for the columns to keep it neat.

*Place an “X” into each box that is true for each row.* (See example)

<table>
<thead>
<tr>
<th></th>
<th>atoms</th>
<th>molecules</th>
<th>element</th>
<th>Compound</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="symbol1.png" alt="Symbol" /></td>
<td><img src="symbol2.png" alt="Symbol" /></td>
<td><img src="symbol3.png" alt="Symbol" /></td>
<td><img src="symbol4.png" alt="Symbol" /></td>
<td><img src="symbol5.png" alt="Symbol" /></td>
</tr>
</tbody>
</table>

Look carefully at the photos below. *In your notebook create a T-Chart describing 3-4 differences in Photo A vs B.*

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.
Draw the diagram on the right into your notebook.

Fill in each circle with the matching vocab word(s):
- New element
- Ion
- Isotope
- Molecule

Use a dictionary if you need one.

Rewrite the following sentences (in your notebook) in the correct order (# 1-5) and write the name of the scientist who developed each model.

Atoms are made of empty space with electrons around a positive nucleus. The terms nucleus and proton (+) are introduced.

Negatively charged particles are called electrons. It is not possible to see electrons scattering around the nucleus. The electron cloud, instead of the electron dots, is used to represent the electron positions. The phrase 'electron cloud' is not used.

An atom is only made up of one type of atom. Atoms are too small to see without an electron microscope. No one wrote about this.

Electrons are arranged in energy levels. Lower energy levels are close to the nucleus and higher energy levels are farther away from the nucleus.

Go to www.brainpop.com for this activity sheet on the Atomic Timeline.
Can you unscramble all the words below? Write the questions and the answers next to each. Hint: They all start with the letter E.

K E S O E T X E O N L
T O E C E L R N
H Q K A E T R U A E

1. I’m on the outside of an insect.
2. I’m very negative all the time.
3. Don’t let it wash away.
4. I’m the center of the world in a way.
5. I might make you shake, rattle, and roll!

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.

Draw the following diagram into your notebook. Write the category and answer inside each circle.

Atomic Number ?
Protons ?
Electrons ?
Neutrons ?
Element Symbol ?
Atomic Mass ?

Calcium
Draw the following diagram into your notebook. *Write the category and answer inside each circle.*

- **Atomic Number**: ?
- **Protons**: 74
- **Electrons**: 74
- **Neutrons**: 110
- **Atomic Mass**: ?
- **Element Symbol**: ?

Draw the following diagram into your notebook. *Answer the questions using complete sentences.*

1. What element is shown in the diagram?
2. How many electrons does it have?
3. What is the atomic mass of this element?
4. How many electrons are in the 2nd energy level?
5. Can any more electrons be added to the 1st or 2nd energy level? Explain.
Write each question and answer neatly into your notebook.

1. What is the atomic number for Chlorine? ___________
2. What is the atomic mass for Boron? ___________
3. How many protons are in an atom of Na? ___________
4. How many neutrons are in an atom of He? ___________
5. How many electrons are in an atom of Cl? ___________
6. How many neutrons are in an atom of Na? ___________

Write each question and answer neatly into your notebook.

1. What is the atomic number for lithium? ___________
2. How many protons does an atom of Si have? ___________
3. What is the atomic mass for Argon? ___________
4. How many electrons does an atom of H have? ___________
5. How many neutrons are in an atom of Li? ___________
6. How many electrons would be in the second energy level of an atom of Si? ___
<table>
<thead>
<tr>
<th>Element</th>
<th>Atomic #</th>
<th>Atomic Mass</th>
<th>Protons</th>
<th>Neutrons</th>
<th>Electrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li</td>
<td>3</td>
<td></td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>8</td>
<td></td>
<td>E</td>
<td>8</td>
<td>F</td>
</tr>
<tr>
<td>Al</td>
<td>13</td>
<td></td>
<td>G</td>
<td>27</td>
<td>H</td>
</tr>
</tbody>
</table>

Draw the following chart into your notebook. Write the answer for each category inside the boxes.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

<table>
<thead>
<tr>
<th>Element</th>
<th>Atomic #</th>
<th>Atomic Mass</th>
<th>Protons</th>
<th>Neutrons</th>
<th>Electrons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mg</td>
<td>12</td>
<td>24</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>15</td>
<td></td>
<td>E</td>
<td>16</td>
<td>F</td>
</tr>
<tr>
<td>K</td>
<td>39</td>
<td></td>
<td>G</td>
<td>39</td>
<td>H</td>
</tr>
</tbody>
</table>

Draw the following chart into your notebook. Write the answer for each category inside the boxes.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.
Write each sentence and answer into your notebook. Identify each element by name.

1. I am a member of the Carbon family with 14 electrons.
2. I am a member of the Alkaline Earth family and would have 6 energy levels.
3. I am a halide that is a liquid at room temperature.
4. I am a transition metal with 79 protons.
5. I am a member of the Alkali Metal family with 20 neutrons.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide

Write each sentence and answer into your notebook. Identify each element by name.

1. I am a member of the Halide family and am a liquid at room temperature.
2. I am a member of the Alkaline Earth family and would have 4 energy levels.
3. I am a member of the Nitrogen family that is gas at room temperature.
4. I am a transition metal with 110 neutrons.
5. I am a member of the Oxygen family with 16 protons and 16 neutrons.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide
Write each sentence and answer into your notebook.

Identify each element by name.

1. I am a Noble Gas that is found in the 6th period.

2. I am a member of the Alkaline Earth family and have 88 electrons.

3. I am a transition metal that is a liquid at room temperature.

4. I am a member of the Carbon family that is found in the 5th period.

5. I am a Halide that is a gas at room temperature and have 3 energy levels.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

Draw a Bohr Diagram for each of the following elements:

- F
- Li
- C
- N
- Na
- B
Draw a Lewis Structure for each of the following elements:

Be  O  Ne
K  Cl  N

Counting Atoms Challenge
How many atoms are in each formula?

1. 5Zn(OH)_2
2. 3UF_4
3. 2Sn(CrO_4)_2
4. 3Pb(NO_3)_2
5. 2NH_4NO_3

Go to http://sciencespot.net/Pages/starters.html for this ppt slide
What is it? Sketch & name what you think the object is, number 1-5.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.

Can you unscramble all the words below? Write the questions and the answers next to each.

Hint: They all start with the letter F.

1. I am a push or a pull.
2. I can "drag" you down.
3. I can tell you about the past.
4. I can make your job easier or harder depending on where I am.
5. I can help you solve a problem.
Bonding: Draw the Lewis Structure, formula, and write the name for each compound formed:

<table>
<thead>
<tr>
<th>Be + F</th>
<th>Ca + O</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are these compounds Ionic or Covalent?

---

Bonding: Draw the Lewis Structure and formula for each compound formed:

<table>
<thead>
<tr>
<th>H + S</th>
<th>C + F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are these compounds Ionic or Covalent?
What is it? Rearrange the symbols for the elements and use the clues provided to figure out the answers. Show your work.

Example: Something to follow:  Thorium + Protactinium

1. You’ll want to be first!  Cerium + Radium

2. Masked bandit:  Nitrogen + Cobalt + Radium + Oxygen

3. Not anybody:  Oxygen + Boron + Dysprosium + Nitrogen + Oxygen

4. Beware of this snake!  Oxygen + Carbon + Boron + Radium

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide

Write these questions into your prompt notebook. Watch the video to answer the questions below.

1. How does Glucose form?

2. What does Methane turn into?

3. What does Propane turn into?

4. Where did all the atoms come from?

5. What is the Law of Conservation of Mass?

You can press “CC” to see the words as you watch the video.
Look carefully at the photos below. In your notebook create a T-Chart describing 3-4 differences in Photo A vs B.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide

Write each question below. Classify each as either an Acid or Base.

a) pH = 2.3  
b) pH = 6.5  
c) pH = 8.5  
d) pH = 11.7  
e) pH = 13.4  
f) pH = 4.1
Write each question below. \textit{Circle} the stronger pH in each pair of pH values:

a) pH 2.2 or pH 3.9  
f) pH 8.5 or pH 9.9
b) pH 5.55 or pH 2.3  
g) pH 10.05 or pH 14.89
c) pH 13.2 or pH 1.7  
h) pH 3.67 or pH 1.4
d) pH 6.4 or pH 4.8  
i) pH 12.036 or pH 9.45
e) pH 8.02 or pH 14.8  
j) pH 1.28 or pH 1.39

Draw the following in your notebook. Cabbage Juice Indicator was added to the following solutions:

Determine if each solution above is an acid, base, or neutral.
Color the answers in your notebook: What will happen when you test the liquids with Litmus?

- pH 2
- pH 7
- pH 11
- pH 5

Can you unscramble all the words below? Write the questions and the answers next to each.

EMOENG
RPAHG
VRACG
HEF
GANGST

1. I am a map of your genes.
2. I’ll help you share your data.
3. I can really bring you down.
4. I’m making things warmer.
5. I’m found in DNA.

Hint: They all start with the letter G.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.
Look carefully at the photos below. In your notebook create a T-Chart describing 3-4 differences in Photo A vs B.

Can you unscramble all the words below?
Write the questions and the answers next to each.

Hint: They all start with the letter H.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide
What is it? Sketch & name what you think the object is, number 1-5.

Go to http://sciencespot.net/Pages/starters.html for this ppt slide.

Which word(s) best describe each mineral’s luster?
Write the mineral and answers in your notebook.

1. Metallic
2. Submetallic
3. Vitreous/Glassy
4. Adamantine/Diamond-like
5. Resinous
6. Silky
7. Pearly
8. Greasy/Oily
9. Pitchy
10. Waxy
11. Dull/Earthy

A: Quartz  B: Pyrite  C: Talc  D: Garnet
Mohs Scale: Write the questions and answers into your notebook

1. If your fingernail can easily scratch the mineral, what is the hardness of this mineral?
2. A student notices that their unknown mineral will scratch a penny but it will not scratch an iron nail. What mineral might this unknown be?
3. What if the unknown mineral scratches all the common objects listed in the chart?

Mohs Scale: Write the questions and answers into your notebook

1. Which mineral will scratch glass, Quartz or Fluorite?
2. Which mineral(s) won’t scratch anything?
3. Can feldspar scratch a streak plate?
Can you identify these minerals? Write the properties in your notebook.

Mineral Properties (A)
- Color: Black/Grey
- Hardness: 1.0 – 2.0
- Luster: Dull, metallic
- Streak: Black/Gray

Mineral Properties (B)
- Color: Greens/Blues
- Hardness: 5.0 – 6.0
- Luster: Waxy
- Streak: White/Greenish

CATEGORIZE Write the directions and answers into your notebook

Categorize the following as either renewable (R) or nonrenewable (N) natural resources. Write R or N before any that are not natural resources at all. Note that not all of these are natural resources, and you may have to think about the movie.

- air
- animals
- coal
- cotton
- trees
- oil
- the sun
- wind

You can watch a short BrainPOP video to help you if get stuck: BrainPOP
Use the map of New Jersey to answer the following questions. Write the questions and answers neatly in your notebook. Presentation mode will allow you to see the image better.

1. What is the largest Province in NJ according to the map?
2. What is the smallest Province?
3. Which Provinces are found in Morris County?
4. Are there more active/registered mines or abandoned/inactive mines according to this map?
5. Name one county that does not have any currently operating quarry mines.

Write the following questions and answers in your notebook:

1. Can you find the border of PA and NJ? Where is it?
2. What type of coal is found in Eastern PA?
3. What type of coal is found in Western PA?
4. Which deposit is larger?
5. About how many miles separate the deposits?
Study the photograph for 2 minutes. Form an overall impression of the photograph and then examine individual items.

Next, divide the photo into quadrants and study each section to see what new details become visible.

List 3 observations for each quadrant:

- Quad 1
- Quad 2
- Quad 3
- Quad 4

Write the following questions and answers into your notebook:

1. Name 5 states that have 5 or more underground mines.
2. Name 5 states that do not have sub-surface mining.
3. Which states have a high concentration of underground mines?
   a. What do you think they mine?
Look carefully at the photos below. In your notebook create a T-Chart describing 3-4 differences in Photo A vs B.

Go to [http://sciencespot.net/Pages/starters.html](http://sciencespot.net/Pages/starters.html) for this ppt slide.

Look at the rock samples below, identify the following questions and answers in your notebook:

Which sample has large mineral crystals? What type of rock is it? What is the name of the rock?

There is only 1 rock for the answers to the questions above - it says SAMPLE not Samples.
Write the following statements into your notebook. Write your answers on the line: I, S, or M.

CATEGORIZE IT

Write “I” if the statement describes Igneous rock, “S” if it describes Sedimentary rock and “M” if it describes a Metamorphic rock.

- Formed when Pangea broke apart 200 million years ago
- Magma cooled slowly in the Earth
- Mafic, intrusive, igneous rock was exposed after the sandstone eroded away
- Up to 540 feet high and about 20 miles long
- The Lenape called the cliffs "rocks that look like rows of trees"

Go to [www.brainpop.com](http://www.brainpop.com) for this activity sheet.

Write the following clues into your notebook and determine where in NJ it is located:

1. Formed when Pangea broke apart 200 million years ago
2. Magma cooled slowly in the Earth
3. Mafic, intrusive, igneous rock was exposed after the sandstone eroded away
4. Up to 540 feet high and about 20 miles long
5. The Lenape called the cliffs "rocks that look like rows of trees"
Using the map and key to answer the questions below. The blue star represents where Peck is located. Write the Q & A's into your notebook:

1. Where are the oldest rocks in New Jersey?
   a. Name the era and time span.
2. Where are the youngest rocks?
   a. Name the era and time span.
3. What is special about where Morristown is located?
4. Where are the abandoned Iron Mines located?

Using the diagram, determine the correct sequence for the tracks and prints shown.
Write the sentences in the correct order in your notebook.

The Butler walks to work
The Handyman rides a bike
The Cook rides a motorcycle
The Maid drives a car
The Nephew has a seeing-eye dog