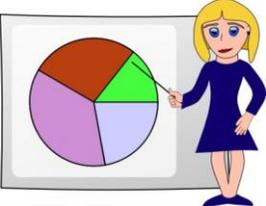
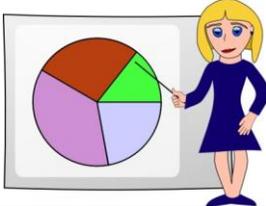


Steps to the Scientific method

<p>Ask a question</p> 	<p>Think of a question that you want to investigate.</p>	<p>Ask a question</p> 	<p>Think of a question that you want to investigate.</p>
<p>Do research</p> 	<p>This could be thinking about what you already know or researching to find out new information.</p>	<p>Do research</p> 	<p>This could be thinking about what you already know or researching to find out new information.</p>
<p>Make a hypothesis</p> 	<p>One possible answer to the problem or question. A prediction. (IF...then)</p>	<p>Make a hypothesis</p> 	<p>One possible answer to the problem or question. A prediction. (IF...then)</p>
<p>Do an experiment</p> 	<p>Steps you follow (procedure) to test your hypothesis.</p>	<p>Do an experiment</p> 	<p>Steps you follow (procedure) to test your hypothesis.</p>
<p>Analyze your data</p> 	<p>RECORD YOUR DATA (a picture, table, or chart) AND LOOK AT IT.</p>	<p>Analyze your data</p> 	<p>RECORD YOUR DATA (a picture, table, or chart) AND LOOK AT IT.</p>
<p>Make a conclusion</p> 	<p>Was your hypothesis correct? What did you learn from this experiment? Share your conclusion with others.</p>	<p>Make a conclusion</p> 	<p>Was your hypothesis correct? What did you learn from this experiment? Share your conclusion with others.</p>

Lesson: Pets in the Classroom; using our turtle as a learning opportunity

Objective: Students will experience various concepts within the curriculum throughout the year using our classroom pet "Franklin the Turtle" as a teaching tool and friend.

Before: Franklin provides a wonderful opportunity for students to all come together as a group or community. At the beginning of the school year I introduce Franklin and then provide an opportunity for all the students to introduce themselves while holding the turtle. Franklin is a very social turtle so he is calm however we go over proper handling and the need to wash hands after holding Franklin. Students, feeling the calmness from the turtle and holding a smaller creature, are too calmed and a lot of the nervousness of starting a new grade disappears. This bond that is created with Franklin is one that is held all year long through various projects.

School Economy: Is an important concept in 5th grade, therefore I have created a job for a student "Biologist" which includes feeding and providing fresh water (everyday) for Franklin. Students are required to keep a log of the amount of mealworms Franklin eats and if the water needed changed. After one month, students are paid the salary of \$600.00. However, due to the popularity of the position, two students have been given the job as Biologist and are equally paid. Before the end of the school-year (last year) I had to split the month, weekly, to provide those students who were not given the opportunity to be Biologist a chance.

Reviewing/Incorporating the Scientific Method using a Pet

During: Now that Franklin is included as a member of the class, students are eager to learn more about him. 5th graders have an understanding of the Scientific Method so our job is to create depth within their comprehension of the process.

Objective: Students will review the concepts involved in the Scientific Method by creating an experiment testing variables and predicting how they think Franklin will react.

Procedure:

- Students are paired in 2's and 3's with the goal of creating an experiment which includes question, research, hypothesis, procedure, observations, data analysis, and conclusion.
- Since students have built a relationship of respect for Franklin, we discuss appropriate ways of testing variables that will keep Franklin safe.
- Open-Ended projects such as are critical as our school is a STEM/Gifted Academy. Students, when given projects which allow creativity, rise to their own, intrinsic expectations.
- Pairs brainstorm their ideas using a circle map (see attached) as a way of discussion with their partner (s). Most, if not all, of their work will be kept in their ISN (Interactive Student Notebook).
- Next students are asked to begin with a question and offered any resources such as library/text, or Laptop/Chromebook/IPAD (technological) to extend their research needs.
- This will then lead into their Hypothesis for their experiment.
- Students will be responsible for creating their procedure, getting it checked off by me, before creating or going forth with their experiment.
- Review data collection and analysis; variables (dependent/independent)
- Finally the parts of a conclusion; restate hypothesis, review data analysis, and any lingering questions.
- Students have the opportunity to present their findings to the class.

Assessment: Attached is a rubric which can be used as a guide as well for the students.

Some examples have been Franklin's ability to reach the end of a maze and what timeframe; does Franklin have five senses?, which type of house does Franklin prefer, grass, straw, or adobe? Does Franklin prefer day over night?

I find that the ability to create their own experiment gives students greater confidence when creating their Science Project/Engineering Project in the spring.

After: In the later part of the year, Franklin has been a topic of study when discussing seasons, adapting to your environment (linked to Social Studies), and

Materials: Due to the project being open-ended and student centered, they are responsible for bringing in the items needed for their experiment. They are mostly recyclable items which students can find easily or know they already have at home.

- Circle Map
- Assessment sheet
- ISN: Compo Book

Key Vocabulary:

* Scientific Method; Steps- Attached;

- Question, Research, Hypothesis, Procedure/Experiment, Data Analysis, and Conclusion

* Dependent Variable: the factor being measured in the experiment

* Independent Variable: the one factor changed by the person doing to experiment

* Constant: all the factors that stay the same in the experiment.

Differentiation: Due to the varied abilities within my classes; I use project based learning in which students can create their own experiment (project) focusing on the rubric/standards covered.

Standards:

SC.3.1.5.2

Propose a solution, resource, or product that addresses a specific human, animal, or habitat need.

SC.1.2.5.2

Plan a simple investigation that identifies the variables to be controlled.

SC.1.2.5.5

Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).

SC.1.3.5.1

Analyze data obtained in a scientific investigation to identify trends and form conclusions.

SC.1.3.5.2

Analyze whether the data is consistent with the proposed explanation that motivated the investigation.

SC.1.3.5.3

Evaluate the reasonableness of the outcome of an investigation.

SC.1.3.5.4

Develop new investigations and predictions based on questions that arise from the findings of an investigation.

SC.1.4.5.1

Communicate verbally or in writing the results of an inquiry.

SC.1.4.5.3

Communicate with other groups or individuals to compare the results of a common investigation.

Rubric Scientific Method

Criteria	None 1	2	3	4	Total Points
Testable Question	•	Problem is somewhat confusing or not clear	Asks a specific measurable cause and effect question and shows a clear purpose	The question shows higher thinking skills and exceeds expectations	
Hypothesis	•	Does not state a clear prediction	Predicts a reasonable outcome as a result of a specific investigation	Exceeds expectations and accounts for different variables	
Procedure/Experiment	•	Procedure is unclear and would be difficult to repeat	Procedure is clear and could be repeated easily	Exceeds expectations; very precise and well thought out.	
Data/Observations	•	Data is not clear or unlabeled	Data and/or observations presented clearly	Exceeds expectations; Complex data; presented clearly/organized.	
Conclusion	•	1-2 Parts of a complete Conclusion	All 3 parts of a complete conclusion	Goes above all three parts to expand into further inquiry	
Total					

Name: _____

Circle Map:

