

## Great Falls Public Schools Biology Rubric

Process Skill and Definition	Proficient
<p><b>Observing</b></p>	<ul style="list-style-type: none"> <li>• Makes and records qualitative and/or quantitative observations</li> <li>• Observations are detailed, relevant and concise</li> </ul>
<p><b>Questioning (asks)</b> Adding to the knowledge base by creating meaning from experience.</p>	<p>When appropriate:</p> <ul style="list-style-type: none"> <li>• Writes relevant questions that are based on observations and prior knowledge</li> </ul>
<p><b>Predicting</b> Uses observations and acquired knowledge to foresee outcome.</p>	<p>When appropriate:</p> <ul style="list-style-type: none"> <li>• Generates a testable hypothesis (prediction) based on observations and acquired knowledge.</li> <li>• Predicts potential (logical) outcomes based on observations and acquired knowledge</li> <li>• Includes an explanation why</li> </ul>
<p><b>Using Variables</b> Controls variables in order to verify or refute ideas.</p>	<ul style="list-style-type: none"> <li>• Identifies variable to be tested</li> <li>• Identifies variables to be controlled</li> </ul>
<p><b>Communicating Information (Procedures)</b> Oral, written or mathematical process of describing an event, action or object to and/or with others.</p>	<ul style="list-style-type: none"> <li>• Describes how to conduct an experiment that can be replicated</li> <li>• Information is presented in a logical and sequential way so that it can be repeated</li> <li>• Describes how and what data will be collected</li> </ul>
<p><b>Measuring and Organizing Data</b> Determining qualitative and quantitative properties of objects and changes during events.</p> <p>Organizes ideas using text and tables.</p> <p>Creating graphs, and or other visual and mathematical representations.</p>	<ul style="list-style-type: none"> <li>• Data is presented in a way that is understandable and logical (sketch, table, graph)</li> <li>• Measurement is scientific (SI) and appropriate.</li> <li>• Labels are appropriate</li> </ul>
<p><b>Data Analysis (Making Sense of Data) and Inferring (Writing Conclusions)</b> Making objective statements that reflect information and/or data.</p> <p>Creating explanations based upon previous experiences and observations.</p>	<p>When appropriate:</p> <ul style="list-style-type: none"> <li>• Identifies relationships between variables (trends and patterns of data)</li> <li>• Uses collected data in conclusion</li> <li>• Conclusion discusses the support or nonsupport of the hypothesis (prediction)</li> <li>• Identifies relevant sources of error</li> </ul>

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Student's Name \_\_\_\_\_

## **Chicken behaviors:**

### **Eating:**

Before picking up a grain the chicken lifts its head so that it can see the grain with both eyes. Now it fixes the position of the grain and after aiming at it is able to hit it. If it fails picking up the grain it has to lift the head again and to aim at it once more. The chicken's decision to pick up a grain depends on its size. That's because the chicken has a natural sense of how large grains should be. Only experience, curiosity, hunger, or the example of another chicken can make one chicken eat a bigger grain. With this new experience they even prefer eating bigger grains first, probably to feel full earlier.

Chickens scratch at the ground with their feet to find food and will search an area for food.

### **Looking out for danger or food:**

The eye of a wild living chicken is focused for a view of five meters to see grains and other small things and for a view of 50 meters to see larger things. That's why chickens do not like to go away from their hen house farther than 50 meters. To watch an object the chicken always has to use the left and the right eye alternately.

One peculiarity of poultry is that they have organs for feeling vibrations. These are located predominantly on the legs, but also on the skin. They feel vibrations of the ground and in the atmosphere, which help them to recognize enemies very quickly. You can notice it if you quietly approach your hen house in the darkness. Immediately you can hear the warning voice of the rooster.

The chicken's senses of smell and taste are not well developed.

### **Keeping Cool:**

Chicken body temperature is between 39.8 °C (103 °F) and 43.6 °C (110 °F). Chickens hit their peak body temperature around 4:00 PM and lowest temperature at midnight. Chickens cannot perspire and tolerate sharp coldness better than temperatures over 28 °C (82 °F). When they are too warm chickens open their beaks and lift their wings a bit to cool their bodies. When the weather is hot they also dip their beak in water to cool the blood in the carotid artery.

### **Drinking:**

For drinking they dive their beak deep into the water, then they quickly lift their head so that the water can run down the throat. Chickens usually prefer to do this together and with the same rhythm.

### **Keeping away from predators:**

In bright light chickens can see different colors very well, but in darkness they are almost blind. Chickens avoid open meadows and prefer the undergrowth where they are safer. In dangerous situations it is amazing how chickens are suddenly

able to fly. Bantams even fly over 30 meters high houses. For the night chickens look for a higher place to sleep, usually the perch in their hen house.

### **Communicating:**

Since chickens are able to express over 30 different sounds, they also have a very good sense of hearing. Hen and chick can still understand each other at a distance of 20 meters, and the chicken chirps when it gets lost. At this distance chicks are able to recognize their mother's voice out of a lot of other sounds. When there is food for the chicks or they are allowed to slip under their mother's feathers, they chirp quite softly because they feel good. The chicks also communicate with each other. But they don't react if any of their brothers and sisters gets lost.

### **Grooming:**

After a highly active period in the morning a time of comfort follows. The chickens sit and clean their feathers. It a period of peace and quietness and they grease their feathers against wetness with grease secreted from the rump. In the afternoon chickens enjoy relaxing in the sun and cleaning their feathers in the dust. Roosters usually avoid cleaning their feathers in the dust.

### **Roosting:**

Chickens only fall asleep in their familiar group. In strange or precarious places they cannot fall asleep. They sit together on their perch at short distances, and the pecking order doesn't mean a thing. Only if there are different perches or if one part of a perch is more comfortable, the rooster with the strongest hens decides to sit there. Weaker hens often go into the hen house earlier to reserve a better place on the perch, but when the stronger ones arrive they usually bite them, and the weaker ones have to leave.

Only in absolute darkness they put their heads under the feathers and fall asleep with their eyes closed.

But this is hard to see, because they wake up from sleep with every sound you make. However, they calm down pretty quickly again because of the darkness, and soon they fall asleep again.

### **Pecking order:**

There is a special, important pecking order in the chicken herd. It determines which chicken may eat first, where which chicken is allowed to sit on the perch and other things. You can often see that one chicken pecks another one without any obvious reason, just to show that it is stronger.

The most pecking takes place on the perch, but only if there are rank differences, as mentioned. The other ones peck especially strange or young chickens and so it can take 15 minutes until everybody has found a place.

Usually the rooster is the strongest member of the herd and has the highest rank in the pecking order. The pecking order changes very seldom because weaker chickens are usually so afraid of stronger ones that they never have the courage to attack them. This applies also to young roosters: Physically they would be much stronger than older hens; however, they do not dare to attack older hens because of their youth experiences.



Student's Name \_\_\_\_\_

Chicken's Name \_\_\_\_\_

## Chicken Project: Conducting an Experiment

### **Observing:**

Make and record qualitative and/quantitative observations that are detailed, relevant and concise.

### **Questioning:**

Write relevant questions that are based on the above observations, prior knowledge and readings.

### **Predicting:**

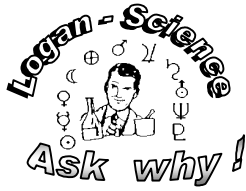
Generate a testable hypothesis based on observations, prior knowledge and readings that predicts outcomes and includes an explanation "why".

### **Using Variables:**

Identify the variable(s) to be controlled and the one to be tested.

### **Controlled Variable(s):**

### **Experimental Variable:**



Name \_\_\_\_\_

## Chicken Project: Conducting an Experiment

Describe how to conduct an experiment that can be replicated. Present the procedures in a logical and sequential way. Describe how and what data will be collected.

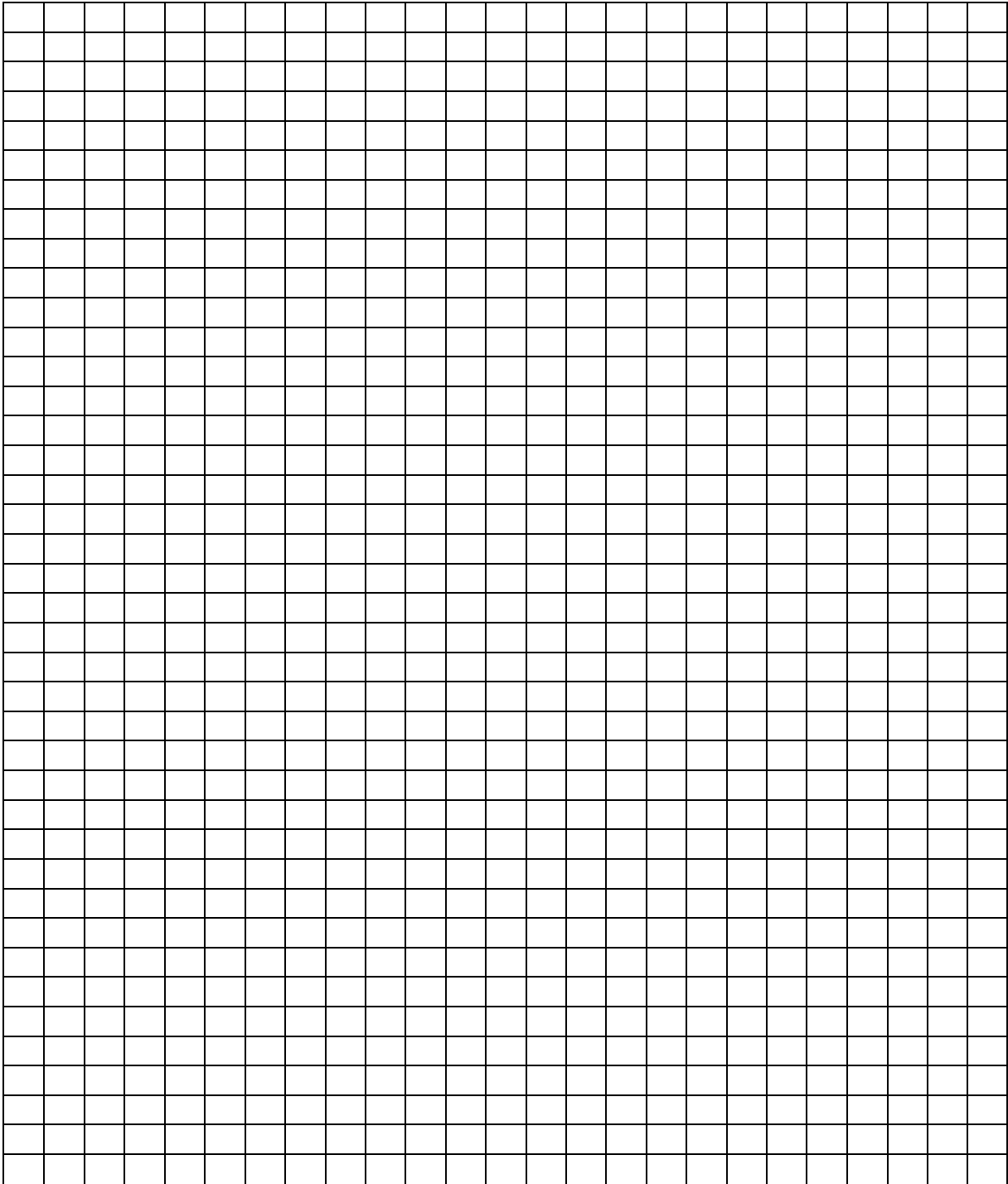


Student's Name \_\_\_\_\_

Chicken's Name \_\_\_\_\_

## Chicken Project: Conducting an Experiment

Draw a graph that compares mass to time. Label each axis and include a title.



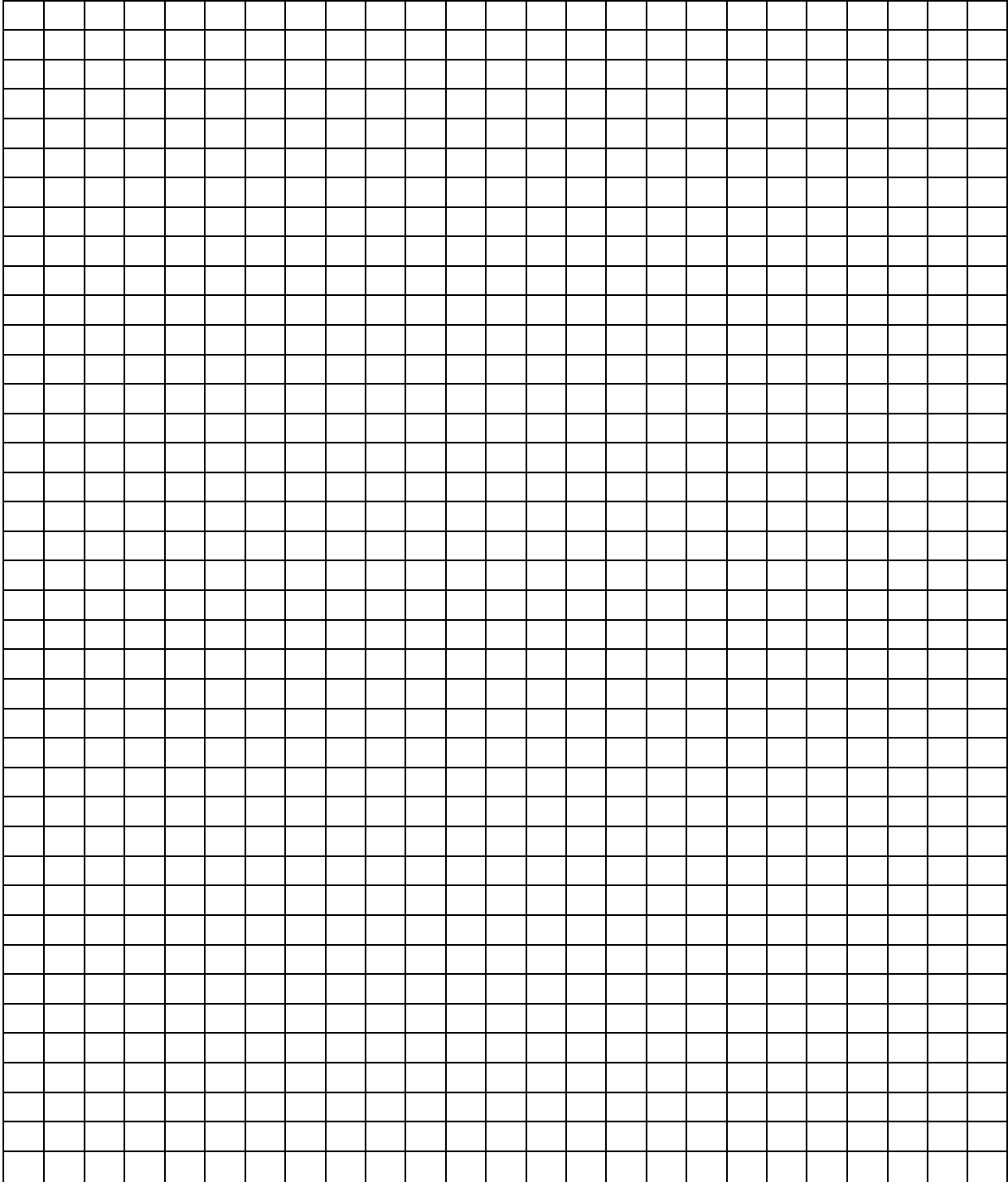


Student's Name \_\_\_\_\_

Chicken's Name \_\_\_\_\_

### Chicken Project: Conducting an Experiment

Draw a second graph that represents your data. Label each axis and include a title.





Student's Name \_\_\_\_\_

Chicken's Name \_\_\_\_\_

## Chicken Project: Conducting an Experiment

Write a conclusion that discusses the support or nonsupport of your hypothesis. Restate your hypothesis, site your data, and list and explain possible sources of error.