

PET SHOP DECISION

Performance Standard 10B.H

Design a study to solve a real-world problem, and then design a study to help them answer the question:

- *Mathematical knowledge*: know how to formulate questions, design studies, and collect, analyze and report data findings,
- *Strategic knowledge*: use appropriate strategies to ask research questions, choose a sample, collect and analyze data, and make recommendations based on data, and
- *Explanation*: explain completely and clearly what was done and why it was done.

Procedures

1. Provide students with sufficient learning opportunities to develop the following skills in order to (10B) formulate questions, design data collections methods, gather and analyze data and communicate findings
 - Formulate questions, design studies, and collect data, and
 - Analyze potential methods of collecting information and decide which methods would produce the most reliable and accurate data. Note: In order to complete the task successfully, students should have prior experience with sampling.
2. Provide each student a copy of the "Pet Store Decisions" task sheet and the rubric. Have students review and discuss the task to be completed and how the rubric will be used to evaluate it.
3. Have the students work individually to solve the problem. Do not help the students or guide their thinking as they solve the following problem:

A pet supply store has decided to start selling lizards and other reptiles. They already sell fish and birds so they have the cages and tanks necessary for housing these creatures, so minimal expense is involved in adding them to their inventory. However, the pet store manager does not know which types of lizards or reptiles she should keep in stock. She has asked for help designing a study that will help her make an informed decision. Your job is to develop a plan for a study to help her decide what types of lizards and reptiles to keep in stock. Your written plan should include information on the question being addressed, the method(s) of data collection, sampling techniques, and planned data analysis, plus a justification for using the methods and techniques you suggest.

4. Evaluate each student's work using the rubric and its guide to determine the performance level. Give each student a score in each of the three categories. The students need to decide first what information will help them make the decision. Then they must determine how to best gather that information. They should consider various data collection methods and select the one they believe is best, and justify their decision.
 - 4 = provided a complete and concise description for the data that should be collected, methods to use for collection, and a description of how that data will be used in the decision-making process. Another individual could implement their plan with little difficulty. Their rationale should also be complete, and represent excellent understanding of the statistical processes and their application.
 - 3 = had the right ideas, but will not have all the details worked out. They will present a fairly good case for the data they want to gather, and why it would be useful, but they do not include enough detail for another person to actually do the data gathering and data analysis.
 - 2 = generally produced a plan that is sketchy and incomplete. They may have some good ideas, but they do not justify their procedures well, and generally lack enough detail about what they will actually do to collect the data and analyze it to allow another person to understand their intent.
 - 1 = had little understanding of what data needed to be collected or how to go about collecting it.

Examples of Student Work follow

Time Requirements

- 20 - 30 minutes
- If you want students to follow-through with actually completing the study, a much longer time period will be needed.

Resources

- Copies of the "Pet Shop Decision" task sheet
- Mathematics Rubric

NAME _____ DATE _____

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Student Task Sheet

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Your job is to develop a plan for a study to help her decide what types of lizards and reptiles to keep in stock. Your written plan should include information on the question being addressed, the method(s) of data collection, sampling techniques, and planned data analysis, plus a justification for using the methods and techniques you suggest.

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Your job is to develop a plan for a study to help her decide what types of lizards and reptiles to keep in stock. Your written plan should include information on the question being addressed, the method(s) of data collection, sampling techniques, and planned data analysis, plus a justification for using the methods and techniques you suggest.

First of all, you have to find out what reptiles are popular. The store could create a survey, which asks for popular reptiles, and types of reptiles people would enjoy having as pets. This information will then be compiled on a spreadsheet. Once the spreadsheet is organized, a nice-looking graph will be made presenting the important data. The graph will show the four most popular reptiles people want as pets. Once the top four reptiles are known, some research will be done. Each of the four reptiles will be researched on many aspects, such as if it is poisonous or how to take care of it. Once all the relevant information is known, we will narrow down the list

if necessary, Then a large amount
of the animals will be purchased,
and ^{be} taken care of in the proper tanks.
Advertising will display the new arrival,
and the project will be profitable and
Successful.

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Things to do:

Do research on different types of lizards to find out which ones are pets. (reptiles)

Observe other pet shops to see the types of reptiles that they sell. Make charts to see what type is sold the most at the pet shops.

Buy lizards/reptiles and record which ones sell the best/worst. The worst ones can be replaced with other reptiles. Record how they other reptiles sell. make graphs on how each lizard/reptile sells so it is easier to compare the information.

There are several ways the pet supply store can know which lizards and reptiles to keep in stock. To start off with, someone should go around to at least five other pet stores. There, they should mark down all of the lizards and reptiles other stores are selling to help our pet store achieve selling our reptiles. This would help because the other pet stores would only be selling the pets that are sold the most. Our pet shop wants to keep in stock the pets that get sold the most so we can make a better profit. If the pet stores that we look at don't carry reptiles or lizards, we can always go online and look up different pet shops or maybe find information

on the most sold lizards or reptiles.

After all of the information about which lizards or reptiles are sold, the best thing to do is to make a graph (bar or line) so it will be easier to compare lizards or reptiles that are sold the most or most popular at pet shops. After that is done, you can now pick out which lizards or reptiles the customer can buy.

Unfortunately, the work doesn't end here. When all of the lizards and reptiles are put out and ready for sale, someone else should keep another chart of the sales. This helps because if some of the animals aren't selling, they should be replaced with another type of lizard or reptile. Also, if a certain type of lizard or reptile is selling much, much more than the others, we may want to add another inventory of that kind to keep in stock. The graphs should be kept from maybe one to two weeks so there's more accuracy and more of a variety of sold lizards and reptiles. If our pet supply store uses this method for keeping lizards and reptiles in stock, it will help us gain better profits.