

ADVANCED LEARNING LABS

A partnership between the North Carolina Department of Public Instruction and Duke TIP
TO ENGAGE, ACTIVATE, AND GROW OUR STUDENTS

GRADES

8–9

Lab 2 • Exploration



ELA

Social media has become very popular in the past decade and the go-to medium for communication while social distancing. Explore this topic: should social media platforms (like Facebook) be allowed to collect and sell data from its users?

Take a stance on the issue and gather strong and relevant evidence from research to support it. Create an introduction to a debate that explains your views on the issue. Include a thesis statement, 3 claims, and 2 counters. Conclude your introduction by emphasizing the importance of your stance. See how many people you can persuade!



SOCIAL STUDIES

In today's news you can see reports about many people asking the governors to re-open the businesses in their states.

Imagine you are the advisor on travel and tourism to the governor of North Carolina. Research to explore both sides of the issue of re-opening businesses.

Write a memorandum to the governor offering your best recommendation regarding businesses in North Carolina opening once again.



SCIENCE

These graphics from the U.S. Energy Information Administration show historical data and make projections for the future.

- US energy consumption
<https://www.eia.gov/todayinenergy/images/2020.01.29/chart2.svg>
- US electricity generation
<https://www.eia.gov/todayinenergy/images/2020.01.29/chart3.svg>
- US energy-related CO2 emissions
<https://www.eia.gov/todayinenergy/images/2020.01.29/chart5.svg>

Given the recent changes in human behavior due to COVID-19, predict how the actual values for each might differ, and explain why. Consider how the values might change over time.



MINDFULNESS

Take some time to think about what you are grateful for. Write on a sheet of paper your response to finish these statements:

1. A strength of mine I am grateful for is...
2. Something that comforts me is...
3. A moment that made me smile today is...
4. A loved one I am grateful for is...
5. An accomplishment I'm proud of is...

Share your responses with a friend or family members. Get creative and post these around your house (on taped pieces of paper or post-its) for others to respond and discuss!



LOGIC PUZZLE

Monopoly Management

It's all fun and games until you need to use deductive reasoning to solve this logic problem. Using the clues provided, determine what properties each player owns.

Link: <https://bit.ly/2yaV1rt>



FIELD STUDIES

Explore Son Doong Cave, the largest cave in the world, located in Vietnam. The cave was first opened to the public in 2013, and public access is very limited.

Write a review to the creators of this virtual tour. Include the benefits and limitations of exploring the cave in a virtual format, as well as what could be done to improve this virtual tour.

Link: <https://www.nationalgeographic.com/news-features/son-doong-cave/2/#s=pano66>



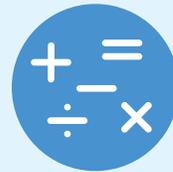
RESEARCH EXPLORATIONS

Engineers use different designs to achieve different goals. Visit the link below and create a paper hovercraft. Using the same type of paper, create a paper airplane of your design choice. Determine the distance that they each will travel.

Use the internet to research the types of forces that make the paper airplanes go and use that information to modify each model to try to make it travel farther.

Which one traveled farther when you increased the distance? How would changing the material (e.g., cardboard, aluminum foil, or newspaper instead of the paper you used) affect each design? Make modifications to your models and continue to test.

Link: <http://www.sciencefun.org/kidszone/experiments/paper-hovercrafts/>



MATH

While jogging around a lake, you notice different exercise strategies. Some people run steadily while others speed up, peak, and then slow down. A few speed up the entire lap and one person constantly gets faster as he goes.

Represent these observations mathematically as both tables and graphs. What inferences can you make based on the data?

How would your data be impacted if people were biking, walking, skipping, etc.? What types of actions would drastically change the graphs?



North Carolina Department of
PUBLIC INSTRUCTION



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Works Cited and Answers

Answers

Math K-1 Solution:

Scores will vary. When discussing if it is easier or harder to pull doubles with 1-5 or 1-10, you can talk with your student about the chance of getting doubles - higher with only 5 numbers in each container - and the higher scores - you could score 20 if you pull 2 10s or 10 if you pull two 5s. You also have a greater chance in each game of having to subtract compared to when you add, with larger integers in the second round. In each game, you will likely see different interactions between probability and score.

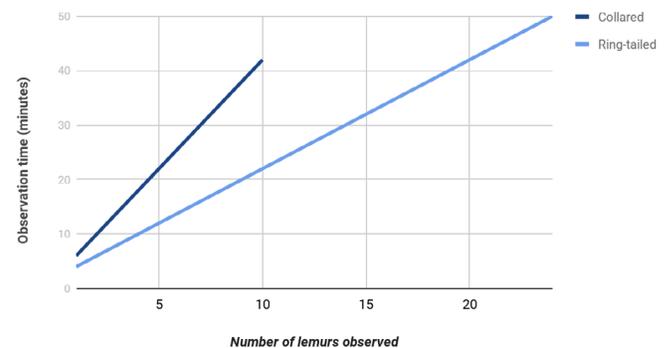
Math 2-3 Solution:

Ring-tailed lemur colony: 10 lemurs. Each lemur eats: 1 carrot, 3 broccoli stems, 6 poplar leaves. Ring-tailed colony eats: 10 bananas, 30 thistles, 60 poplar leaves. Collared lemur colony eats: 5 bananas, 15 thistles, 30 poplar leaves. Leftovers: 9 bananas, 3 thistles, 10 poplar leaves. With leftovers, you could feed 1 more lemur since you need 3 thistles per lemur.

Math 4-5 Solution:

If you spend 35 minutes with each colony, you observe 8 CL or 16 RT. If all lemurs are present, you spend 92 minutes (1 hour, 32 minutes) observing. If you spend the same time observing, you see twice as many ring-tailed lemurs as collared lemurs ($RT = 2 \times CL$).

Lemur Center Observation Times



References

Math K-1 activity is adapted from “Double Down” in “7 Games for Practicing Math Facts” at <https://www.scholastic.com/teachers/articles/teaching-content/7-games-practice-math-facts/>

Math 2-3 & 4-5 links:

- Lemur diet information from <https://lemur.duke.edu/discover/meet-the-lemurs/>
- Lemur colony information from <https://lemur.duke.edu/discover/meet-the-lemurs/>
- Ring-Tailed Lemur: <https://lemur.duke.edu/discover/meet-the-lemurs/ring-tailed-lemur/>
- Red Collared Lemur: <https://lemur.duke.edu/discover/meet-the-lemurs/red-collared-lemur/>

Math 6-7 link:

- Random Number Generator: <https://www.calculator.net/random-number-generator.html>

Math 8-9 activity is adapted from “Comparing Linear, Quadratic & Exponential Models” at <https://study.com/academy/lesson/comparing-linear-quadratic-exponential-models.html>

Math 10-12 links:

- 2017 World Happiness Report: <https://www.youtube.com/watch?v=Se2gfFKp1lw>
- Weighted Averages Example: <https://drive.google.com/file/d/1JCDvFsd4dLeMbRkHyTEFYsdlLWWtRXu9/view>
- Gapminder Indicator Selector: <https://www.gapminder.org/data/>
- See the “Happiness” Full Lesson Plan for other guiding questions and examples: <https://blogs.tip.duke.edu/teachersworkshop/how-do-we-quantify-happiness/>