

Project WILD Standards-Based FCAT-Style Activities



Turkey Trouble

Teacher Page

Students practice FCAT skills while learning about linear and exponential population growth.

GRADE LEVEL: 9th - 12th grades

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will read a selection introducing them to the concepts of linear and exponential population growth.
- Students will respond to FCAT-Style questions and prompts in Reading, Writing, Math, and Science.

SUNSHINE STATE STANDARDS ASSESSED:

- LA.910.4.2.1 Writes in a variety of informational/expository forms, including a variety of technical documents (e.g. How-to-manuals, procedures, assembly directions)
- LA.1112.4.2.1 Writes in a variety of informational/expository forms including documents using precise technical and scientific vocabulary (e.g. Manuals, procedures, directions).
- LA.910.2.2.2 Uses information from the text to answer questions or to state the main idea or provide relevant details.
- LA.1112.2.2.2
- MA.E.1.4.1 Interprets data that has been collected, organized, and displayed in charts, tables, and plots.
- MA.C.3.4.2 Using a rectangular coordinate system (graph), applies and algebraically verifies properties of two and three-dimensional figures, including distance, midpoint, slope, parallelism, and perpendicularity.
- SC.G.2.4.5 Understands that the amount of life any environment can support is limited and that human activities can change the flow of energy and reduce the fertility of the Earth.

RESOURCES:

K-12/Project WILD website - <http://myfwc.com/educator/K12.html>
Florida Department of Education Website - <http://www.firn.edu/doe/>

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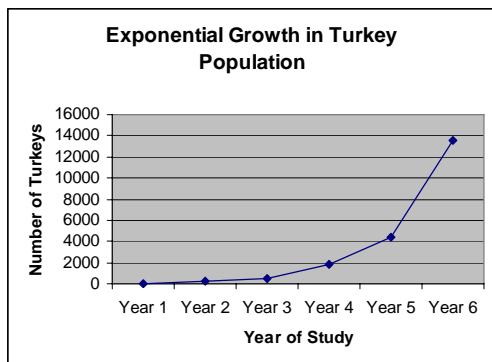
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ANSWER KEY:

1. LA.910.4.2.1, LA.1112.4.2.1 Use the 6-point writing rubric.
2. Use the –point science rubric for Short Response Questions.
SC.G.2.4.5 Example of a Top-Score Response:
Part A: When the turkeys crowd in close together to get the corn, they are more likely to spread germs, especially since they are pooping all over the area and walking in it. Because the area might not have enough water resources to support all those turkeys, the animals might become weakened, and consequently more prone to disease.
Part B: Adding food to the area increases the area’s carrying capacity for disease agents. Before, only so many germs and viruses could survive there because there weren’t many turkeys to live in. The increase in turkey food means more turkeys, which can support more disease organism.
3. Use the 4-point reading rubric for Extended Response Questions.
LA.910.1.7.2, LA.1112.1.7.2 Example of a Top-Score Response:
Linear growth is when something increases by the same amount every year. So if there is one pair of turkeys and they have 4 chicks one year, the new larger population would only be expected to have 4 chicks the following year. This doesn’t happen because when the first chicks grow up, they’ll also produce new chicks. Instead of increasing by a set number (linear growth), the population grows at “an increasing rate through time.” That’s the definition the article gives to “exponential growth.”
4. Use the 4-point math rubric for Extended Response Questions.
MA.E.1.4.1 Example of a Top-Score Response:

Part A



Part B

This graph is an ever-increasing curve. A linear graph would also be ever-increasing, but it would be in a straight line, not a curve.



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WRITING

1. Turkey populations will increase in size as long as they have adequate food, water, and shelter. Think about how a population of turkeys living near a small town might respond to an extended drought. Write to explain how the populations of turkeys and humans might be affected by this drought.

NOTE: Write your response to question 1 on another sheet.

SCIENCE

2. Mr. Green decides to manage his forest property for turkey hunting. He has read that providing corn-filled feeding stations is one way to create a stable turkey population that will continue to breed exponentially. Neighbors, however, warn him that feeding stations can draw in too many birds, causing problems with crowding.

Part A: How can altering a habitat to increase the population of one species create instead an increase in the population of disease agents like bacteria and viruses? **Part B:** Describe how this man-made change alters the area's carrying capacity for disease agents.

READ
INQUIRE
EXPLAIN

Part A: _____

Part B: _____

Name: _____	Date: _____
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READING

This article is adapted from the Project WILD activity "Turkey Trouble":

Turkey Population Growth

Growth rates can be characterized by two different growth curves: linear and exponential. Linear growth occurs at a constant rate. Many increases or decreases occur at linear rates. An example of this would be having your salary increase by \$1,000.00 per year. Exponential growth occurs at an increasing rate through time. An example would be having your salary increase (or decrease) at a rate of five percent per year.

Although populations have the potential to increase at an exponential rate, population growth is limited by many factors, including the availability and quality of water, food, shelter, and territory, as well as natural and human-made changes in habitat.

For example, in 1935 Wyoming had no Merriam's turkeys within its borders. A decision was made to release 46 turkeys in a mountainous area of the state. The table displayed below is a projection of the maximum turkey population in this habitat. In reality, the population would be affected by many factors, including the availability of food, water, shelter, and space; disease; predation; and climatic conditions as well as broken or infertile eggs.

Year	1	2	3	4	5	6
1. beginning population	46	276	506	1886	4416	13570
2. five year olds	0	0	0	0	46	230
3. last year's hatch	0	230	230	1380	2530	9200
4. breeding population	46	46	276	506	1840	4140
5. breeding pairs #4/2	23	23	138	253	920	2070
6. offspring #5 x 10 eggs/clutch	230	230	1380	2530	9200	20700
+ #4 above	46	46	276	506	1840	4140
+ #3 above	0	230	230	1380	2530	9200
7. total population	276	506	1886	4416	13570	34040

Name:

Date:



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MATH

Exponential Growth Data for a Wild Turkey Population

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
46 Turkeys	276 Turkeys	506 Turkeys	1,886 Turkeys	4,416 Turkeys	13,570 Turkey

4. The table above shows the exponential increase in turkey population during one six-year study. **Part A:** Graph the data from this table. Be sure to title your graph and label your axes. **Part B:** On the next page, write 1-2 sentences describing the how this graph differs from one that shows linear growth.

Name:	Date:
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MATH, continued

3. *Part B*

Name:

Date: