

Analyzing Graphs

Essential question: How can you describe a relationship given a graph and sketch a graph given a description?

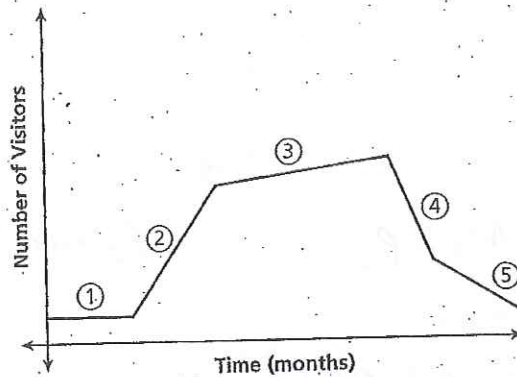
COMMON
CORE

CC.8.E.5

1 EXPLORE

Interpreting Graphs

A roller coaster park is open from May to October each year. The graph shows the number of park visitors over its season.



- A. Segment 1 shows that attendance during the opening days of the park's season stayed constant. Describe what Segment 2 shows.

Attendance rises quickly
(steep + slope).

- B. Based on the time frame, give a possible explanation for the change in attendance represented by Segment 2.

This increase could be due to
the summer break from school.

- C. Which segments of the graph show decreasing attendance? Give a possible explanation.

4 & 5 End of summer break. It's
time to go back to school. !!

REFLECT

1. Explain how the slope of each segment of the graph is related to whether attendance increases or decreases.

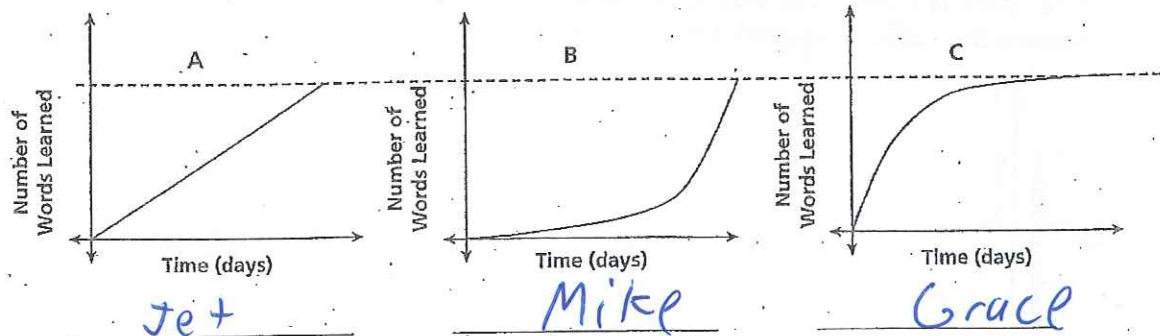
+ slope, as time goes attendance ↑
- slope, as time goes attendance ↓

2 EXPLORE Matching Graphs to Situations

Grace, Jet, and Mike are studying 100 words for a spelling bee.

- Grace started by learning many words each day, but then learned fewer and fewer words each day.
- Jet learned the same number of words each day.
- Mike started by learning only a few words each day, but then learned a greater number of words each day.

Match each student's study progress with the correct graph.



A. Describe the progress represented by Graph A.

Learns at the same rate.
This means the same # of words each day.

B. Describe the progress represented by Graph B.

starts off with a shallow curve
and gets higher quicker over time. This means
student started off slow and learned more and more
towards the end.

C. Describe the progress represented by Graph C.

Starts off quicker and then gets more of a
shallow curve. This means student started
off learning many words a day, then learning
less and less towards the end.

D. Determine which graph represents each student's study progress and write the students' names under the appropriate graphs.

REFLECT

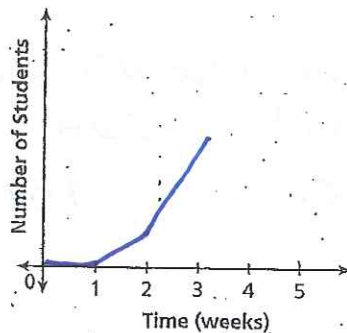
2. What would it mean if one of the graphs slanted downward from left to right?

The student forgot words that were
already learned.

3 EXPLORE Sketching a Graph for a Situation

Mrs. Sutton provides free math tutoring to her students every day after school. No one comes to tutoring sessions during the first week of school. Over the next two weeks, use of the tutoring service gradually increases.

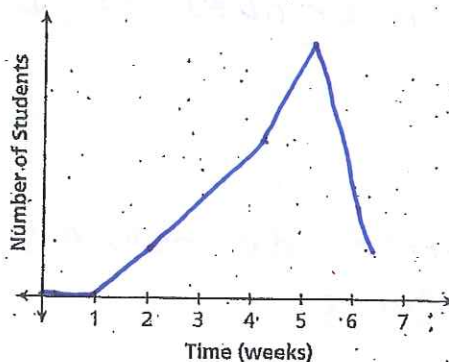
- A. Sketch a graph showing the number of students who use the tutoring service over the first three weeks of school.



- B. Mrs. Sutton's students are told that they will have a math test at the end of the fifth week of school. How do you think this will affect the number of students who come to tutoring?

More students come to tutoring right before the test. After the test, the # of student might ↓.

- C. Considering your answer to B, sketch a graph showing the number of students who might use the tutoring service over the first six weeks of school.



REFLECT

- 3a. Suppose Mrs. Sutton offered bonus credit to students who came to tutoring sessions. How do you think this would affect the number of students who come to tutoring?

More students might come.

- 3b. How would your answer to 3a affect the graph?

Graph would shift ↑ because of more kids but overall trends would be the same.

PRACTICE

In a lab environment, colonies of bacteria follow a predictable pattern of growth. The graph shows this growth over time.

1. During which phase is growth slowest? During which phase is growth fastest? Explain.

P1: Curve increasing a little.

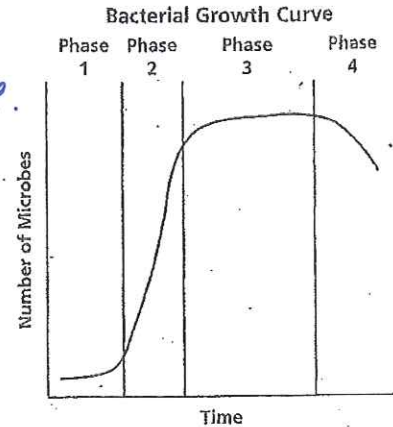
P2: Fastest growth. It's a lot "steeper" than P1.

2. What is happening to the population during Phase 3?

P3: Graph is almost horizontal. No growth (stable).

3. What is happening to the population during Phase 4?

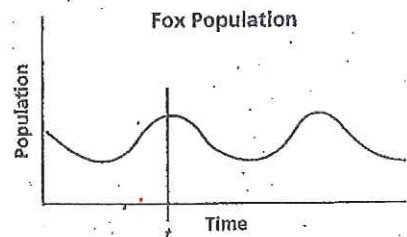
P4: Graph is ↓
of microbes is ↓



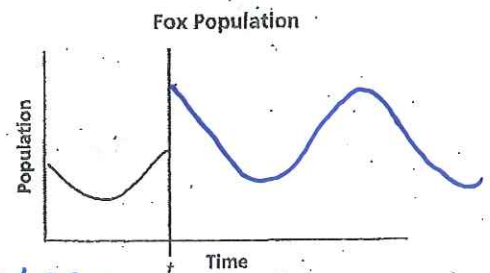
A woodland area on an island contains a population of foxes. The graph describes the changes in the fox population over time.

4. What is happening to the fox population before time t ?

Population decreases then increases



5. At time t , a conservation organization moves a large group of foxes to the island. Sketch a graph to show how this action might affect the population on the island after time t .



6. At some point after time t , a forest fire destroys part of the woodland area on the island. Describe how your graph from problem 5 might change.

Graph would show a steep decline at that point to represent the fire. Then the forest would regrow and the pattern would repeat.