Math on the Science and Social Studies Sub-Tests

In addition to the math sub-test, there is math on both the Science and Social Studies sub-tests of the TASC. In this packet you will find sample TASC-style questions in Social Studies and Science.

We can't share actual questions from the TASC Readiness Assessments. The items in this packet come from two sources:
- The TASC Item Specifications in Science and Social Studies[1]
- The New York State Regents Exams in Science and American History

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The following Question Stems are found throughout the TASC Readiness Assessments in Social Studies and Science on questions involving graphs and charts:

- Which factor contributed the most to the changes shown on the charts?

- Which statement describes an effect of the changes shown in the charts?

- Which of these contributed the most to the trend shown on the graph?

- Which conclusion can be drawn from the data on the graph?

- Which comparison can be supported by the information in the graph?

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[1] As opposed to math, the TASC Science and Social Studies Item Specifications are missing sample items for many of the standards. When no sample items were provided, we have substituted appropriate New York State Regents questions. The NYS Regents exams are aligned to the same standards as the TASC. We choose NYS Regents questions that aligned with the standards and question-types found on the TASC. We used the question stems above, questions stems similar to the Readiness Assessment, and the standards described in the TASC Item Specification documents.

U. S. Urban/Rural Population, 1850–1900

Percentage of Total Population vs. Years

Rural / Urban
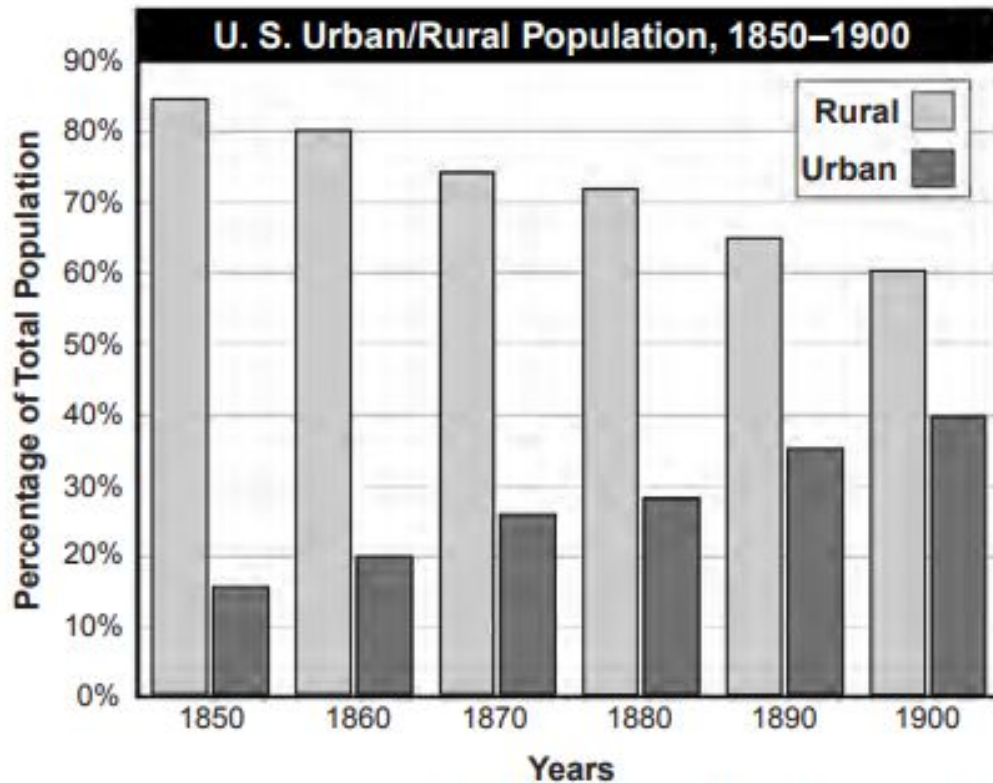
Source: U.S. Bureau of the Census (adapted)

What was the primary cause of the trends shown on the graph?

A.   closing of the Western frontier
B.   industrialization of the North and the Midwest
C.   passage of the Homestead Act
D.   completion of the transcontinental railroad

Total United States Population by Region, 1900–2000
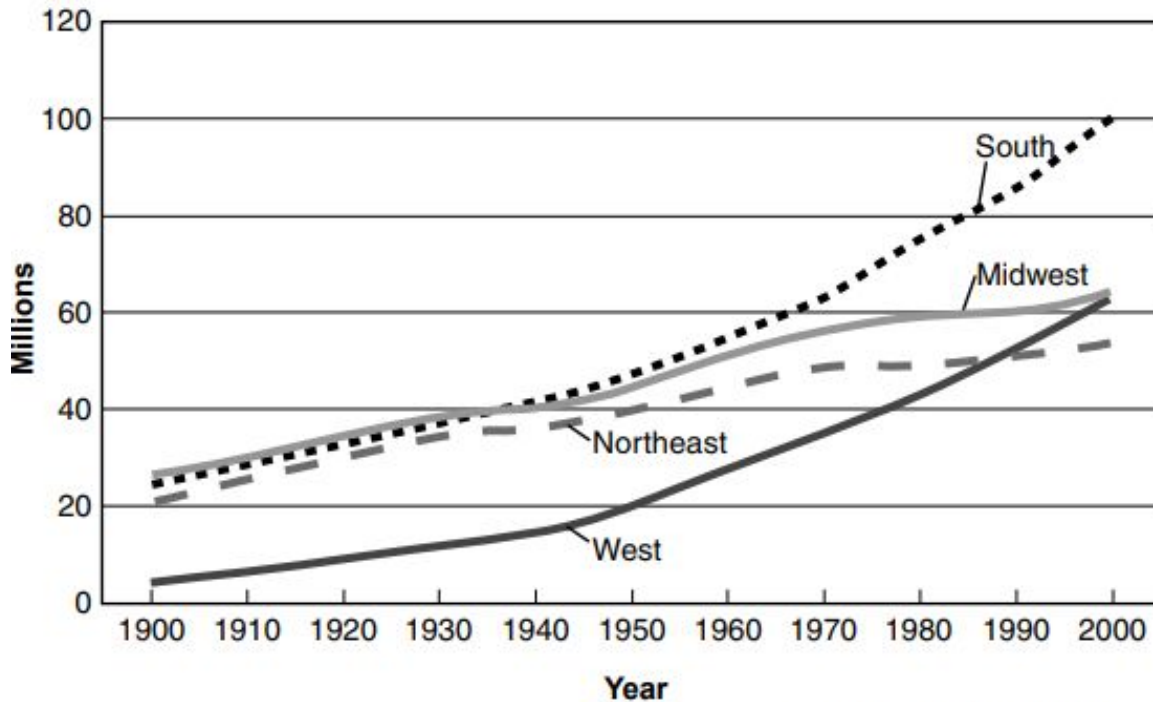
Source: U.S. Census Bureau (adapted)

Which section of the country gained the most population in the years shown on the graph?
- A. South
- B. Midwest
- C. Northeast
- D. West

What is one effect the population changes shown in the graph have had on national politics?
- A. Reducing the number of senators from the Midwest
- B. Increasing the representation of the South and the West in Congress
- C. Enhancing the chances for election of presidential candidates from the Northeast
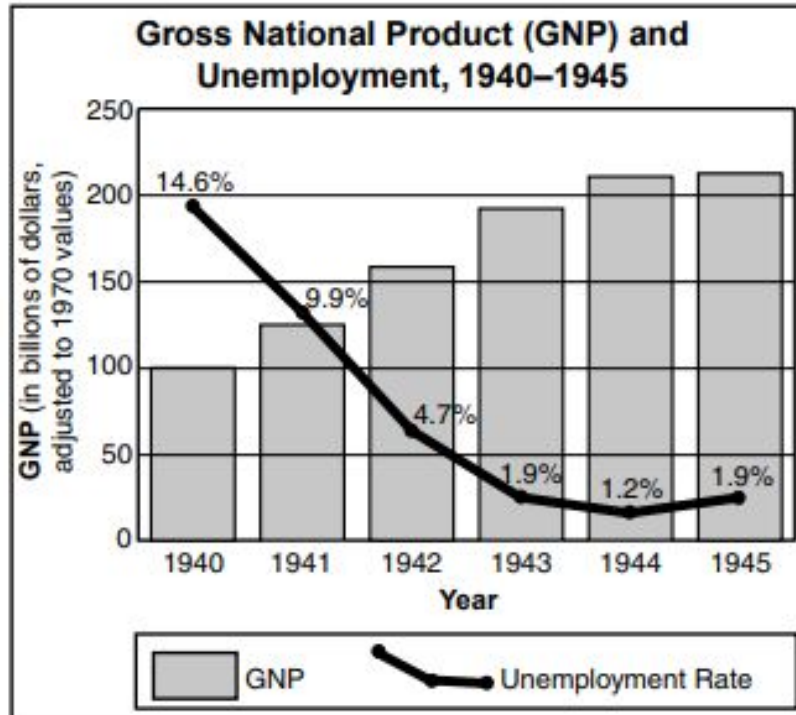- D. Strengthening the Democratic Party's control of the South

Consumer spending (in billions) on selected items and total value of stock, 1929–1933

	1929	1933
Food	$19.5	$11.5
Housing	$11.5	$7.9
Clothing	$11.2	$5.4
Automobiles	$2.6	$0.8
Medical care	$2.9	$1.9
Philanthropy	$1.2	$0.8
Value of shares on the New York Stock Exchange	$89.7	$22.2

Source: *Historical Statistics of the United States*

Which conclusion is best supported by the information on the chart?
A.   Business advertising had succeeded in selling more products.
B.   Violence by labor had increased throughout the country.
C.   Economic conditions had become worse.
D.   The stock market had recovered in 1933.

Gross National Product (GNP) and Unemployment, 1940–1945

GNP (in billions of dollars, adjusted to 1970 values)

- 14.6% (1940)
- 9.9% (1941)
- 4.7% (1942)
- 1.9% (1943)
- 1.2% (1944)
- 1.9% (1945)
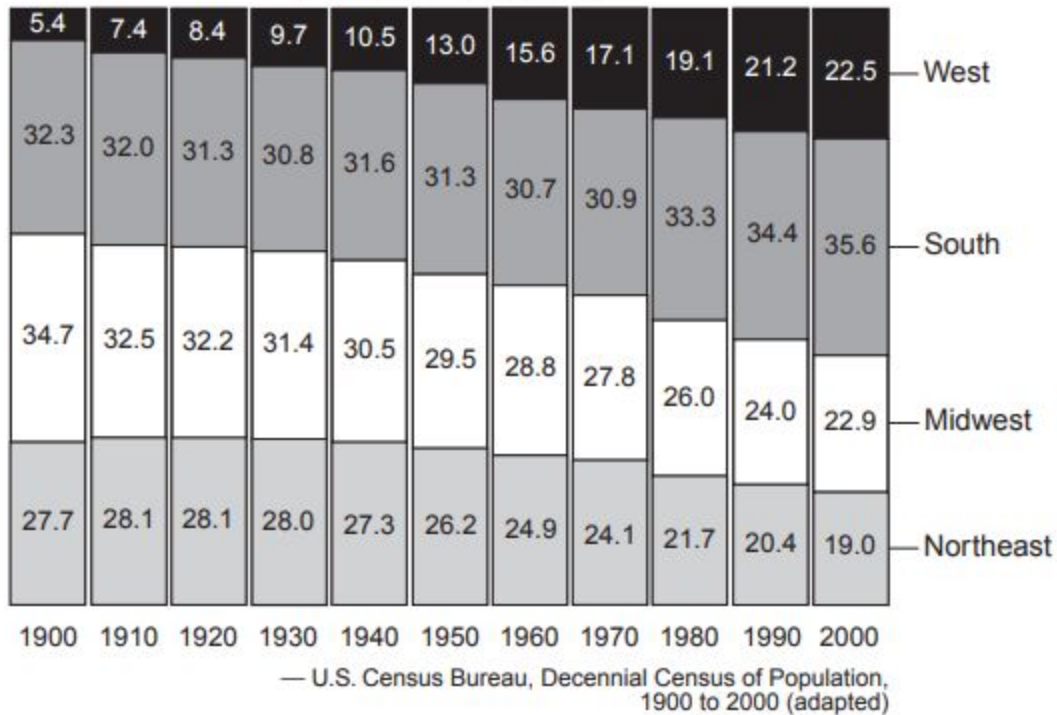
Legend: GNP, Unemployment Rate

Source: *Historical Statistics of the United States*, U.S. Bureau of the Census

Which conclusion about the United States economy during World War II is most clearly supported by the information in the graph?

- A. Organized labor conducted frequent strikes during the war years.
- B. The war led to improved economic conditions.
- C. The Gross National Product (GNP) steadily declined during the war years.
- D. Unemployment increased throughout the war.

United States Population Distribution by Region: 1900 to 2000
(Percent of Population)

Region	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
West	5.4	7.4	8.4	9.7	10.5	13.0	15.6	17.1	19.1	21.2	22.5
South	32.3	32.0	31.3	30.8	31.6	31.3	30.7	30.9	33.3	34.4	35.6
Midwest	34.7	32.5	32.2	31.4	30.5	29.5	28.8	27.8	26.0	24.0	22.9
Northeast	27.7	28.1	28.1	28.0	27.3	26.2	24.9	24.1	21.7	20.4	19.0

— U.S. Census Bureau, Decennial Census of Population, 1900 to 2000 (adapted)

Which statement about population distribution is best supported by the information provided in the graph?

A. Since 1900, the percentage of the population located in the South has steadily declined.

B. Since 1900, the greatest percentage increase in population has occurred in the West.

C. Before 1950, the greatest percentage change in population distribution occurred in the Midwest.

D. Since 1950, the population of the Northeast as a percentage of the nation has remained constant.

The graph below shows data on human population growth.

Human Population Growth from 1650 to 2004
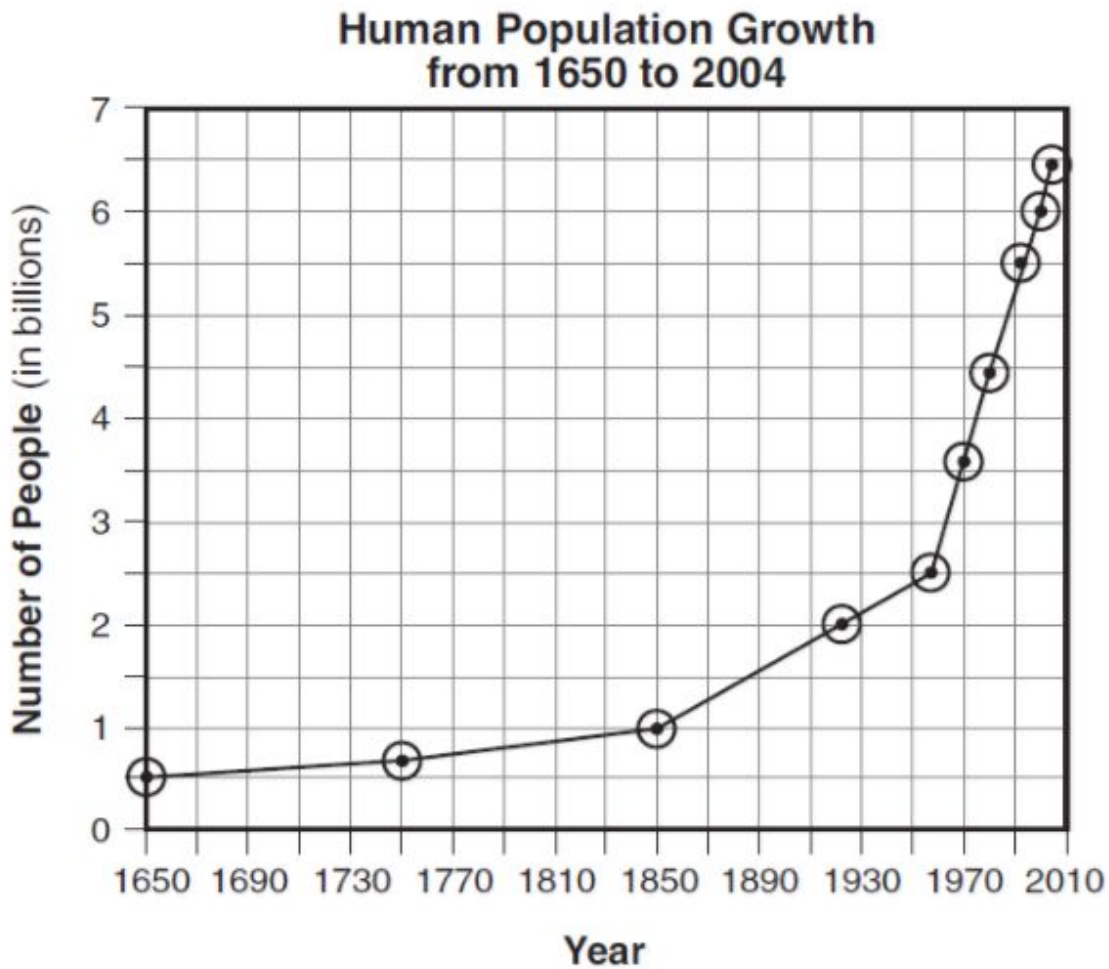
The trend shown on the graph would most likely result in

A. A decreased demand for deforestation

B. An increase in available freshwater

C. A decrease in air pollution

D. An increased demand for land use

Species Extinctions and Human Population Size
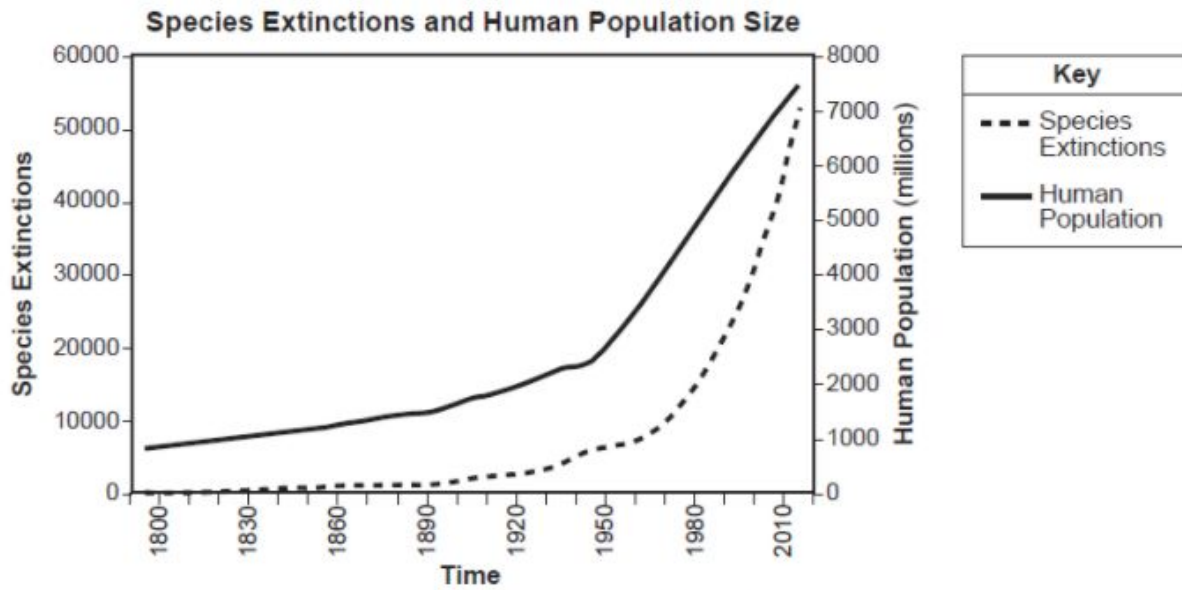
Source: modified from USGS

The graph indicates that the number of species that have become extinct
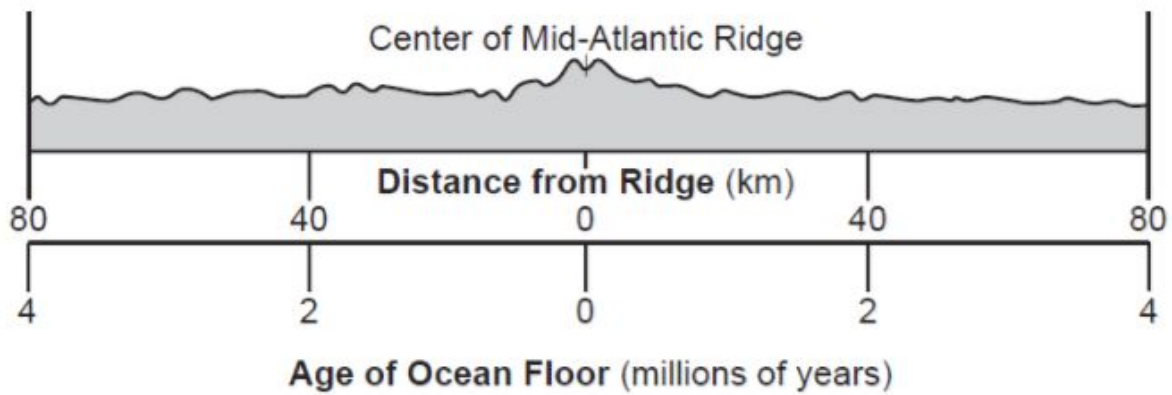   A. Has increased with increasing human population
   B. Has decreased with increasing human population
   C. Is not affected by the size of human population
   D. Is greater than the size of the human population

Below shows the carrying capacities of an ecosystem for three different species 1, 2, and 3, that inhabit an area and the actual population sizes of these three different species in the area.

Carrying Capacities of an Ecosystem
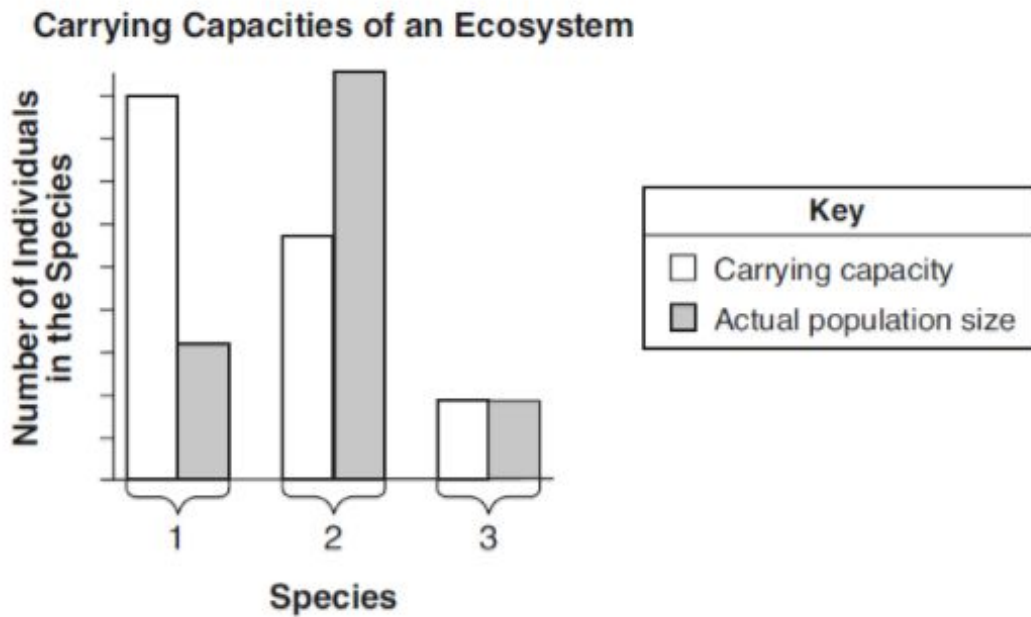
Which of these statements below is the most likely true, based on the graph above?
   A. The competition between members of Species 1 is the highest.
    B. The competition between members of Species 2 is highest.
    C. The competition between members of Species 3 is highest.
    D. The competition would be the same for each species.

Center of Mid-Atlantic Ridge

Distance from Ridge (km)

| 80 | 40 | 0 | 40 | 80 |

| 4 | 2 | 0 | 2 | 4 |

Age of Ocean Floor (millions of years)

According to the cross section, every 1 million years, the ocean floor bedrock moves approximately

A. 20 km toward the Mid-Atlantic Ridge
B. 20 km away from the Mid-Atlantic Ridge
C. 40 km toward the Mid-Atlantic Ridge
D. 40 km away from the Mid-Atlantic Ridge

In a particular ecosystem, squirrels make up a large portion of the diet of coyotes. A fatal disease in the squirrel population begins to reduce their population over a period of months. Which graph best represents the expected changes in population size of the coyotes and the squirrels?
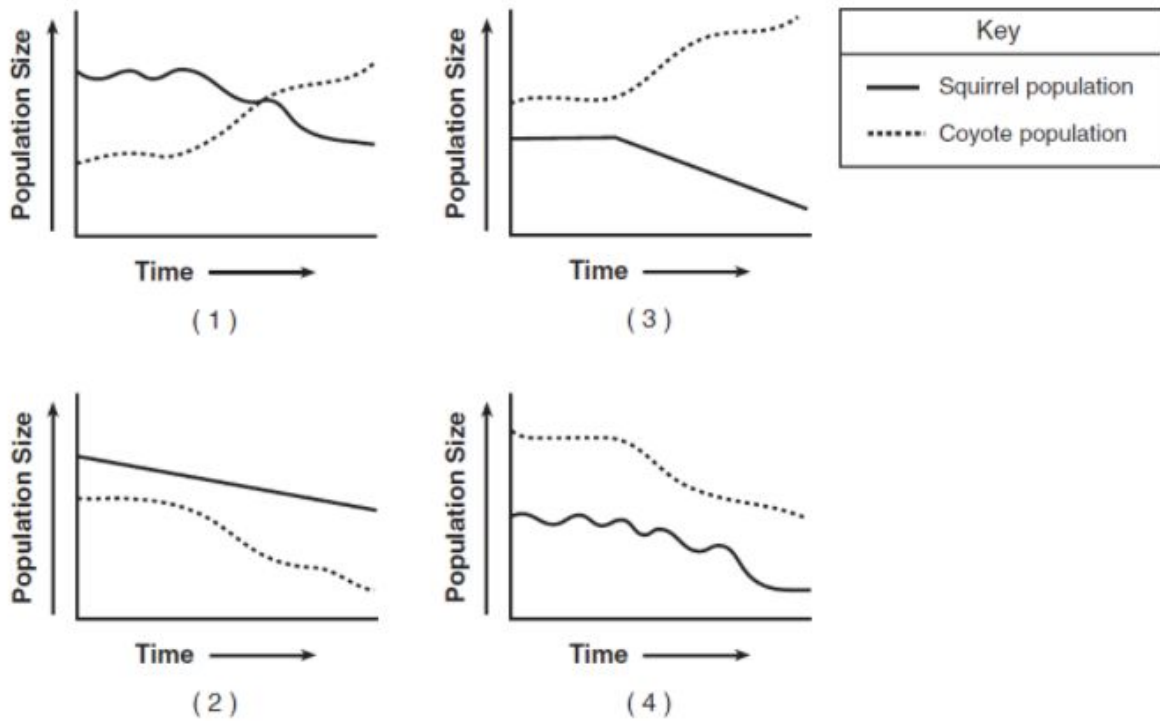
Which graph correctly shows the effect of heat energy on the motion of molecules of matter?

(1)

(2)

(3)

(4)
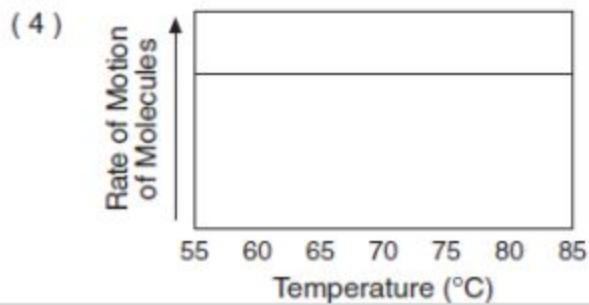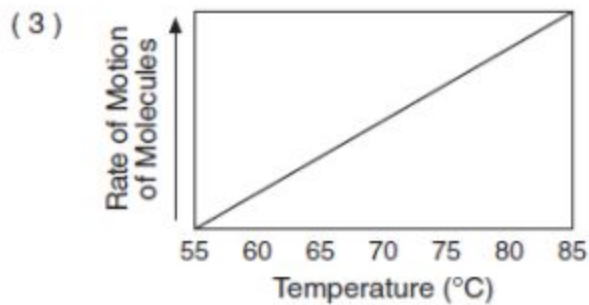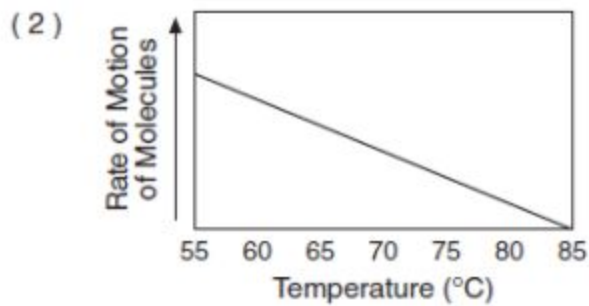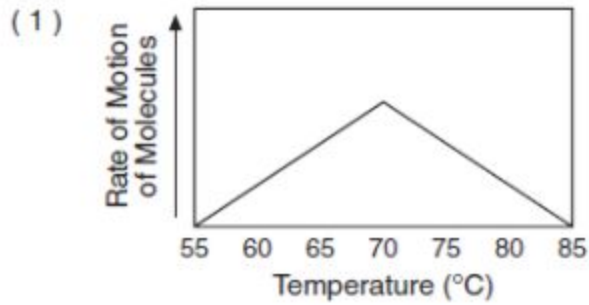
A Punnett square is shown below. The dominant trait is represented by R. The recessive trait is represented by r.

	R	r
R	RR	Rr
r	Rr	rr

What percentage of the offspring will most likely show the dominant trait?

A. 25%
B. 50%
C. 75%
D. 100%

Mother

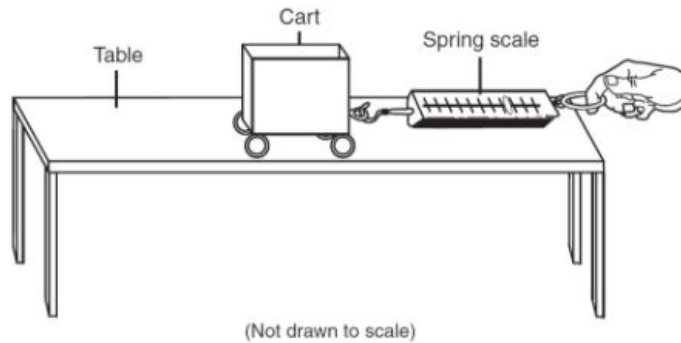|		E	e
Father	E	EE	Ee
	e	Ee	ee

E = unattached earlobes (dominant)
e = attached earlobes (recessive)

According to the information in the Punnett square, what is the likelihood that the child would have attached earlobes?

A. 0%
B. 25%
C. 50%

D.   100%

The diagram below represents a student using a spring scale to pull a toy cart across a level table.

(Not drawn to scale)

The student pulled the cart across the table five times. Each time, the student used more force.

Newton's second law can be represented by the following equation.

$$F = m \times a$$

In the equation, F is the net force in newtons, m is the mass of the object in kilograms, and a is the acceleration of the object in meters per second squared.

Force is measured on the spring scale. The student then calculated the acceleration of the cart, measured in meters per second (m/s^2). The results are shown in the data table below.

Data Table

Force (N)	Cart Acceleration (m/s²)
3.0	1.5
3.6	1.8
4.2	2.1
4.8	2.4
5.4	2.7

Determine the mass of the cart.

    A. 1 kg
    B. 2 kg
    C. 3 kg
    D. 4 kg

What force would cause the cart to accelerate at 6 m/s²?

    A. 2 N
    B. 4 N
    C. 8 N
    D. 12 N

Math instruction should include graphs and charts in a science or historical context. When possible, math teachers should confer with reading/writing teachers to look for opportunities to integrate math into other disciplines, especially through the use of data, charts, and graphs. See the CUNY Data and Graph Collection for engaging data sets and ideas on how to use them in the classroom.

http://www.collectedny.org/frameworkposts/cuny-graph-collection/

CollectEdNY

resources for New York State educators preparing adult students for high scho

Resource Reviews   CUNY HSE Framework Posts   Career Posts   MathMemos   NYSED Teacher Le

CUNY Data, Graph and Map Collection

Click for resource → url

Subjects: Math, Reading Graphs, Science, Social Studies, Statistics and Probability, Warm-ups
Tags: graphs

Charts, graphs and maps are great opportunities for building student background knowledge while simultaneously developing their ability to read graphs. Having students make observations and inferences with data will help them on the TABE, HSE exam, as well as be able to be more informed and discerning consumers of data in our world.

In the CUNY Data, Graphing and Map Collection, teachers can find a wealth of charts, graphs and maps in categories like:

- The Criminal Justice System
- Demographics
- Economics
- Education
- Health
- Historical Data, Graphs, and Maps
- Graph Sequences
- Population Density Maps, US
- Science and Nature
- Transportation
- Voting and Politics
- War
- Miscellaneous

The collection is continually growing, with new graphs and charts being added all the time.

Teachers will also find some ideas for how to use open-ended prompts with graphs in the CUNY HSE Math Curriculum Framework.