

Data Analysis

Lesson one

Terminal Objective

Students will identify claims based on statistical data involving the Port of Long Beach and then analyze and evaluate the validity of the claims by answering multiple choice questions.

Content Standard Reference:

Grade 6 Number Sense

6.2.5: Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims.

Materials

Data Analysis PowerPoint

Time Required

1 class



Introduction of Lesson

Anticipatory Set

In an effort to help reduce pollution, the Port of Long Beach collects data on the environment at the Port. These statistics are used to analyze and prepare for future anti-pollution efforts.

Student Objective

Students will learn how to answer questions about bar, circle, and line graphs using Port of Long Beach graphs.

Purpose

The ability to interpret graphs is critical to understanding the Port of Long Beach’s economic impacts and environmental efforts.

Lesson

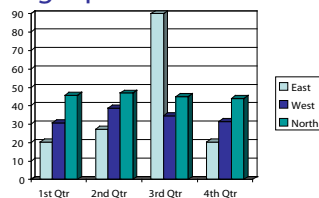
Keyword

1. **Statistics** - the organization and analysis of data

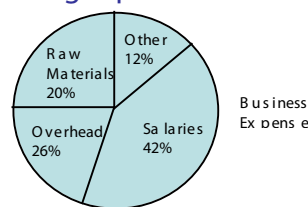
Input

Statistics is the organization and analysis of data. The data can be stored in charts and displayed in different ways. These charts include bar graphs, circle graphs and line graphs.

bar graph:

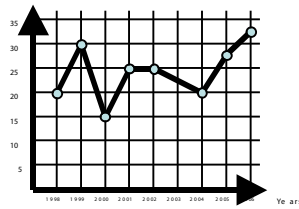


circle graph:



Lesson cont'd

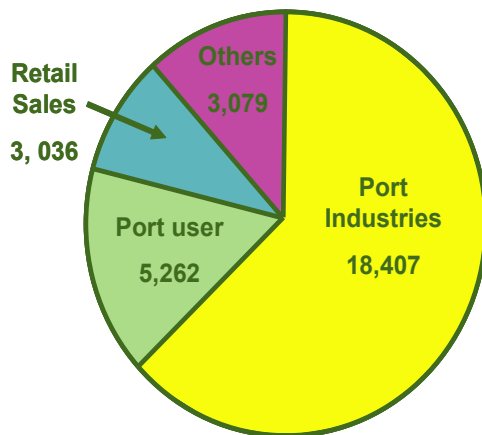
line graph:



Modeling

Studying graphs like these can be useful in estimating the Port of Long Beach's economic impacts. One of the ways the Port benefits the economy for the city of Long Beach is by providing jobs, both full- and part-time employment. The Port supports nearly 30,000 jobs, or roughly one out of eight in the city.

According to the circle graph shown...



...approximately how many jobs in the Port are due to retail sales and port industries?

- A 3,036 B 18,407
C 21,443 D 29,784

Input

Steps to analyze graphs:

- Look over the graph
- Carefully read the question
- Read each choice
- Eliminate possible wrong answers
- Decide on a strategy

Lesson cont'd

Modeling

Approximately how many jobs in the Port are due to retail sales and port industries?

- A 3,036 B 18,407
 C 21,443 D 29,784

Eliminate 3,036 and 18,407.

Add retail sales and port industries together.

$$3,036 + 18,407 = 21,443$$

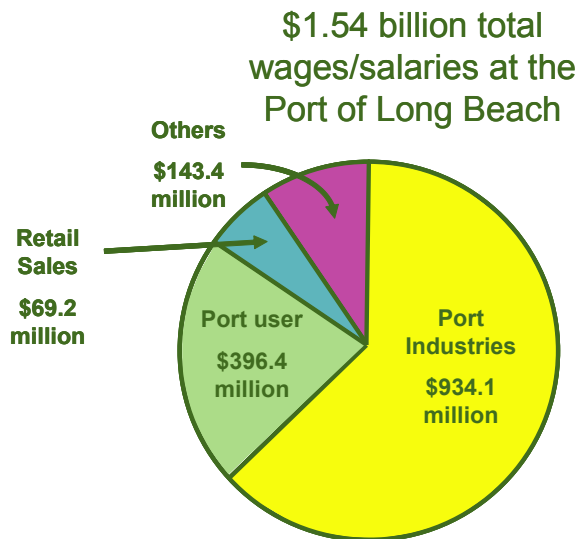
Answer: C

Check for Understanding

Have students explain to their neighbors:
 Why is C the best answer for this question?

Guided Practice

According to the circle graph below, which of the following conclusions is true?



- A Port industries created less than half of the wages/salaries at the Port.
 B Port users created more wages/salaries than the retail sales and others combined.

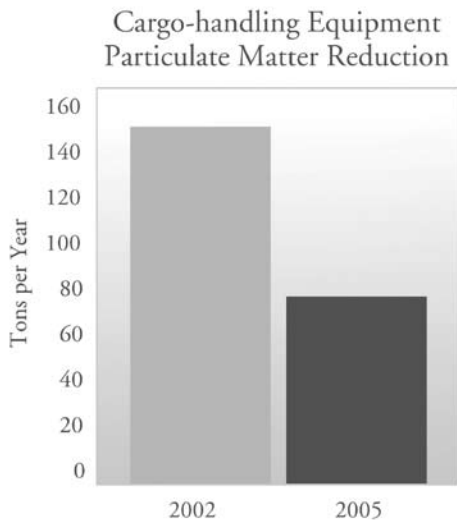
Lesson cont'd

- C More wages/salaries came from others than Port users.
- D The Port's wages/salaries totaled in the millions of dollars.

(Correct answer: B)

Modeling

The Port's pollution control measures have been instrumental in reducing emissions from cargo-handling equipment.



Based on the bar graph above, which of the following conclusions is true?

- A Particulate matter pollution decreased by less than 50 tons from 2002 to 2005.
- B In 2002, 140 tons of particulate matter pollution were emitted by cargo handling equipment.
- C Particulate matter pollution decreased by more than 50% from 2002 to 2005.
- D The region's particulate matter pollution is increasing.

(Correct answer: C)

Lesson cont'd

Check for Understanding

Is the following statement true or false?

When answering multiple choice questions about a graph, one needs to eliminate answers before thoroughly reading the question.

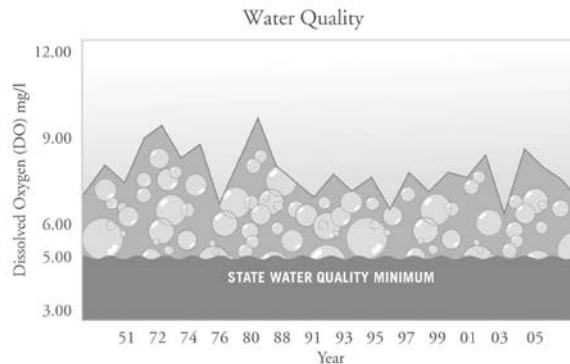
False - you should start by reading the question/ statement

Guided Practice

For questions 1 - 4:

- Answer each of the following questions in your notes.
- When prompted, check your answers with your neighbor.
- Be prepared to explain your answers to the class.

1) Which of the following statements are true?
(there may be more than one)

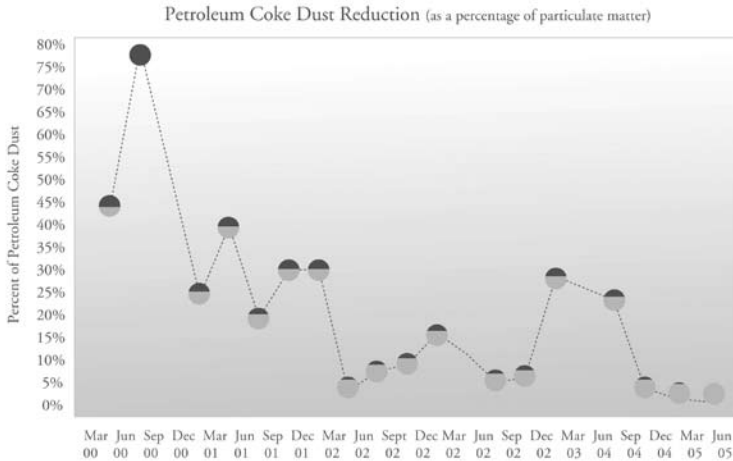


- A Dissolved oxygen concentration decreased between 1976 and 1980.
- B Harbor water quality dropped below the state minimum in 2003.
- C The line graph indicates water quality being consistently above state minimum standards.
- D 1974 and 2005 had approximately the same oxygen concentration.

(Correct answers - C & D)

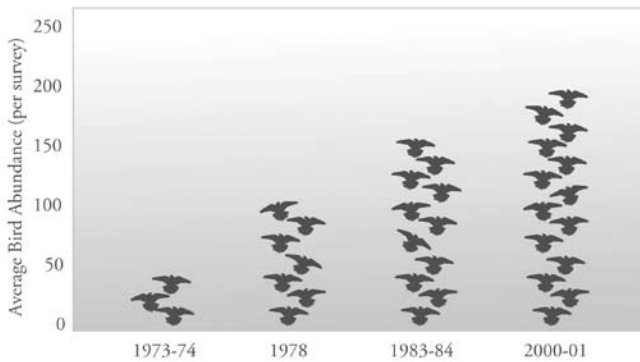
Lesson cont'd

2) Which time period had the greatest reduction of airborne dust?



- A Jan 00 to Dec 00
 - B Dec 01 to Mar 02
 - C Jan 04 to Sep 04
 - D Sept 02 to Dec 02
- (Correct answer - A)

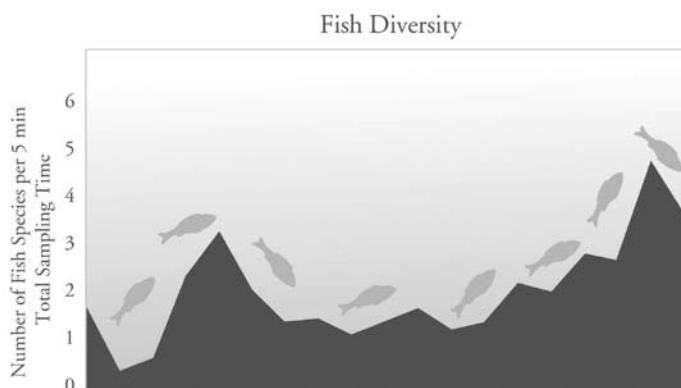
3) The Port monitors protected species of birds, including peregrine falcons, least terns, and black-crowned night herons, that could be affected by their projects.



True or False: The average number of birds at the harbor has more than doubled since the 1970s.
(Correct answer - True)

4) In an effort to restore aquatic ecosystems, the Port monitors the number and diversity of fish species in the Long Beach harbor. Using the graph below, which statement is true?

Lesson cont'd



- A Fish diversity has generally decreased from 1997 to 2004.
- B The number of fish species increased from 1980 to 1985.
- C There were 3 fish species observed per 5 minutes sampling time in 1993.
- D There were 5 fish species observed per 5 minutes sampling time in 2004.

(Correct answer - D)

Closure

Tell students:

In your notes, write a summary of how to read a graph and answer questions about it.

Exchange papers with your neighbor.

Add any statement to your summary that will help you to remember today's lesson.