Important Concepts . . .

Preview Review

Mathematics Grade 8

W2 - Lesson 4: Critiquing the Representation of Data

Important Concepts of Grade 8 Mathematics

W1 - Lesson 1 .....Perfect Squares and Square Roots
W1 - Lesson 2 ..... Working with Ratios and Rates
W1 - Lesson 3 ..... Multiplying and Dividing Fractions
W1 - Lesson 4 ..... Multiplying and Dividing Integers
W1 - Lesson 5 ..... Working with Percents
W1 - Review
W1 - Quiz

W2 - Lesson 1 ..... Modelling and Solving Linear Equations Using Algebra Tiles
W2 - Lesson 2 .....Solving Linear Equations
W2 - Lesson 3 .....Graphing and Analyzing Linear Relations
W2 - Lesson 4 ..... Critiquing the Representation of Data
W2 - Lesson 5 ..... Probability of Independent Events
W2 - Review
W2 - Quiz

W3 - Lesson 1 ..... Pythagorean Theorem
W3 - Lesson 2 .....Calculating Surface Area
W3 - Lesson 3 .....Calculating Volume
W3 - Lesson 4 .....Drawing 3-D Objects
W3 - Lesson 5 .....Congruence of Polygons
W3 - Review
W3 - Quiz

Materials Required

Protractor
Ruler
Calculator

No Textbook Required

This is a stand-alone course.

Mathematics Grade 8
Version 6
Preview/Review W2 - Lesson 4
ISBN 1-891894-00-6

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Preview/Review Concepts for Grade Eight Mathematics

W2 – Lesson 4:

Critiquing the Representation of Data

OBJECTIVES

By the end of this lesson, you will be able to:

- Identify the advantages and disadvantages of different graphs, including circle graphs, line graphs, bar graphs and pictographs
- Justify the choice of a graphical representation for a given situation
- Explain how the format of a given graph, such as the size of the intervals, the width of the bars and the visual representation, may lead to misinterpretation of the data.
- Explain how a given formatting choice could misrepresent the data.

W2 – Lesson 4: Critiquing the Representation of Data

Materials required:

- Paper, Pencil, and Grid paper

Part 1: Choosing the best graph to represent data

Data can be displayed using a bar graph, line graph, pictograph, or a circle graph.

Determining which type of graph to use to display your data is important because you want the data being represented in the graph to be interpreted correctly.

The intention of the graph could be misinterpreted if the data is misrepresented.

Type of graph	Advantages	Disadvantages
Bar Graph	• Lengths of bars compare data values • Scale can be used to find the total • Easy to draw	• May be difficult to read based on scale used • Does not show percents of the total for comparison
Line Graph	• Easy to draw and read • Shows data changes over time • Can be used to estimate values between and beyond data points	• Does not show parts of a whole • A zig-zag pattern can be difficult to interpret
Pictograph	• Lengths of symbols compare data values • Looks great • Key can be used to find the total	• A large number of symbols make it difficult to read • Does not show parts of a whole • Difficult to draw
Circle Graph	• Shows parts of a whole, • Shows percents of a total • Compares part of the whole to one another	• Does not show data values and the total • Difficult to draw accurately

Example 1

Meghna wants to plant the fastest growing flowers in her garden. She chooses seeds from four different flower companies. She wants to do this experiment over a two-week period. What type of graph should she use to display her collected data?

Since Meghna wants to compare the growth of four different types of seeds over a period of time, she should use a line graph.

Practice Questions

Determine which type of graph would be the best to use to display the given information.

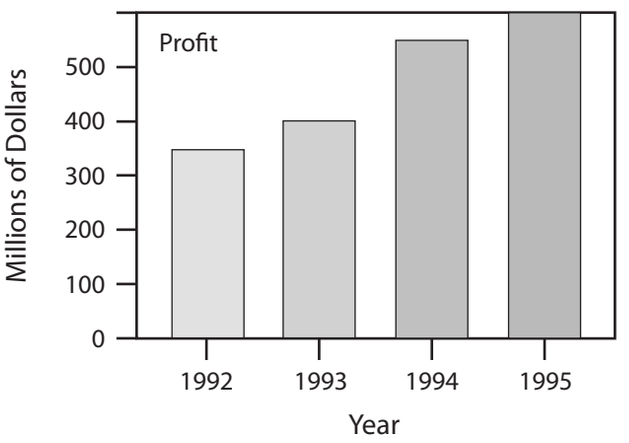
1. The monthly budget for the Chung family.

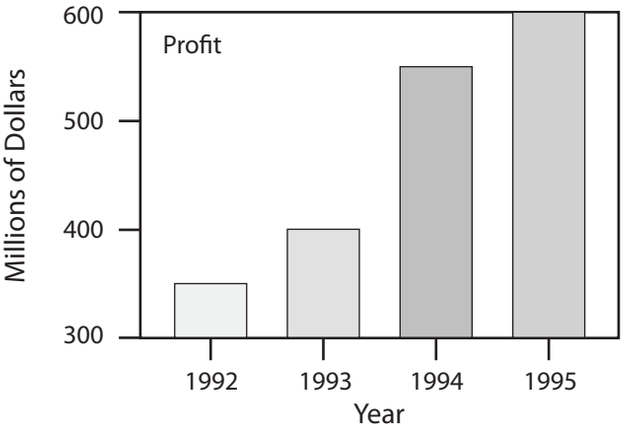
2. The temperature change over the month of September.

3. The different number of vehicles sold in a given year by a car dealership.

Part 2: Displaying Data

When displaying data, consistency is vital to ensure data is not misinterpreted or misrepresented. Make sure the bars are the same width in a bar graph, the scales are consistent along both axes, and the origin always starts at zero.





In the first bar graph, the width of the bars is the same size, the scales are consistent, and the origin starts at zero. The data presented here is presented correctly.

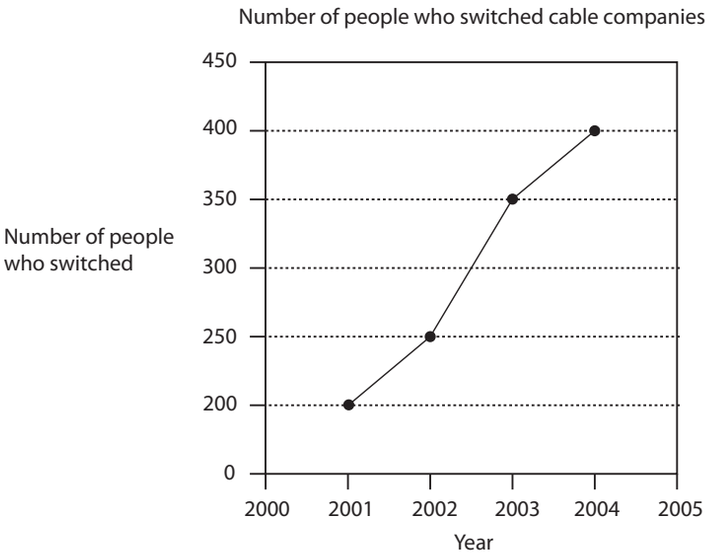
In the second graph, the width of the bars is the same size, however, the origin starts at 300 not 0, and the scales are inconsistent.

In the second graph, it looks like there was a huge increase in profits from 1993 to 1994. Compared to the first graph the increase in profits is highly exaggerated. This is an example of how the data is not incorrect or misleading; it is the way the data is represented that is misleading.

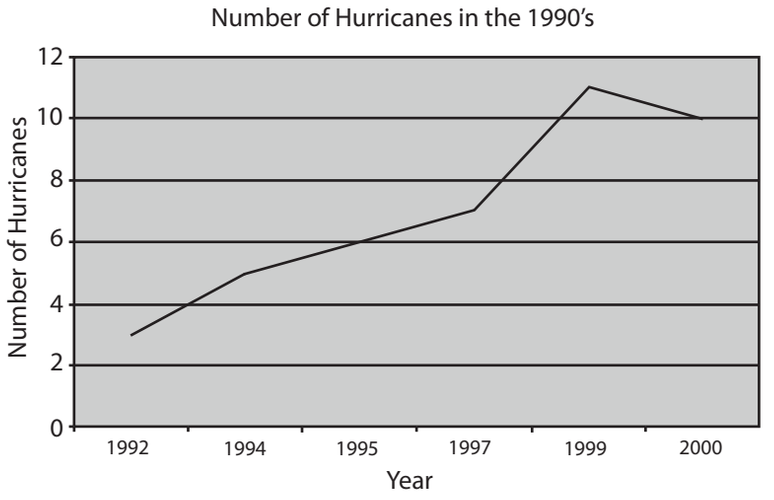
Practice Questions

Determine how the data is being misrepresented in the following graphs.

1.



2.



Lesson 9: Assignment

Determine the best graph to use for each of the following situations.

1. Measuring how far Sharah runs over a 7-day period

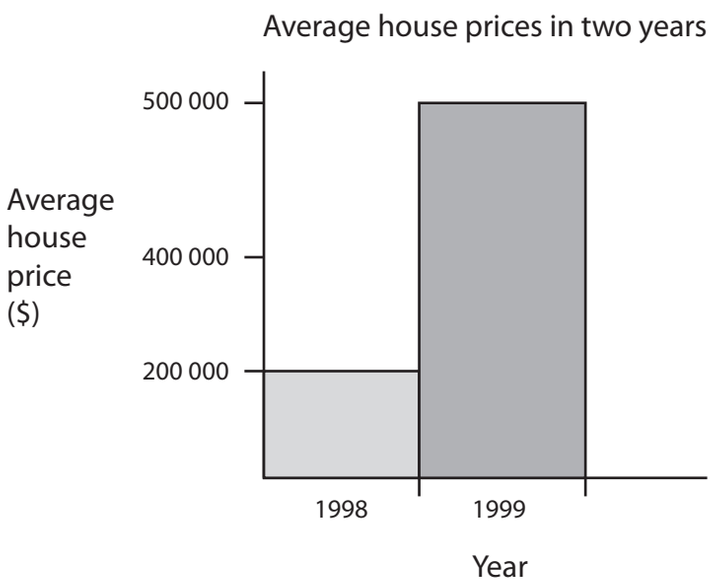
2. Illustrating the percentage of roses, daisies, marigolds, and lilies in a garden

3. Determining how many people enjoyed a particular movie on a scale of 1-5

4. Measuring the amount of sunlight hours on a given day in August

Determine how the given graphs are misrepresenting the data.

5.



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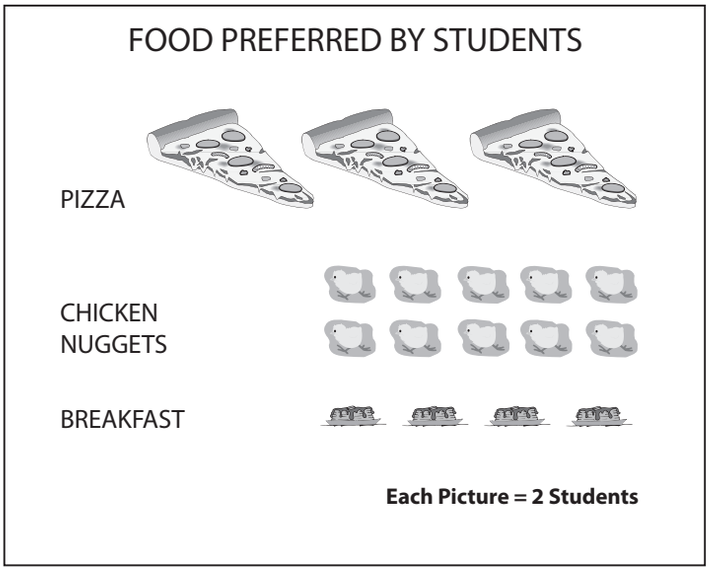
FOOD PREFERRED BY STUDENTS
PIZZA
CHICKEN NUGGETS
BREAKFAST
Each Picture = 2 Students

LEARNING
ANYTIME ANYWHERE