

11.5 Data Display

Bellwork

A bag contains 6 red marbles, 10 blue marbles and 8 yellow marbles. Find each probability.

1. P(red or yellow) $\frac{6}{24} + \frac{8}{24} = \frac{14}{24} = \frac{7}{12}$

2. P(red, then blue, then yellow) $\frac{6}{24} \cdot \frac{10}{24} \cdot \frac{8}{24} = \frac{5}{144}$
 with replacing

3. P(yellow or blue, without replacement)

$\frac{18}{36} \cdot \frac{10}{35} = \frac{5}{36}$
 and

Cumulative Warm Up

Types of Data

Qualitative Data (aka categorical data): data separated into different categories

(i.e. types of flowers)

Quantitative Data: numbers that represent counts or measurements

(i.e. heights of basketball players)

Tell whether the data are *qualitative* or *quantitative*.

a. prices of used cars at a dealership

Quantitative

b. jersey numbers on a basketball team

Quantitative

c. lengths of songs played at a concert

Quantitative

d. zodiac signs of students in your class

Qualitative

Example 1

Tell whether the data are *qualitative* or *quantitative*. Explain your reasoning.

1. telephone numbers in a directory

Quantitative

telephone #'s represents counts

2. ages of patients at a hospital

Quantitative

ages is a measurement

3. lengths of videos on a website

Quantitative

length is a measurement

4. types of flowers at a florist

Qualitative, it's sorted into types of flowers

Monitoring Progress 1-4

Analyze the data and then create a display that best represents the data. Explain your reasoning.

a.

Eye Color Survey	
Color	Number of students
brown	63
blue	37
hazel	25
green	10

b.

Speeds of Vehicles (mi/h)			
Interstate A		Interstate B	
65	67	67	72
68	71	70	78
72	70	65	71
68	65	71	80
65	68	84	81
75	82	77	79
68	59	69	70
62	68	66	69
75	80	73	75
77	75	84	79

SOLUTION

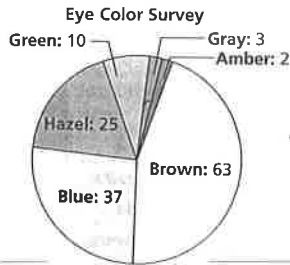
a. A circle graph is one appropriate way to display this qualitative data. It shows data as parts of a whole.

Step 1 Find the angle measure for each section of the circle graph by multiplying the fraction of students who have each eye color by 360° . Notice that there are $63 + 37 + 25 + 10 + 3 + 2 = 140$ students in the survey.

Brown: $\frac{63}{140} \cdot 360^\circ \approx 162^\circ$ Blue: $\frac{37}{140} \cdot 360^\circ \approx 95^\circ$ Hazel: $\frac{25}{140} \cdot 360^\circ \approx 64^\circ$

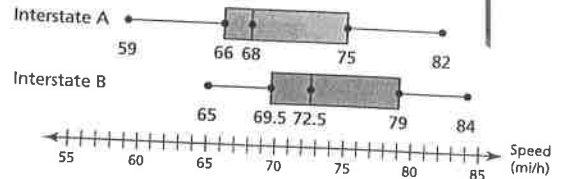
Green: $\frac{10}{140} \cdot 360^\circ \approx 26^\circ$ Gray: $\frac{3}{140} \cdot 360^\circ \approx 8^\circ$ Amber: $\frac{2}{140} \cdot 360^\circ \approx 5^\circ$

Step 2 Use a protractor to draw the angle measures found in Step 1 on a circle. Then label each section and title the circle graph, as shown.

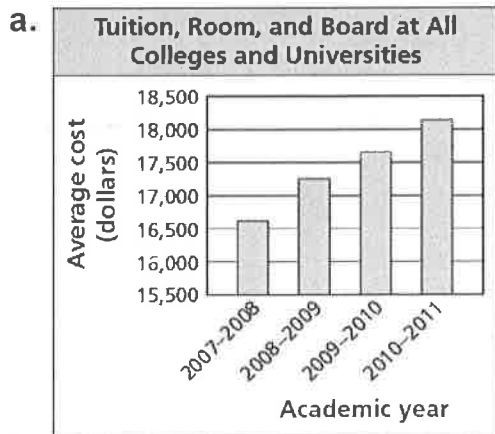


Exempl

b. A double box-and-whisker plot is one appropriate way to display this quantitative data. Use the five-number summary of each data set to create a double box-and-whisker plot.



Describe how each graph is misleading. Then explain how someone might misinterpret the graph.



a.) Vertical axis starts @ 15,500 instead of 0. Makes it appear that the avg. cost increased rapidly for the yrs. given.



b.) Vertical axis scale not equal increments. Someone might think the greatest increase was from 2011-2012, but it was from 2009-2010.

Example 3

Homework

11.5 Pg. 621 #3 - 8, 13, 21 - 24

Closure

Name:

Date:

Hour:

Algebra 1
WS PC #2 Unit 5 Review

Theoretical and Experimental Probability

1. A cooler contains 18 cans: 9 of lemonade, 3 of iced tea, and 6 of cola. Dee selects a can without looking. What is the probability that Dee selects iced tea?

$$\frac{3}{18} = \frac{1}{6}$$

2. A number cube is rolled 50 times, and a 2 is rolled 12 times. Find the experimental probability of not rolling a 2.

$$1 - \frac{12}{50} = \frac{38}{50} = \frac{19}{25}$$

3. There are 13 green marbles, 8 red marbles, and 12 white marbles in a bag. What is the probability of not selecting a green marble?

$$1 - P(G) = 1 - \frac{13}{33} = \frac{20}{33}$$

Independent and Dependent Events

4. A bag contains 25 checkers – 15 red and 10 black. Find the probability.
- a. selecting a red checker, without replacement

$$\frac{15}{25} = \frac{3}{5}$$

- b. selecting a red checker, with replacement

$$\frac{15}{25} = \frac{3}{5}$$

5. You have a standard deck of 52 cards. Find the probability.
- a. A nine, then a face card, then an ace is drawn, with replacement

$$\frac{1}{13} \cdot \frac{4}{52} \cdot \frac{3}{52} = \frac{4}{2197}$$

- b. A red, then an eight is drawn, without replacement

$$\frac{26}{52} \cdot \frac{4}{51} = \frac{2}{51}$$

- c. A diamond, then a seven is drawn, without replacement

$$\frac{13}{52} \cdot \frac{4}{51} = \frac{1}{51}$$

Compound Events

1 2 3 4 5 6 7 8

6. Find each probability.

a. Rolling a 5 or an odd number on a numbered cube

$$\frac{1}{8} + \frac{4}{8} - \frac{1}{8} = \frac{1}{2}$$

b. Lincoln High School has 98 teachers. Of the 42 female teachers, 8 teach math. One-seventh of all the teachers teach math. What is the probability that a teacher is a man or does not teach math?

$$P(\text{male}) + P(\text{non math}) - P(\text{male not math})$$

$$\frac{56}{98} + \frac{84}{98} - \frac{50}{98} = \frac{90}{98} = \frac{45}{49}$$

	Female	Male	T
Math	8	6	14
NonM	34	50	84
T	42	56	98

c. A card is drawn from a deck of 52. What is the probability that the card is a heart or a 6?

$$P(\heartsuit) + P(6) - P(6 \heartsuit)$$

$$\frac{13}{52} + \frac{4}{52} - \frac{1}{52} = \frac{16}{52} = \frac{4}{13}$$

Data Display

Determine if each data set is quantitative or qualitative.

7. Heights of plants in an experiment

Quantitative

8. License plates of cars on the road

Qualitative

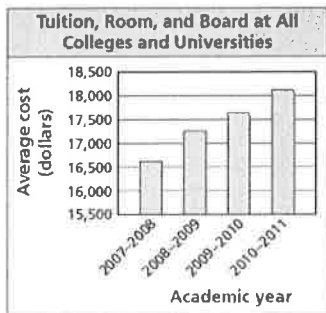
9. Types of flowers in a bouquet

Qualitative

10. Number of hours worked each week

Quantitative

11. Describe how each graph is misleading.



Vertical axis starts @ 15,500 instead of 0.



Vertical axis scale NOT equal increments.