Looking Ahead

Relative frequencies are often given as decimal numbers, converted from fractions.

Example Preview

Calculate the relative frequency for each class in the frequency distribution.

Solution

We first find the sample size by summing the class frequencies.

$$\begin{aligned} n &= \sum f_i \\ &= 2+5+4+5+4 \\ &= 20 \end{aligned}$$

Then divide each class frequency by 20.

3-D TV Prices with Relative Frequencies

Class	Frequency	Relative Frequency, f_i	
\$1500 – \$1599	2	$\frac{2}{20}=\frac{1}{10}=0.1=10\%$	Each fraction is converted to a decimal number.
\$1600 – \$1699	5	$\frac{5}{20}=\frac{1}{4}=0.25=25\%$	
\$1700 – \$1799	4	$\frac{4}{20}=\frac{1}{5}=0.2=20\%$	
\$1800 – \$1899	5	$\frac{5}{20}=\frac{1}{4}=0.25=25\%$	
\$1900 – \$1999	4	$\frac{4}{20}=\frac{1}{5}=0.2=20\%$	

2.R.2 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. When a terminating decimal number is changed to a fraction, the denominator will be the power of 10 that names the rightmost digit of the decimal number.

2. When a terminating decimal number is changed to a fraction, the numerator can be determined by using the whole number that is formed by all the digits of the decimal number.

3. Fractions can always be converted to decimal form without losing accuracy.

4. In decimal form, $\frac{1}{3}$ is repeating and nonterminating.

Practice

Change each decimal number to a fraction or mixed number in lowest terms.

5. 0.18

6. 2.75

Change each fraction to a decimal number rounded to the nearest hundredth.

7. $\frac{20}{3}$

8. $\frac{40}{9}$

Simplify the expression by first writing all of the numbers in decimal form. Round to the nearest hundredth, if necessary.

9. $\frac{1}{4} + 0.25 + \frac{1}{5}$

10. Arrange the following data in order from smallest to largest. $0.76, \frac{3}{4}, \frac{7}{10}$

Applications

Solve.

11. ***Rectangles:*** A rectangle measures 6.4 inches in length, and has a width that measures $\frac{2}{5}$ of the length. Find the perimeter of the rectangle.

12. ***Groceries:*** A loaf of bread weighs 21.6 ounces. Mauricio cut off a third of the loaf to save for later and then cut the remaining portion into 16 equal slices. What was the weight of each slice of the 16 slices he cut?

13. ***Statistical Survey:*** A student mailed a survey to 132 people and $\frac{1}{4}$ of those surveyed did not respond. How many respondents were there?

14. ***Advertising:*** An ad states that 9 out of 10 dentists would recommend Freshbright toothpaste. Marge wants to know how many dentists she can expect to recommend Freshbright if she surveys 150 dentists. To answer Marge's question compute $\frac{9}{10}$ of the total number of dentists surveyed, 150.

Writing & Thinking

15. Describe the process used to change a terminating decimal number to a fraction.

16. List 2 different ways to solve this problem: $\frac{1}{2} + 3.67 - \frac{1}{8}$. State which method you prefer and why.