LESSON 8.6

Percents, Decimals, and Fractions

Goal: Write fractions and decimals as percents.

EXAMPLE 1 **Writing Fractions as Percents**

Restaurants A waitress has been keeping track of the number of items she has sold. She recorded that six of the last ten potato orders were for French fries, and eighteen of the last twenty-five beverage orders were for soft drinks. What percent of the last ten potato orders were for French fries and what percent of the last twenty-five beverage orders were for soft drinks?

Solution

To answer the questions, first write each record as a fraction. Then write an equivalent fraction with a denominator of 100 to find the percent.

a. $\frac{6}{10}$ ← French fry orders / Total potato orders

6×10

$\frac{6}{10} = \frac{60}{100}$

10×10

$\frac{60}{100} = 60\%$

Answer: sixty percent of the orders were for French fries.

b. $\frac{18}{25}$ ← Soft drink orders / Total beverage orders

18×4

$\frac{18}{25} = \frac{72}{100}$

25×4

$\frac{72}{100} = 72\%$

Answer: seventy-two percent of the orders were for soft drinks.

Your turn now Write the fraction as a percent.

1. $\frac{1}{4} \cdot \frac{25}{25} = \frac{25}{100}$	2. $\frac{9}{10} \cdot \frac{10}{10} = \frac{90}{100}$	3. $\frac{11}{20} \cdot \frac{5}{5} = \frac{55}{100}$	4. $\frac{7}{50} \cdot \frac{2}{2} = \frac{14}{100}$
25%	90%	55%	14%

EXAMPLE 2 **Writing Decimals as Percents**

Write the decimal as a percent.

a. $0.08 = \frac{8}{100} = 8\%$ — 0.08 is eight hundredths

b. $0.8 = \frac{8 \cdot 10}{10 \cdot 10} = \frac{80}{100} = 80\%$ — 0.8 is eight tenths

multiply the numerator and denominator by 10 to get a denominator of 100.

c. $0.075 = \frac{75}{1000} = \frac{7.5}{100} = 7.5\%$ — 0.075 is seventy-five thousandths

divide the numerator and denominator by 10 to get a denominator of 100.

Remember that you can divide by 10 by moving the decimal point 1 place to the left.

① write the decimal as a fraction
② get a denominator of 100
③ write the %.

tenths → ten.
hundredths → hundred
thousandths → 1,000

75 ÷ 10

EXAMPLE 3 Using Decimals to Write Percents

Defective Parts The machine used to manufacture a plastic part occasionally needs to be adjusted. The machine is adjusted when 3% of the parts made contain some kind of defect. During a recent run, 125 parts were made and only 3 were defective. Does the machine need to be adjusted?

Solution

Use decimals to write fractions as percents when you cannot easily write the equivalent form of the fraction with a denominator of 100.

$\frac{3}{125} = 0.024$ Divide 3 by 125 to write the fraction as a decimal.

$= \frac{\square}{\square}$ $\square$ is $\square$.

$= \frac{\square}{\square}$ $\square$ the numerator and denominator by $\square$ to get a denominator of $\square$.

$= 2.4\%$

Answer: Because 2.4 % < 3%, the machine doesn't need to be adjusted.

Decimal → %
* move decimal 2 places to the right

0.75 → 75%

Your turn now Write the decimal or fraction as a percent.

5. 0.9	6. 0.108	7. $\frac{5}{8}$	8. $\frac{17}{40}$
$\frac{9 \cdot 10}{10 \cdot 10} = \frac{90}{100}$ 90%	10.8%	0.625 62.5%	0.425 42.5%

Common Percents, Decimals, and Fractions

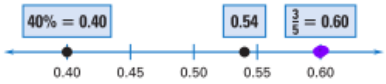
Fifths	Fourths	Thirds
$20\% = 0.2 = \frac{\square}{\square}$	$\square\% = 0.25 = \frac{1}{4}$	$33\frac{1}{3}\% = 0.\overline{3} = \frac{\square}{\square}$
$\square\% = 0.4 = \frac{2}{5}$	$50\% = 0.5 = \frac{\square}{\square}$	$66\frac{2}{3}\% = \square = \frac{2}{3}$
$60\% = \square = \frac{3}{5}$	$75\% = \square = \frac{3}{4}$	
$80\% = 0.8 = \frac{\square}{\square}$		

EXAMPLE 4 **Using Common Relationships** write all as decimals

0.6

Order the numbers $\frac{3}{5}$, 40%, and 0.54 from least to greatest.

Write the number as decimals and graph them on a number line.



~~0.4~~
~~0.54~~
0.6

Answer: An ordered list of the numbers is 40%, 0.54, and $\frac{3}{5}$.

0.40%

0.4