6.1 Understanding Percent

Percents are commonly used in our daily lives. Here are some examples:

- 56% of the students at Shasta College are female.
- The recommended daily intake of fat is 20% of total calories.
- The sales tax rate in Red Bluff is 7.5%.

Formally, a ***percent*** is a portion of a hundred, denoted %.

Note that "*cent*um" is Latin for hundred, 100 *cent*s equals one dollar, and 100 years equals one *cent*ury. From these facts we can derive that "per*cent*" can be interpreted as "per *cent*", or "per 100". Let's use this meaning of percent to rewrite the statements above:

- 56 of every 100 students at Shasta College are female.
- The recommended daily intake of fat is 20 calories for every 100 calories.
- The sales tax rate in Red Bluff is 7.5 cents for every 100 cents of purchase.

So then percents are actually ratios and we have learned that ratios can be written as fractions. Since fractions can be written as decimals, then percents can also be written as decimals.

Percent	Fraction	Decimal
56%	$\dfrac{56}{100}$	0.56
20%	$\dfrac{20}{100}$	0.20
7.5%	$\dfrac{7.5}{100}$	0.075

In general, to convert a percent to a fraction, write the percent number as a numerator, place a denominator of 100 beneath it, and remove the percent symbol. Depending on the context, it may or may not be necessary to reduce this fraction.

Notice that we can use a shortcut to convert a percent to a decimal as follows:

$$56\% = \frac{56}{100} = 56 \div 100 = 56. \div 100 = 0.56$$

Or more simply: $56\% = 56.\% = 0.56$

Demonstration Problems	*Practice Problems*
Complete each table.	Complete each table.

1. (a)

Percent	Fraction	Decimal
23%		

1. (b)

Percent	Fraction	Decimal
47%		

2. (a)

Percent	Fraction	Decimal
2.3%		

2. (b)

Percent	Fraction	Decimal
4.7%		

3. (a)

Percent	Fraction	Decimal
150%		

3. (b)

Percent	Fraction	Decimal
250%		

Answers: **1. (b)** $\dfrac{47}{100}$, 0.47;　**2. (b)** $\dfrac{4.7}{100}$, 0.047;　**3. (b)** $\dfrac{250}{100}$, 2.5

Demonstration Problems	*Practice Problems*

Complete each table.

4. (a)

Percent	Fraction	Decimal
	$\dfrac{140}{100}$	

Complete each table.

4. (b)

Percent	Fraction	Decimal
	$\dfrac{310}{100}$	

5. (a)

Percent	Fraction	Decimal
	$\dfrac{0.05}{100}$	

5. (b)

Percent	Fraction	Decimal
	$\dfrac{0.02}{100}$	

6. (a)

Percent	Fraction	Decimal
	$\dfrac{80}{100}$	

6. (b)

Percent	Fraction	Decimal
	$\dfrac{30}{100}$	

Answers: **1. (b)** 310%, 3.1;   **2. (b)** 0.02%, 0.0002;   **3. (b)** 30%, 0.3

Demonstration Problems	*Practice Problems*
Complete each table.	Complete each table.
7. (a)	**7. (b)**

7. (a)

Percent	Fraction	Decimal
		0.015

7. (b)

Percent	Fraction	Decimal
		0.024

8. (a)

Percent	Fraction	Decimal
		0.99

8. (b)

Percent	Fraction	Decimal
		0.79

9. (a)

Percent	Fraction	Decimal
		8

9. (b)

Percent	Fraction	Decimal
		1

Answers: **7. (b)** 2.4%, $\dfrac{2.4}{100}$;   **8. (b)** 79%, $\dfrac{79}{100}$;   **9. (b)** 100%, $\dfrac{100}{100}$