

Objective

Calculating Tips, Commissions, and Simple Interest

Warm-Up



Express each percent as a decimal and as a fraction.

1. 47%

Sample worked out

Percent to decimal

Percent to Fraction



$47\% \rightarrow 47\%$
 Move the decimal place
 ONLY 2 places
 to the left
 0.47

$47\% \rightarrow \frac{47}{100}$

The % symbol indicated that the denominator is 100

2. 3%

3. 12.5%

4. 0.25%

5. 4.99%

GETTING STARTED

Make Sure to Tip Your Servers

Most restaurant patrons add a tip to the final bill to show their appreciation for the wait staff. Usually, a patron will determine 15% to 20% of the bill, and then add that amount to the total. Many times, patrons will just round off the tip to the nearest dollar.

You can use benchmark percents to estimate the amount of any tip. Common benchmark percents used in calculating tips are 1%, 5%, 10%, and 25%.

WORKED EXAMPLE

One strategy to determine a 20% tip for a restaurant bill that is \$38.95 is to first determine 10% of the total and then double that amount. Ten percent of \$38.95 is \$3.90, or approximately \$4. So, a 20% tip should be about \$8.

For each bill amount, use benchmark percents to estimate a 15% and 20% tip.

	15% Tip	20% Tip
\$89.45		
\$125.00		
\$12.45		



Now that many people own phones with built-in calculators, some calculate the exact tip for their restaurant bill rather than use rounding and benchmark fractions.

Suppose you want to determine the recommended 15% tip on a restaurant bill of \$45.00. You can use a proportion to determine the amount of a tip based on the restaurant total.

1. Use a proportion to determine the amount of a tip based on the restaurant total.

You can also use a percent equation to determine the tip amount on a restaurant bill. A percent equation can be written in the form $\text{percent} \times \text{whole} = \text{part}$, where the percent is often written as a decimal.

WORKED EXAMPLE

		percent	=	$\frac{\text{part}}{\text{whole}}$
percent as decimal	×	whole	=	part
(tip percent)	of	(total bill)	=	amount of the tip
↑		↑		↑
$\frac{15}{100}$ or 0.15	×	45	=	t
		6.75	=	t

2. Analyze the worked example.

a. Describe how the percent equation in the form percent \times whole = part is equivalent to a proportion in the form percent = $\frac{\text{part}}{\text{whole}}$.

b. Explain how the variable is isolated. Then, describe how the tip amount is calculated using the percent equation.

3. Use proportions and percent equations to calculate tips on the given restaurant bills. For each, isolate the variable first. Then, determine the tip amount. Finally, write your answer in a complete sentence.

Bill	Percent	Use a Proportion	Use a Percent Equation
\$63.89	18%		
Sentence			
\$24.40	15%		
Sentence			

4. Describe how the strategies you used to solve the proportions and the percent equations are similar.



Restaurant servers are not the only people provided with tips for a job well done.

Skylar is a hair stylist at a salon. Her clients pay their bills at the front desk but give her cash for her tip. She wondered what her typical tip percent was, so she calculated the tip percent received from each client on a specific day.

WORKED EXAMPLE

Skylar's first client of the day spent \$150 to have her hair dyed and cut, and gave Skylar a \$30 tip.

Use a Proportion

$$\frac{t}{100} = \frac{30}{150}$$
$$t = \frac{(30)(100)}{150}$$
$$t = 20$$

Use a Percent Equation

$$(t)(150) = 30$$
$$150t = 30$$
$$\frac{150t}{150} = \frac{30}{150}$$
$$t = \frac{30}{150}$$
$$t = 0.2$$

1. Explain why Skylar's methods result in different values for t . What percent tip did Skylar receive from her client?

2. Calculate the tip percent for Skylar's next two clients. Use both proportions and percent equations in the table shown. For each problem, isolate the variable first. Then, calculate the answer. Finally, write your answer in a complete sentence.

Bill	Tip Amount	Use a Proportion	Use a Percent Equation
\$80	\$15		
Sentence			
\$80	\$10		
Sentence			

3. Describe the strategies you used to solve each proportion and each percent equation.



Tipping for services is not a universal standard, so some business add an automatic gratuity, or tip, onto every bill. Restaurants frequently add an 18% gratuity when the group includes 8 or more people. Some hotels, resorts, and service providers close to tourist areas often add an automatic 18% gratuity to the bill.

1. The esthetician, manicurist, and massage therapist at the Sun and Sand Resort earn an automatic 18% gratuity on their services. Determine the value of the services each must provide in a day to earn the desired gratuity. Show your work, and then write a sentence to explain your answer.

	Desired Gratuity	Use a Proportion	Use a Percent Equation
Esthetician	\$100		
Sentence			
Manicurist	\$150		
Sentence			
Massage Therapist	\$200		
Sentence			

**LESSON 4.2a**
Perks of Work**Objective****Calculating Tips, Commissions, and Simple Interest**

Practice

1. Joan receives a 4% commission on the merchandise she sells in a department store.
 - a. Write an equation to represent the relationship between the total sales (s) and the commission (c) received.

 - b. How much commission would Joan receive if the merchandise she sold totaled \$139?

 - c. How much would Joan have to sell to earn a commission of \$100?

2. Serena deposits \$1200 into a savings account that earns simple interest. The interest is applied to her account at the end of each year. Complete the table.

Year	Principal Balance	Interest Rate	Interst Earned
1	\$1200	2%	
2	\$1224	2%	
3		3%	