

## Concept: Percent in Business

Name:

### COMPUTER COMPONENT

**Instructions:** In  follow the **Content Menu** path:

**Percent > Percent in Business**



Work through all Sub Lessons of the following Lessons **in order**:

- *In This Topic*
- *Sales Tax*
- *Discount*
- *Commission*
- *Simple Interest*
- *Compound Interest*



As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

### NOTES:

Fill in the blanks for the following formulas.

**Simple Interest:**

$$\text{Amount} = \underline{\text{Principal}} + \underline{\text{Interest}}$$

$$\text{Interest} = \underline{\text{Principal}} \times \underline{\text{Interest}} \times \underline{\text{Time}}$$

When you receive interest on interest, we say that the interest is compounded.

The AMOUNT at the end of one year becomes the new principal for the next year.

**Compound Interest:**

$$\text{Amount} = \underline{\text{Principal}} (1 + \underline{\text{Interest Rate}})^{\text{year}}$$

**OFF COMPUTER EXERCISES**
**Solve the following:**

1. Gabby buys herself a new jean jacket priced at \$59.99. Sales tax in her region is 15%. *How much will she have to pay in total for the jacket?*

$$\begin{aligned} \text{Sales Tax} & 0.15 \times \$59.95 = \$9.00 \\ \text{Total Cost} & \$59.95 + \$9.00 = \$68.95 \end{aligned}$$

2. Clare and Roy's restaurant bill comes to \$45.35.

- (a) Calculate the amount of tax they would pay at 11%.

$$\text{Tax} \quad 0.11 \times \$45.35 = \$4.99$$

- (b) Calculate the tip. The service was good so they plan to tip 15% of the cost of the meal. (*Cost of the meal does not include the tax.*)

$$\begin{aligned} \text{Total} & \$45.35 + 4.99 = \$50.34 \\ \text{Tip} & 0.15 \times \$50.34 = \$7.55 \end{aligned}$$

- (c) How much will Clare and Roy paying in total for their meal?

$$\text{Total for meal} \quad \$45.35 + \$4.99 + \$7.55 = \$57.89$$

3. Theo bought a new pair of shoes. The sales tax of his purchase was \$4.80. In his region, the sales tax is 15%. *How much were the shoes that he bought?*

*Let  $x$  represent the cost of the shoes.*

$$\frac{\text{tax}}{\text{total}} = \frac{12}{100} = \frac{\$4.80}{x}$$

$$x = \$40.00$$

$$\text{Total charges is } \$40.00 + \$4.80 = \$44.80$$

4. A new resort has opened up just on the outskirts of the city with a water park entertainment center. They have posted 4 different rates. The rates are listed in the chart below.

Jackson's Hotel Room Packages			
A	B	C	D
Daily Rate	2-Day Package	3-Day Package	7-day Package
\$136 plus 15% tax	\$264 plus 15% tax	\$439 (tax included)	\$1150 (tax included)

Deb her friends, are planning to take a 7 day vacation at the resort. *What is the least expensive way for their friend to stay for 7 days?*

$$\begin{array}{lll}
 \text{A- } 0.15 \times 136 = 20.40 & \text{B- } 0.15 \times 264 = \$39.60 & \text{C- } \$439 \div 3 \\
 = 20.40 + 136 & = 39.60 + 264 & = \$146.33 \\
 = \$156.40 & = \$303.60 \div 2 = \$151.80 & 
 \end{array}$$

$$\begin{array}{ll}
 \text{D- } \$1150 \div 7 & \text{The least expensive way is through option B.} \\
 = \$164.29 & 
 \end{array}$$

5. Normally, movie tickets sell for \$8.00 each. The movie theater is having a sale! If you buy 4 or more tickets, you get \$1.00 off each ticket. *What percent discount is this?*

$$\frac{1}{8} = 0.125 \times 100\% = 12.5\% = 13\%$$

***\$1.00 off of each ticket is a 13% discount.***

6. A car salesperson earns 2.8% commission of every sale that she makes. If the salesperson sold a car for \$21 000, *how much would she earn from that sale?*

$$\frac{\text{commission}}{\text{cost}} = \frac{2.8}{100} = \frac{x}{\$21000}$$

$$x = \$588$$

7. Pedro works at a computer store. He earns a 4 % commission on all his sales. *What amount must he sell for his commission to be \$200?*

$$\frac{\text{commission}}{\text{cost}} = \frac{4}{100} = \frac{200}{x}$$

$$x = \$5000$$

- (a) His boss offered him an opportunity to earn a flat rate per week of \$300 dollars with a lower commission. Normally he earns \$500 a week. Assuming he sells the same amount each week, *what rate would his commission have to be to maintain his weekly salary of \$500?*

***\$500 - \$300 = \$200 is needed to maintain his weekly salary of \$500.***

$$\frac{\text{commission}}{\text{cost}} = \frac{4}{100} = \frac{200}{5000}$$

***Pedro would still have to work for a rate of 4% to maintain his weekly salary of \$500.***

8. Colin has \$1500 in a bank account. The account pays Simple Interest of 1.5% per year. *How much money will Colin have after 4 years?*

$$\begin{aligned} \text{Simple Interest is } P \times I \times T \\ = \$1500 \times 0.015 \times 4 \\ = \$90.00 \end{aligned}$$

***Colin will have \$1500 + \$90.00 = \$1590 at the end of four years.***

9. Carla has \$1500 in an investment. Her investment pays 1.5% Compound Interest per year. *How much money will Carla have in total after 4 years?*

$$\begin{aligned} \text{Amount} &= \text{Principal} (1 + \text{Rate})^{\text{year}} \\ &= \$1500 (1 + 0.015)^4 \\ &= \$1592.05 \end{aligned}$$

***Carla will have \$1592.05 in her account***

10. A credit card company charges 17% Simple Interest per month on all overdue accounts. Patrick has a balance of \$250 on his credit card.

- (a) Assume that Patrick pays his credit card bill after 6 months have passed. *How much will he owe then?*

$$\begin{aligned} \text{Patrick will owe his balance + interest for 6 months.} \\ = \$250 + (\$250 \times 0.17 \times 6) = 250 + 255 = \$505 \end{aligned}$$

- (b) Assume that Patrick pays his credit card bill after 12 months have passed. *How much will he owe then?*

$$\begin{aligned} \text{After one year, Patrick will owe balance plus 17% interest per month.} \\ = \$250 + (250 \times 0.17 \times 12) = \$250 + \$510 = \$760 \end{aligned}$$

11. Charlie invests \$1000 for 5 years. The investment is a Compound Interest investment with the interest rate of 8% per year.

(a) *How much money will Charlie have at the end of the 5 years?*

$$\begin{aligned} \text{Amount} &= 1000 \times (1.08)^5 \\ &= \$1469.33 \end{aligned}$$

(b) *How much interest has Charlie earned over the 5 years?*

$$\text{Charlie has earned } \$1469.30 - \$1000 = \$469.30$$

12. Leslie's favorite sports store is having a sale, but Leslie can only afford to buy one item. She has narrowed her choices down to three items:

Item	Original Price	Discount
Squash Racket	\$29.99	5%
Tennis Shoes	\$58.99	40%
Skateboard	\$89.99	60%

(a) *Calculate the discounted price for all three items.*

$$\text{Racket Sale } \$29.99 \times 0.95 = \$28.49 \text{ (have to pay 95\% of the price)}$$

$$\text{Tennis Shoes } \$58.99 \times 0.60 = \$35.39$$

$$\text{Skateboard } \$89.99 \times 0.40 = \$36.00$$

(b) *Which is the most inexpensive item on the list after the discount?*

**Squash Racket**

(c) *How much would the most expensive item cost if the cashier offered Leslie an additional 8% off the already discounted price?*

$$\text{Skateboard } \$36.00 \times 0.92 = \$33.12$$

**Challenge:**

13. Last year, an Energy company reported a profit of \$15,000 on natural gas sales of \$1,000,000. This year they made a profit of \$30,000 on natural gas sales of \$1,000,000. When talking to their employees, they claim that their profit increased only by 3%. Employees were enraged and insisted that their profits increased by 100%.

(a) How did the company and the employees calculate these increases?

**Company-** Calculated a profit increase by  $\frac{30000}{1000000} = 0.03$  or 3%

*This represents profit as a percentage of sales, but not growth from year to year.*

**Employees-** Calculated a profit increase by  $\frac{15000}{100} = \frac{30000}{200}$

*As you can see, the employees were correct and their profits did increase by 100%*

12. To solve problems involving percent, it is important to be able to recognize what quantity is the whole (100%). The whole (100%) is the quantity to which the other things in the problem are being compared. Complete the following mind map with as many phrases that can be used to signal 100%. (You may choose to have students complete this on their own, in pairs, or in groups)

(answers will vary)

