

DEV085 Lesson 19	Percents
Percent Applications	General percent problems (including sales tax, and sales commission, simple interest, percent of increase / decrease)

Examples:

1. John scored 90% on a 20-problem math test. How many problems did he answer correctly if all the problems had the same point value?
2. A prestigious business school accepted 216 students that represented 40% of the total applicants. How many applicants were there?
3. Maria earns \$68,000 per year as a computer programmer. Anita earns \$81,600 per year as a physician's assistant. Anita's salary is what percent of Maria's salary?

Turn Tape Off And Work Practice Exercises 4 - 6

4. After graduating from medical school, Sonya must pay \$700 per month for her student loans. If this is 14% of her monthly income, how much does she earn per month?

- Charlie has a retirement plan that puts 9.25% of his monthly income into an account. If he currently earns \$5000 per month, how much money goes into the account per month?
- In a college student body of 19,500 students 12,285 of them are women. What percent are women?

Turn Tape Back On For Solutions

Formulas

Sales Tax = sales tax rate \times price

Total Cost = price + sales tax

Sales Commission . . . is a bonus paid to an employee as a reward for good sales and is a _____ total sales.

Formula: Sales Commission = commission rate \times sales

Examples:

- Alandrea earns \$2000 per month plus 6% sales commission on total sales for the month. If her total sales were \$18,000 for the month of September, what was her total income for that month?

8. A new car priced at \$22,500 has an additional \$1125 added in for sale tax. What is the sales tax rate?

9. The sales tax rate for Montgomery County is currently $6\frac{1}{2}\%$. How much sales tax will be charged for an item costing \$1000?

Turn Tape Off And Work Practice Exercises 10 - 12

10. A salesman earns $12\frac{1}{2}\%$ commission on all sales. What were his last month's sales if his commission was \$450?

11. A real-estate agent earns 4% commission. If he sells a home for \$125,000, how much commission does he earn on this sale?

12. A stereo priced at \$499 cost \$528.94 after sales tax was added. What is the rate of sales tax? (HINT: find the amount of tax first)

Turn Tape Back On For Solutions

Percent Terms

_____ – the amount borrowed or deposited.

_____ – the percent used to determine the amount of interest.

_____ . . . is interest computed on the original amount.

Simple Interest: Interest = principal \times rate \times time OR $I = P \times R \times T$

Examples:

13. A bank offers a certificate of deposit (CD) interest rate (assume simple interest) of 5.25% per year. If a \$5000 CD is deposited at this bank, how much interest is earned in five years?

Compound Interest (Optional)

. . . when interest received is added to the principal at an ongoing basis and the new amount is reinvested at the same rate of interest.

$$A = P \left(1 + \frac{r}{n} \right)^{nt}$$

Notes: _____

14. Find interest owed on a \$4000 loan at the annual rate of 12%:

. . . for one year _____

. . . for 4 years _____

. . . for 3 months _____

15. A department store credit card charges $1\frac{3}{4}\%$ interest per month on unpaid balances. If the unpaid balance on your account was \$380, how much will it take to pay the account off (balance plus interest)?

Turn Tape Off And Work Practice Exercises 16 - 17

16. A stockbroker claims that a \$10,000 investment will earn 13.5% interest in one year.

a) How much is earned in 3 months? b) How much is earned in one year?

c) What is the total value after one year?

d) **(Optional)** If compounded monthly, the value of this investment after one year is computed by the following:

$$10,000 \left(1 + \frac{0.135}{12} \right)^{12}$$

17. A \$5000 loan has an annual interest rate of 18%. How much interest will you pay if you pay the loan off in 9 months?

Turn Tape Back On For Solutions

Percent Increase

. . . shows how much something has increased over its original value.

$$\text{Formula for Percent Increase} = \frac{\text{amount of increase}}{\text{original value}}$$

Example:

18. John received an 80-cent raise in his hourly wage. If his wage rate was \$12.50 per hour, find the percent increase in his hourly wage?

Percent Decrease

. . . shows how much something has decreased over its original value.

$$\text{Formula for Percent Decrease} = \frac{\text{amount of decrease}}{\text{original value}}$$

Example:

19. The original cost of a used car was \$5000. The price was then reduced to \$4700. Find the percent decrease in the cost of the car.

Turn Tape Off And Work Practice Exercises 20 - 22

20. A new car was valued at \$28,500. Four years later, the car's value was assessed at \$19,700. Find the percent of decrease in the car's value. (Round your answer to the nearest tenth of a percent)
21. After receiving her Associates Degree, Tammy's salary increased from \$28,000 per year to \$32,000 per year. Find the percent of increase in salary and round your answer to the nearest tenth of a percent.
22. Sarah and James's house sold for \$189,000 in 1999. They purchased it in 1994 of \$166,500. Find the percent of increase in the value of the house from 1994 to 1999 and round your answer to the nearest tenth of a percent.

Turn Tape Back On For Solutions

Lesson 19: Problem Set

1. 42% of the voters that voted in the election were women. If 124,300 people voted in the election, how many were women?
2. Oscar's pay rate went from \$6.15 an hour to \$6.47 an hour. Determine the percent of increase to the nearest tenth of a percent.
3. A department store is having a sale in the electronics department. All appliances are marked down 15%. What is the sale price on a \$239.99 DVD-player?
4. Sonya sells cars at a dealership and works on commission. She gets 7% on the first \$50,000 and 3% on any amount over \$50,000. Her total sales for the month total are \$128,000. What is the **total** amount of her commission?
5. The rate of sales tax in Ohio is 6.5%. What is the **total purchase price** of a rug that costs \$247.59? Round to the nearest cent.
6. A local school district reported enrollments changed from 6280 students to 5935 students. What was the percent of decrease? Round to the nearest tenth.

7. Oswald Savings has a 5% interest rate on certificates of deposit (CD). How much interest will be earned on a \$15,000 CD for:
- 6 months
 - 2 years
 - Optional:** If compounded monthly the value of this investment after 2 years is computed by the following formula. Use a calculator to find the amount.

$$15000 \left(1 + \frac{0.05}{12}\right)^{24} =$$

8. Susie's Dress Barn has a final winter clearance sale of 60% off your total purchase. Audrey bought 3 dresses. One dress originally sold for \$79.99, another originally sold for \$108.99, and the last one originally sold for \$49.99. How much is her purchase after the sale discount? (Round to the nearest cent)
9. From the previous question, The rate of sales tax is 6.25%. What is the total price of Audrey's purchase? (Round to the nearest cent)
10. Juanita is determined to save up for a cruise so she puts \$75 a month into a special account. If her take-home pay is \$1875 per month, determine the percent of take-home pay she is saving for this trip.
11. 60% of the class got a failing grade on the test. If the class had 40 students, how many received a failing grade?
12. Joy received 60% of her money back that she had loaned a friend. If she got back \$150.00. How much did she originally loan her friend?