

Applications

To find joy in work is to discover the fountain of youth.
Pearl S. Buck, American Novelist

1. How can the quote be interpreted in light of what you have learned?
2. Roberto's employer offers a sliding paid vacation. When he started work, he was given three paid days of vacation. For each six-month period he stays at the job, his vacation is increased by two days.
 - a. Let x represent the number of 6-month periods worked and y represent the total number of paid vacation days. Write an equation that models the relationship between these two variables.
 - b. How much vacation time will he have earned after working for 4.4 years?
3. When Lisa started at her current job, her employer gave her two days of paid vacation time with a promise of three additional paid vacation days for each year she remains with the company to a maximum of four work weeks of paid vacation time.
 - a. Let x represent the number of years she has worked for this employer and y represent the number of paid vacation days she has earned. Write an equation that models the relationship between these two variables.
 - b. It has been five years since Lisa began working for **this** employer. How many paid vacation days has she earned?
 - c. When will she reach the maximum number of paid vacation days allowed?
4. When Lou started his current job, his employer told him that he would receive two vacation days for each full year he worked. Let x represent the number of years he has worked for the company and y represent the number of paid vacation days he earned.
 - a. Write an equation that models the relationship between these two variables.
 - b. How long will it take him to earn 18 paid vacation days?
5. When George started his current job, his employer told him that at the end of the first year, he would receive two vacation days. After each year worked, his number of vacation days would double up to five work weeks of paid vacation.
 - a. Let x represent the work year and y represent the number of paid vacation days. Write an equation that models the relationship between these two variables.
 - b. How many vacation days will he have earned after four years?
 - c. In what year will he have maxed out his vacation days?
6. Ruth contributes 18% of the total cost of her individual health care. This is a \$67.50 deduction from each of her biweekly paychecks. What is the total value of her individual coverage for the year?

7. At Richardson Manufacturing Company, there are two factors that determine the cost of health care. If an employee makes less than \$55,000 per year, he pays \$40 per month for individual coverage and \$85 per month for family coverage. If an employee makes at least \$55,000 per year, individual coverage is \$70 per month and family coverage is \$165 per month.

- Arielle is an office assistant at Richardson. She makes \$47,700 per year. She has individual health care. Her yearly contribution is 5% of the total cost. How much does her employer contribute?
- Catherine is a department manager at Richardson. Her annual salary is \$68,300. She has family health care. Her employer contributes \$935 per month towards her total coverage cost. What percent does Catherine contribute toward the total coverage?

8. Eddie is a plant manager at North Salem Construction Company. He has been employed there for 20 years and will be retiring at the end of this year. His pension is calculated on the average of his last four years' salaries. In those years, he earned \$82,000, \$96,000, \$105,000, and \$109,000. His employer will give him 1.2% of that average for each year he worked. Calculate Eddie's pension.

9. As part of their employee benefits, all workers at Middletown Electronics receive a pension that is calculated by multiplying the number of years worked times 1.65% of the average of their three highest years' salary. Maureen has worked for Middletown for 27 years and is retiring. Her highest salaries are \$97,000, \$97,800, and \$98,198. Calculate Maureen's pension.

10. The spreadsheet calculates a yearly pension. Users enter the pension percentage as a percent in cell B1, the number of years worked in cell B2, and the last four working years' salaries in cells B3–B6. That 4-year average salary is calculated and displayed in cell B7. The yearly pension amount is calculated and displayed in cell B8.

- Write the spreadsheet formula for cell B7.
- Write the spreadsheet formula for cell B8.

	A	B
1	Pension percentage	
2	Years worked	
3	Year 1 salary	
4	Year 2 salary	
5	Year 3 salary	
6	Year 4 salary	
7	Average salary	
8	Yearly pension	

11. Natalia worked in an automobile plant. She lost her job when the plant relocated to another state. She applied for unemployment compensation. In her state, the amount is calculated by taking 55% of the average of the last 26 weekly salary amounts. The gross incomes from her last 26 paychecks are listed in the table. Determine Natalia's unemployment compensation weekly amount to the nearest cent.

Week	1	2	3	4	5	6	7	8	9	10	11	12	13
Salary	\$715	\$700	\$730	\$730	\$730	\$720	\$700	\$720	\$720	\$720	\$725	\$720	\$725
Week	14	15	16	17	18	19	20	21	22	23	24	25	26
Salary	\$730	\$730	\$735	\$735	\$735	\$740	\$740	\$740	\$740	\$740	\$740	\$740	\$740

12. In Rodger's state, unemployment compensation is calculated by finding the total of the quarterly wages of two consecutive quarters and dividing by 26. The weekly unemployment is 65% of that amount. In the quarter of January, February, and March, Rodger made a total of \$13,950.80. In the quarter of April, May, and June, he made a total of \$14,250.10. Find Rodger's weekly unemployment amount.