

Section 6.3:
Commissions, Royalties, and Piecework Pay
Read pg. 303

Commission: A method of payment where an employee receives a percentage of the amount of sales produced by that employee.

Royalty: Money that employees or others receive based on sales, for example an author or musician.

Pieceworker: A type of worker who is paid for each item the employee produces.

Piecework Rate: The set amount of money that a worker receives for each item individual produces.

1. Enid wrote a textbook for high school students. She receives a 5% royalty based on the total sales of the book. The book sells for \$51.95, and 12,341 copies were sold last year. How much did Enid receive in royalty payments for last year, to the nearest cent?

Total sales = number of books sold \times pay per book

$$\text{Total sales} = 12,341 \times 51.95 = \underline{641,114.95}$$

Commission = sales subject to commission \times percent

$$\text{Commission} = \underline{641,114.95} \times 0.05 = \underline{32,055.75}$$

Multiply by the decimal percent.

Enid earned 32,055.75 in commission.

2. Carter Cadillac pays commission to its car sales staff. They are paid a percent of the profit the dealership makes on the car, not on the selling price of the car. If the profit is under \$500, the commission rate is 18%. If the profit is at least \$500 and less than or equal to \$2,000, the commission rate is 24% of the profit. If the profit is above \$2,000, the rate is 27% of the profit. If p represents the profit, express the commission $c(p)$ algebraically as a split function.

There is a different rule for each of the different domains.

Inclusive includes the end data.

There is an 18% commission rate if the profit is under 500.

There is an 24% commission rate if the profit is 500 to 2000, inclusive.

There is an 27% commission rate if the profit is greater than 2000.

The piecewise function is:

$$c(p) = \begin{cases} .18p & \text{when } p < 500 \\ .24p & \text{when } 500 \leq p \leq 2000 \\ .27p & \text{when } p > 2000 \end{cases}$$

3. Rich wrote a novel that sells for n dollars each. He received a bonus of \$50,000 to sign the contract to write the book, and he receives 9% commission on each book sale. Express the total amount of income he earns from selling b books algebraically.

$$n(b)(.09) + 50,000$$

4. Mr. Corona sells magazines part-time. He is paid a monthly commission. He receives 21% of his first \$1,500 in sales and 14% of the balance of his sales. Last month he sold \$2,233 worth of magazine subscriptions. How much commission did he earn last month?

$$2233 - 1500 = 733$$

$$1500 \cdot .21 = 315$$

$$733 \cdot .14 = +102.62$$

$$\text{Total} = \textcircled{417.62}$$

5. Abbey Road Motors pays a percent commission to its sales people. They are paid a percent of the profit the dealership makes on a car. If the profit is under \$1,000, the commission rate is 20%. If the profit is at least \$1,000 and less than or equal to \$2,000, the commission rate is 20% of the first \$1,000 and 24% of the remainder of the profit. If the profit is above \$2,000, the rate is 20% of the first \$1,000 of profit, 24% of the next \$1,000 of profit, and 29% of the amount of profit over \$2,000. If p represents the profit, express the commission $c(p)$ algebraically as a split function.

$$c(p) = \begin{cases} .2p & \text{when } p < 1000 \\ 200 + .24(p-1000) & \text{when } 1000 \leq p \leq 2000 \\ 440 + .29(p-2000) & \text{when } p > 2000 \end{cases}$$

$200 + 240$

6. Barry works at Larry's Computer Outlet. He receives a weekly salary of \$310 plus 3.05% commission based on his sales. Last year, he sold \$1,015,092 worth of computer equipment. How much money did Barry earn last year, to the nearest cent?

$$310(52) = 16120$$

$$1,015,092(.0305) = 30,960.31$$

$$\text{Total Pay} = \underline{\underline{47,080.31}}$$

7. Jill picks corn and gets paid at a piecework rate of 55 cents per container for the first 300 containers picked. She receives 60 cents per container for every container over 300 that she picks. Last week, Jill picked 370 containers. How much did she earn?

$$f(x) = \begin{cases} .55x & \text{when } x \leq 300 \\ 165 + .6(x-300) & \text{when } x > 300 \end{cases}$$

\uparrow
 $.55(300)$

$$165 + .6(370-300) = \boxed{\$207}$$

**Section 6.4:
Employee Benefits
Pg. 310-311**

Employee Benefits: Value-added options that an employer may choose to offer employees; typically, benefits are in the forms of insurance (health, life, and disability), paid vacation time, paid holiday time, retirement plans, stock ownership plans, and childcare leave.

Insurance: A value-added benefit that employers may offer to employees, such as policies that cover medical, dental, life, and disability. Also see specific of type of insurances, i.e. automobile, car rental, collision, comprehensive, decreasing term, disability, emergency road service, group term life, homeowner's, increasing term, level term, no-fault, Old-age, Survivors, and Disability, term-life, unemployment, universal life, variable life, whole life

Paid Vacation Time: Paid time off that an employer may offer to employees as an employee benefit.

Paid Holiday Time: Paid time off for holidays that an employer may offer to employees as an employee benefit.

Retirement Plans: A means that employers may offer a way to save for retirement; these types of plan may include pensions or 410K's

Stock Ownership Plans: A plan that allows employees to buy or receive company stock; offered as an employee benefit.

Childcare Leave: An employee benefit that allows employees paid time off to care for sick children or newborns.

Family Health Care: A type of health insurance that covers all members of the immediate family for health care bills to the extent outlines in the health care coverage plan.

Individual Health Care: A type of health insurance that covers only the individual to the extent outlined in the health care coverage plan.

Pension: A type of retirement plan where an employee receives compensation from an employer after retirement.

Unemployment Insurance: A government program that offers benefits to eligible employees who, through no fault of their own, have become unemployed.

Base Period: A fixed period of time that most states use in an unemployment insurance formula to determine weekly benefits.

Worker's Compensation: Assistance to employees who are injured while working at their job. A program that is governed by state laws.

1. When Ina started work, she was given two paid days of vacation. For each four-month period she stays at the job, her vacation is increased by one day. Let x represent the number of 4-month periods worked and y represent the total number of vacation days. Write an equation that models the relationship between these variables. How much vacation time will she have after working for 6.5 years?

$$\text{Months in 6.5 years} = 6.5 \times 12 = \underline{78} \text{ months}$$

Divide the number of months by 4 for the number of 4-month periods.

$$78 \div 4 = \underline{19.5} \text{ four-month periods}$$

$$y = \textcircled{2} + x$$

$$y = 2 + 19.5 = \underline{21.5}$$

Substitute 19.5 for x .

Ina will have 21.5 days of vacation in 6.5 years.

2. Martha's employee benefits include family health care coverage. She contributes 18% of the cost. Martha gets paid biweekly and \$108.00 is taken out of each paycheck for family health care coverage. How much does her employer contribute annually for the family coverage?

Martha contributes $\underline{26} \times 108 = 2,808$, which is 18% of the total.

Write an equation. Let x represent the total cost of Martha's health insurance. Solve.

$$.18x = \underline{2808}$$

$$\frac{0.18x}{0.18} = \frac{2,808}{0.18}$$

Divide each side by 0.18.

$$x = \underline{15,600} \leftarrow \text{Total}$$

$$\text{Subtract Martha's portion: } \underline{15600} - \underline{2808} = \underline{12,792}$$

Martha's employer contributes _____ of Martha's health insurance costs.

3. Ali has worked at a fashion magazine for the last 5 years. Her current annual salary is \$64,000. When she was hired, she was told that she had four days of paid vacation time. For each year that she worked at the magazine, she would gain another three days of paid vacation time to a maximum of 26 days. How many paid vacation days does she now get at the end of five years of employment?

$$4 + \overset{2\text{yr}}{3} + \overset{3\text{yr}}{3} + \overset{4\text{yr}}{3} + \overset{5\text{th}}{3} = 16$$

4. Liz works at Food For Thought magazine. Her employer offers her a pension. Liz's employer uses a formula to calculate the pension. Retiring employees receive 2.1% of their average salary over the last four years of employment for every year worked. Liz is planning on retiring at the end of this year after, 20 years of employment. Her salaries for the last four years are \$66,000; \$66,000; \$73,000; and \$75,000. Calculate Liz's annual pension.

$$\frac{66000 + 66000 + 73000 + 75000}{4} = 70,000$$

$$70000(20 \text{ yrs}) = 1,400,000$$

$$.021(1,400,000) = 29,400$$

5. Dan's employee benefits include health care coverage. His employer covers 78% of the cost, which is a contribution of \$1,599.78 towards the total coverage amount. How much does Dan pay for his coverage?

$$\frac{.78X}{.78} = \frac{1599.78}{.78}$$

$$X = 2051 \leftarrow \text{Total}$$

$$2051 - 1599.78 = \boxed{451.22}$$

6. As part of their employee benefits, all workers at Light and Power Electric Company receive a pension that is calculated by multiplying the number of years worked times 1.875% of the average of their three highest years' salaries. Mia has worked for LPEC for 30 years and is retiring. Her highest salaries were \$92,000, \$94,800, and \$96,250. Calculate Mia's pension.

53,071.88

7. In Ben's state, the weekly unemployment compensation is 55% of the 26-week average for the two highest-salaried quarters. A quarter is three consecutive months. For July, August, and September, Ben earned a total of \$22,400. In October, November, and December, he earned a total of \$22,800. Determine Ben's weekly unemployment compensation.

$$\frac{22400 + 22800}{2} = 22600$$

$$22600(4) = 90,400 \div 52 = 1738.46$$

$$1738.46(.55) = 956.15$$

Homework:
pg.307: 2,3,7,9
&
pg.314-315:6,8,11