

**Applied Problems on Slope Concept
Section 4.1**

OBJECTIVES: Understand and interpret the slope of the line
Write equations of “real-world” linear functions

DIRECTIONS: Discuss and solve the following problems in your groups. Write your solutions neatly on another piece of paper. Due

1. The steepness of a roof on a house is called the “pitch” of the roof. Architects regulate this measurement for all kinds of buildings. A roof on a residential building often has a 8:12 pitch, meaning that every rise of 8 inches the roof correlates with 12 inches across. What is the “slope” of such a roof? Draw a graph of line with this slope. Is the pitch of the roof on your house smaller or larger than the slope of the line?
2. The Americans with Disabilities Act of 1990 states that the slope of any ramp must be no greater than 1:12. What does this mean? Draw a graph of a line with such a slope.

Extra credit: Go to the Lutheran Church in Lynnwood and measure the slope of the handicap accessible ramp. Does it comply with the ADA regulation?

3. Pat, a plumber, charges a \$50 flat fee plus \$37 an hour, for every hour he spends on the job.
 - a. Complete the table below.

Time, n (hours)	Cost, C (dollars)
0	
1	
2	
3	
4	
5	

- b. What is the rate or slope?
- c. What is the charge when Pat steps in the door (at $n=0$)?
- d. Write an equation for this linear function.

4. In 1986, the average time of major league baseball games in the US was 2 hours and 44 minutes. Each year, this average time has increased by approximately one minute. Let A represent the average time (in minutes) of major league baseball games in the year that is t years since 1986.

- a. Complete the table below. Do not simplify.

t	A
0	
1	
2	
3	
4	
t	

- b. Find an equation that describes the relationship between A and t .
- c. What is the slope of your equation? What does it represent?
- d. By 1995, baseball games were taking so long to complete that a committee met to figure out what was causing the problem and how it could be addressed. List some possible reasons why baseball games are getting longer each year.
5. Below is a set of data that relates the water pressure and the depth of the water. Determine if the data can be modeled with a linear function. If so, sketch a graph and write a linear function that models the data.

Depth (feet)	Pressure (Atm)
0	1
33	2
66	3
132	5

6. There is a sign on highway 26 returning from Mt. Hood that says "6% downgrade for the next five miles." What is the elevation change in those five miles?

