

3. Which measure of activity—number of units produced or janitorial workdays—should be used as the activity base for explaining janitorial labor cost?



CASE 5-25 (Appendix 5A) Least-Squares Regression; Scattergraph; Comparison of Activity Bases [L02, L05]

The Hard Rock Mining Company is developing cost formulas for management planning and decision-making purposes. The company's cost analyst has concluded that utilities cost is a mixed cost, and he is attempting to find a base with which the cost might be closely correlated. The controller has suggested that tons mined might be a good base to use in developing a cost formula. The production superintendent disagrees; she thinks that direct labor-hours would be a better base. The cost analyst has decided to try both bases and has assembled the following information:

Quarter	Tons Mined (000)	Direct Labor-Hours (000)	Utilities Cost
Year 1:			
First	15	5	\$50,000
Second	11	3	\$45,000
Third	21	4	\$60,000
Fourth	12	6	\$75,000
Year 2:			
First	18	10	\$100,000
Second	25	9	\$105,000
Third	30	8	\$85,000
Fourth	28	11	\$120,000

Required:

- Using tons mined as the independent (X) variable:
 - Determine a cost formula for utilities cost using the least-squares regression method. (The variable cost you compute will be in thousands of tons. It can be left in this form, or you can convert your variable cost to a per ton basis by dividing it by 1,000.)
 - Prepare a scattergraph and plot the tons mined and utilities cost. (Place cost on the vertical axis and tons mined on the horizontal axis.) Fit a straight line to the plotted points using the cost formula determined in (a) above.
- Using direct labor-hours as the independent (X) variable, repeat the computations in (a) and (b) above.
- Would you recommend that the company use tons mined or direct labor-hours as a base for planning utilities cost?



CASE 5-26 (Appendix 5A) Analysis of Mixed Costs, Job-Order Costing, and Activity-Based Costing [L01, L02, L05]

Ruedi Bärlach PLC, a company located in Gümligen, Switzerland, manufactures custom-designed high-precision industrial tools. The company has a traditional job-order costing system in which direct labor and direct materials costs are assigned directly to jobs, but factory overhead is applied to jobs using a predetermined overhead rate based on direct labor-hours. Management uses this job cost data for valuing cost of goods sold and inventories for external reports. For internal decision-making, management has largely ignored this cost data since direct labor costs are basically fixed and management believes overhead costs actually have little to do with direct labor-hours. Recently, management has become interested in activity-based costing (ABC) as a way of estimating job costs and other costs for decision-making purposes.

Management assembled a cross-functional team to design a prototype ABC system. Electrical costs were among the first factory overhead costs investigated by the team. Electricity is used to provide light, to power equipment, and to heat the building in the winter. The ABC team proposed allocating electrical costs to jobs based on machine-hours since running the machines consumes significant amounts of electricity. Data assembled by the team concerning actual direct labor-hours, machine-hours, and electrical costs over a recent eight-week period have been entered into the spreadsheet that appears below. (The Swiss currency is the Swiss franc, which is denoted by SFr.)