

- Using Broad averages (for instance, a single indirect cost rate) for assigning the cost of resources uniformly to cost objects when the actual usage is nonuniform among cost objects
- Undercosting: A cost object consumes a high level of resources but is reported to have a low cost per unit
- Overcosting: A cost object consumes a low level of resources but is reported to have a high cost per unit
- Product-cost cross-subsidization: If a company undercosts one of its products, then it will overcost at least one of its other products, and vice versa.

- ISAS Corporation manufactures a normal lens (NL) and a complex lens (CL). The firm uses a single indirect-cost rate job costing system
- Cost objects: 80,000 NL and 20,000 CL

	80,000 NL		20,000 CL		Total
	Total	per Unit	Total	per Unit	
Direct Materials	\$1,520,000	\$19	\$920,000	\$46	\$2,440,000
Direct Manufacturing Labor	800,000	10	260,000	13	1,060,000
Total direct costs	2,320,000	29	1,180,000	59	3,500,000

- Cost allocation base to use for allocating indirect costs to products (\$2,900,000): Direct manufacturing labor hours (50,000 hours)

- Indirect cost rate = $2,900,000 / 50,000 = \$58$ per direct manufacturing labor hour
- ISAS uses 36,000 direct manufacturing labor-hours to make NL and 14,000 direct manufacturing labor-hours to make CL
- Indirect costs allocated to NL = $58 \times 36,000 = \$2,088,000$
- Indirect costs allocated to CL = $58 \times 14,000 = \$812,000$

	80,000 NL		20,000 CL		Total
	Total	per Unit	Total	per Unit	
Direct Materials	\$1,520,000	\$19	\$920,000	\$46	\$2,440,000
Direct Manufacturing Labor	800,000	10	260,000	13	1,060,000
Total direct costs	2,320,000	29	1,180,000	59	3,500,000
Indirect costs allocated	2,088,000	26.1	812,000	40.6	2,900,000
Total Costs	4,408,000	55.1	1,992,000	99.6	6,400,000

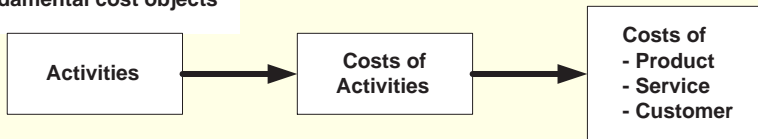
NLs sell for \$60 per each and CLs sell for \$142 each.

	Normal	Complex
Revenue	\$60.00	\$142.00
Cost	55.10	99.60
Income	\$ 4.90	\$ 42.40
Margin	8.2 %	29.9%

- Reduce the use of broad averages, better measurement of the costs of overhead resources used by different cost objects
- Direct cost tracing: Classify as many of the total costs as direct costs
- Indirect cost pools: Expand the number of indirect cost pools until each of these pools is more homogenous
- Cost allocation bases: Use the cause-and-effect criterion to identify the cost allocation base for each indirect cost pool

- A costing system that focuses on individual activities as the fundamental cost objects
 - Activity: An event, task, or unit of work with a specified purpose
- Costs are assigned to the cost objects such as products and services on the basis of the activities needed to produce each product or service

Fundamental cost objects



ISAS identifies seven activities needed to design, manufacture and distribute lenses:

- Design products and processes
- Set up molding machine
- Operate machines to manufacture lenses
- Maintain and clean the molds
- Set up batches of finished lenses for shipment
- Distribute lenses to customers
- Administer and manage all processes

It is recognized that the cost of cleaning and maintaining molds can be traced directly to the cost objects

- Total costs of setups: \$409,200
- Allocation base: setup hours

	NL	CL	Total
Quantity produced	80,000	20,000	
Quantity produced per batch	250	50	
Number of batches	320	400	
Setup time per batch	2 hours	5 hours	
Total setup hours	640 hours	2,000 hours	2,640 hours

- Allocation rate using direct manufacturing labor hours:
 $(409,200 / 50,000) = \$8.184$ per direct manufacturing labor hour
- Allocation rate using setup hours:
 $(409,200 / 2,640) = \$155$ per setup hour

	NL	CL	Total
Costs allocated using direct manuf. labor hours $(36,000 \times 8.184; 14,000 \times 8.184)$	\$294,624	\$114,576	\$409,200
Costs allocated using setup hours $(640 \times 155; 2,000 \times 155)$	\$99,200	\$310,000	\$409,200

- Note that setup hours (allocation base for setup costs) are related to batches of lenses made, not individual lenses
- When the cost in a cost pool relates to batches of output, the cost allocation base must also relate to batches of output
- A cost hierarchy categorizes costs into different cost pools on the basis of the different types of cost drivers, or cost allocation bases, or different degrees of difficulty in determining cause-and-effect relationships
- ABC systems use a cost hierarchy of 4 levels: output unit-level costs, batch-level costs, product-sustaining costs, facility-sustaining costs

- Step 1: Identify cost objects: Normal lenses and complex lenses
- Step 2: Identify direct costs of the products: Direct material, direct labor, mold cleaning and maintenance

	Cost Hierarchy	NL	CL	Total
Direct materials	Output unit	\$1,520,000	\$920,000	\$2,440,000
Direct manuf. labor	Output unit	800,000	260,000	1,060,000
Cleaning and maintenance	Batch	160,000	200,000	360,000
Total direct costs		2,480,000	1,380,000	3,860,000

- Direct costs per unit (NL) = $(2,480,000 / 80,000) = \$31$ per unit
- Direct costs per unit (CL) = $(1,380,000 / 20,000) = \$69$ per unit

- Steps 3, 4 and 5: Select the cost allocation bases to use for allocating indirect costs to the products, identify the indirect costs associated with each cost allocation base, and compute the rate per unit

Activity	Hierarchy	Costs	Base	Rate
Design	Product sustaining	\$313,300	100 parts	\$3,133
Setups	Batch	\$409,200	2,640 setup hours	\$155
Manuf. ops.	Output unit	\$1,020,000	17,000 molding machine-hours	\$60
Shipment setup	Batch	\$112,500	250 shipments	\$450
Distribution	Output unit	\$385,000	70,000 cubic feet	\$5.5
Administration	Facility sustaining	\$300,000	50,000 direct manuf. labor hrs	\$6

- Steps 6 and 7: Compute the indirect costs allocated to the products, and compute the total costs

	NL	CL	Total
Direct costs	\$2,480,000	\$1,380,000	\$3,860,000
Indirect costs			
Design activity costs ($30 \times 3,133; 70 \times 3,133$)	93,990	219,310	313,300
Setup costs ($640 \times 155; 2,000 \times 155$)	99,200	310,000	409,200
Manuf. ops. cost ($12,000 \times 60; 5,000 \times 60$)	720,000	300,000	1,020,000
Shipping setup costs ($125 \times 450; 125 \times 450$)	56,250	56,250	112,500
Distribution costs ($50,000 \times 5.5; 20,000 \times 5.5$)	275,000	110,000	385,000
Administration costs ($36,000 \times 6; 14,000 \times 6$)	216,000	84,000	300,000
Total indirect costs	1,460,440	1,079,560	2,540,000
Total costs	\$3,940,440	\$2,459,560	\$6,400,000
Unit costs	\$49.255	\$122.978	