Exercise 8-20 (45 minutes)

1. The unit product costs under the company's conventional costing system would be computed as follows:

	Rascon	*Parcel*	*Total*
Number of units produced (a)	20,000	80,000	
Direct labor-hours per unit (b)	0.40	0.20	
Total direct labor-hours (a) × (b)	8,000	16,000	24,000
Total manufacturing overhead (a)	$576,000		
Total direct labor-hours (b)	24,000 DLHs		
Predetermined overhead rate (a) ÷ (b)	$ 24.00 per DLH		

	Rascon	*Parcel*
Direct materials	$13.00	$22.00
Direct labor	6.00	3.00
Manufacturing overhead applied:		
0.40 DLH per unit × $24.00 per DLH	9.60	
0.20 DLH per unit × $24.00 per DLH		4.80
Unit product cost	$28.60	$29.80

Exercise 8-20 (continued)

2. The unit product costs with the proposed ABC system can be computed as follows:

Activity Cost Pool	*Estimated Overhead Cost**	*(b) Expected Activity*	*(a) ÷ (b) Activity Rate*
Labor related	$288,000	24,000 direct labor-hours	$12.00 per direct labor-hour
Engineering design ...	$288,000	6,000 engineering-hours	$48.00 per engineering-hour

*The total overhead cost is split evenly between the two activity cost pools.

	Rascon		*Parcel*	
	Expected Activity	*Amount*	*Expected Activity*	*Amount*
Labor related at $12.00 per direct labor-hour	8,000	$ 96,000	16,000	$192,000
Engineering design at $48.00 per engineering-hour	3,000	144,000	3,000	144,000
Total overhead cost assigned (a)		$240,000		$336,000
Number of units produced (b).....		20,000		80,000
Overhead cost per unit (a) ÷ (b		$12.00		$4.20

The unit product costs combine direct materials, direct labor, and overhead costs:

	Rascon	*Parcel*
Direct materials	$13.00	$22.00
Direct labor	6.00	3.00
Manufacturing overhead (see above) ..	12.00	4.20
Unit product cost	$31.00	$29.20

Exercise 8-20 (continued)

3. The unit product cost of the high-volume product, Parcel, declines under the activity-based costing system, whereas the unit product cost of the low-volume product, Rascon, increases. This occurs because half of the overhead is applied on the basis of engineering design hours instead of direct labor-hours. When the overhead was applied on the basis of direct labor-hours, most of the overhead was applied to the high-volume product. However, when the overhead is applied on the basis of engineering-hours, more of the overhead cost is shifted over to the low-volume product. Engineering-hours is a product-level activity, so the higher the volume, the lower the unit cost and the lower the volume, the higher the unit cost.