

# CHAPTER 4

## Activity-Based Costing

# SOLUTIONS TO BRIEF EXERCISES

## BRIEF EXERCISE 4-1

(a) 
$$\frac{\text{Estimated annual overhead costs}}{\text{Expected annual operating activity}} = \text{Predetermined overhead rate}$$

$$\frac{\$975,000}{100,000} = \$9.75 \text{ per direct labor hour}$$

(b)  $92,000 \text{ direct labor hours} \times \$9.75 = \$897,000 \text{ overhead applied}$

(c) If the manufacturing process is complex, then multiple allocation bases can result in more accurate product-cost computations. In such situations, managers need to consider an overhead cost allocation method that uses multiple bases. That method is activity-based costing.

## BRIEF EXERCISE 4-2

Under ABC, overhead costs are shifted from the high-volume products to the low-volume products. This shift results in more accurate costing for two reasons:

1. Low-volume products often require more special handling, such as more machine setups and inspections, than high-volume products. Thus, the low-volume product frequently is responsible for more overhead costs per unit than is a high-volume product.
2. Assigning overhead using ABC will usually increase the cost per unit for low-volume products. Therefore, a traditional overhead allocation such as direct labor hours is usually a poor cost driver for assigning overhead costs to low-volume products.

As a result, for Finney, one of the products (Product RX3) may have been low volume and therefore may have more overhead costs assigned to it under an ABC system.

### BRIEF EXERCISE 4-3

An appropriate cost driver for each activity is:

<u>Activity</u>	<u>Cost Driver</u>
Materials handling	Number of requisitions
Machine setups	Number of setups
Factory machine maintenance	Machine hours used
Factory supervision	Number of employees
Quality control	Number of inspections

### BRIEF EXERCISE 4-4

- (a) Number of parts or assemblies
- (b) Number of setups
- (c) Number of employees
- (d) Number of inspections
- (e) Number of purchase orders
- (f) Machine hours
- (g) Square footage occupied

### BRIEF EXERCISE 4-5

Machine setups	$\$150,000 \div 2,500 = \$60$ per setup
Machining	$\$375,000 \div 25,000 = \$15$ per machine hour
Inspections	$\$87,500 \div 1,750 = \$50$ per inspection

### BRIEF EXERCISE 4-6

<u>Activity Cost Pool</u>	<u>Estimated Overhead</u>	<u>Expected Use of Cost Drivers per Activity</u>	<u>Activity-Based Overhead Rates</u>
Designing	\$ 450,000	10,000 designer hours	\$45.00 per designer hour
Sizing and cutting	4,000,000	160,000 machine hours	\$25.00 per machine hour
Stitching and trimming	1,440,000	80,000 labor hours	\$18.00 per labor hour
Wrapping and packing	336,000	32,000 finished units	\$10.50 per finished unit

## BRIEF EXERCISE 4-7

<u>Activity Cost Pool</u>	<u>Estimated Overhead</u>	$\div$	<u>Expected Use of Cost Drivers per Activity</u>	$=$	<u>Activity-Based Overhead Rates</u>
Ordering and receiving	\$ 84,000		12,000 orders		\$7.00 per order
Food processing	480,000		60,000 machine hours		\$8.00 per machine hour
Packaging	1,760,000		440,000 labor hours		\$4.00 per labor hour

<u>Cost Drivers</u>	$\times$	<u>Overhead Rates</u>	$=$	<u>Total Overhead Applied</u>
11,000 orders		\$7.00		\$ 77,000
50,000 machine hours		\$8.00		400,000
500,000 labor hours		\$4.00		<u>2,000,000</u>
				<u><u>\$2,477,000</u></u>

## BRIEF EXERCISE 4-8

- (a) Non-value-added
- (b) Value-added
- (c) Non-value-added
- (d) Non-value-added
- (e) Non-value-added
- (f) Value-added

## BRIEF EXERCISE 4-9

<u>Value-added Activities</u>	<u>Hours</u>
(1) Designing and drafting	3.0
(3) On-site supervision	2.0
(5) Consultation with client	<u>1.5</u>
	<u>6.5</u>

<u>Non-value-added Activities</u>	<u>Hours</u>
(2) Staff meetings	1
(4) Lunch	1
(6) Entertaining a prospective client	<u>2</u>
	<u>4</u>

### BRIEF EXERCISE 4-10

- (a) Batch- or unit-level
- (b) Unit-level
- (c) Unit-level
- (d) Batch- or unit-level
- (e) Facility-level
- (f) Batch- or product-level
- (g) Batch- or product-level
- (h) Unit-level
- (i) Facility-level
- (j) Batch-level

### BRIEF EXERCISE 4-11

- (a) Facility-level
- (b) Unit-level
- (c) Product-level
- (d) Unit-level
- (e) Batch-level
- (f) Batch-level
- (g) Product-level
- (h) Facility-level

### BRIEF EXERCISE 4-12

(a) Initial concept formation  $\frac{\$40,000}{20} = \$2,000$  per project change

Design  $\frac{\$300,000}{150,000} = \$2$  per square foot

Construction oversight  $\frac{\$100,000}{100} = \$1,000$  per month

- (b) Initial concept formation—product-level
- Design—unit-level
- Construction oversight—batch-level

## SOLUTIONS TO DO IT! REVIEW EXERCISES

### DO IT! 4-1

- (a) True
- (b) False
- (c) False
- (d) True
- (e) True

### DO IT! 4-2

- (a) Computations of activity-based overhead rates per cost driver:

<u>Activity Cost Pools</u>	<u>Estimated Overhead</u>	<u>Expected Use of Cost Drivers per Activity</u>	<u>Activity-Based Overhead Rates</u>
Machine setup	\$ 16,000	40 setups	\$400 per setup
Machining	110,000	5,000 machine hours	\$ 22 per machine hr.
Packing	<u>30,000</u>	500 orders	\$ 60 per order
	<u>\$156,000</u>		

- (b) Assignment of each activity's overhead cost to products using ABC:

Activity Cost Pools	BC113			AD908		
	Expected Use of Cost Drivers per Product	Activity-Based Overhead Rates	Cost Assigned	Expected Use of Cost Drivers per Product	Activity-Based Overhead Rates	Cost Assigned
	Product	Overhead Rates	Assigned	Product	Rates	Assigned
Machine setup	25	\$400	\$10,000	15	\$400	\$ 6,000
Machining	1,000	\$ 22	22,000	4,000	\$ 22	88,000
Packing	150	\$ 60	<u>9,000</u>	350	\$ 60	<u>21,000</u>
Total assigned costs			<u>\$41,000</u>			<u>\$115,000</u>

- (c) Computation of overhead cost per unit:

		BC113	AD908
Total costs assigned	(a)	\$41,000	\$115,000
Total units produced	(b)	3,000	1,500
Overhead cost per unit	(a) ÷ (b)	\$13.67	\$76.67

## DO IT! 4-2 (Continued)

- (d) These computations show that the total overhead assigned to Product AD908 is more than two and a half times that assigned to BC113. On a per unit basis, the overhead assigned to AD908 is close to six times that assigned to each BC113.

## DO IT! 4-3

- (a) unit-level
- (b) product-level
- (c) facility-level
- (d) batch-level
- (e) unit-level
- (f) batch-level
- (g) facility-level
- (h) unit-level

## DO IT! 4-4

- (a) The activity based overhead rates would be:

	Estimated Overhead	÷	Expected Use of Cost Driver Per Activity	=	Activity-Based Overhead Rate
Loading and unloading	\$ 90,000		90,000		\$1.00 per piece
Travel	\$450,000		600,000		\$0.75 per mile
Logistics	\$ 75,000		3,000		\$25 per hour

- (b) The overhead applied to job XZ3275 is:

$$(150 \times \$1.00) + (200 \times \$0.75) + (.75 \times \$25) = \$318.75$$

# SOLUTIONS TO EXERCISES

## EXERCISE 4-1

(a) 
$$\frac{\text{Estimated overhead}}{\text{Direct labor costs}} = \text{Predetermined overhead rate}$$

$$\frac{\$240,000}{\$50,000 + \$100,000} = 160\% \text{ of direct labor cost}$$

<u>Activity cost pools</u>	<u>Cost drivers</u>	<u>Estimated overhead</u>
Machining	Machine hours	\$140,000
Machine setup	Set up hours	100,000

### Activity-based overhead rates

Machining:

$$\frac{\$140,000}{1,000 + 1,000} = \$70 \text{ per machine hour}$$

Machine setup:

$$\frac{\$100,000}{400 + 100} = \$200 \text{ per setup hour}$$

<u>Traditional costing</u>	<u>Standard</u>	<u>Custom</u>
\$50,000 X 160%	\$80,000	
\$100,000 X 160%		<u>\$160,000</u>
	<u>\$80,000</u>	<u>\$160,000</u>

### Activity-based costing

Machining:

1,000 X \$70	\$70,000	
1,000 X \$70		\$70,000

Machine setup:

100 X \$200	20,000	
400 X \$200		<u>80,000</u>
	<u>\$90,000</u>	<u>\$150,000</u>



## EXERCISE 4-2

### (a) Traditional costing system

	<u>Product 540X</u>	<u>Product 137Y</u>	<u>Product 249S</u>
Sales	\$180,000	\$160,000	\$70,000
Costs	<u>55,000</u>	<u>50,000</u>	<u>15,000</u>
Operating income	<u>\$125,000</u>	<u>\$110,000</u>	<u>\$55,000</u>

### (b) Activity-based costing system

	<u>Product 540X</u>	<u>Product 137Y</u>	<u>Product 249S</u>
Sales	\$180,000	\$160,000	\$70,000
Costs	<u>50,000</u>	<u>35,000</u>	<u>35,000</u>
Operating income	<u>\$130,000</u>	<u>\$125,000</u>	<u>\$35,000</u>

(c) Product 540X:  $(\$130,000 - \$125,000) \div \$125,000 = 4.00\%$

Product 137Y  $(\$125,000 - \$110,000) \div \$110,000 = 13.64\%$

Product 249S  $(\$35,000 - \$55,000) \div \$55,000 = (36.36\%)$

(d) These costs are similar probably because the cost drivers are essentially the same; that is, they are based on a unit volume concept.

**EXERCISE 4-3**

(a) <u>Activity cost pools</u>	<u>Cost drivers</u>	<u>Estimated overhead</u>
Cutting	Machine hours	\$360,000
Design	Number of setups	585,000

**Activity-based overhead rates**

<u>Cutting</u>		<u>Design</u>
$\frac{\$360,000}{200,000} = \$1.80$ per machine hour		$\frac{\$585,000}{1,500} = \$390$ per setup

	<u>Wool</u>	<u>Cotton</u>
<b>Activity-based costing</b>		
<b>Cutting</b>		
100,000 X \$1.80	\$180,000	
100,000 X \$1.80		\$180,000
<b>Design</b>		
1,000 X \$390	390,000	
500 X \$390		195,000
<b>Total cost allocated</b>	<u>\$570,000</u>	<u>\$375,000</u>

(b)  $\frac{\text{Estimated overhead}}{\text{Direct labors hours}} = \frac{\$945,000}{450,000} = \$2.10$  per direct labor hour

	<u>Wool</u>	<u>Cotton</u>
<b>Traditional costing</b>		
225,000 X \$2.10	<u>\$472,500</u>	
225,000 X \$2.10		<u>\$472,500</u>

The wool product line is allocated \$97,500 (\$570,000 – \$472,500) more overhead cost when an activity-based costing system is used. As a result, the cotton product line is allocated \$97,500 (\$472,500 – \$375,000) less.

## EXERCISE 4-4

(a)	Direct labor hours for car wheels	(40,000 X 1)	=	40,000
	Direct labor hours for truck wheels	(10,000 X 3)	=	<u>30,000</u>
	Total direct labor hours			<u>70,000</u>

$$\frac{\$770,000 \text{ (total estimated overhead)}}{70,000 \text{ (total direct labor hours)}} = \$11 \text{ per direct labor hour.}$$

### Overhead assigned

Car wheels	(40,000 X \$11)	=	\$440,000
Truck wheels	(30,000 X \$11)	=	<u>330,000</u>
Total overhead			<u>\$770,000</u>

(b)			Expected Use of <u>Cost</u> <u>Drivers</u>	=	ABC Overhead <u>Rate</u>
	<u>Activity Cost Pool</u>	<u>Estimated Overhead</u>	÷		
	Setting up machines	\$220,000		1,000	\$220
	Assembling	280,000		70,000	\$ 4
	Inspection	270,000		1,200	\$225

(c)		<u>Car Wheels</u> Expected Use of Cost Driver per Product	X	Activity-Based Overhead Rates	=	Cost <u>Assigned</u>
	<u>Activity Cost Pools</u>					
	Setting up machines	200		\$220		\$ 44,000
	Assembling	40,000		\$ 4		160,000
	Inspection	100		\$225		<u>22,500</u>
	Total cost assigned					<u>\$226,500</u>

**EXERCISE 4-4 (Continued)**

<b>(c)</b>	<u>Truck Wheels</u>			
<u>Activity Cost Pools</u>	<u>Expected use of Cost Driver per Product</u>	X	<u>Activity- Based Overhead Rates</u>	= <u>Cost Assigned</u>
Setting up machines	800		\$220	\$176,000
Assembling	30,000		\$ 4	120,000
Inspection	1,100		\$225	<u>247,500</u>
Total cost assigned				<u>\$543,500</u>

(d) Assuming that the cost drivers are a reasonable representation of what is occurring in the two product lines, it seems appropriate to switch to activity-based costing. By using this system, more accurate cost information is developed which should lead to better allocation of resources and pricing decisions in the future.

**EXERCISE 4-5**

(a) Traditional costing:

$$\begin{aligned} & \$260,000 \div 2,500 (800 + 1,700) \text{ hours} \\ & = \$104 \text{ per direct labor hour} \end{aligned}$$

(1) One mobile safe:

$$\begin{aligned} & 800 \text{ hours} \times \$104 = \$83,200 \\ & \$83,200 \div 200 = \underline{\$416} \text{ each} \end{aligned}$$

(2) One walk-in safe:

$$\begin{aligned} & 1,700 \text{ hours} \times \$104 = \$176,800 \\ & \$176,800 \div 50 = \underline{\$3,536} \text{ each} \end{aligned}$$

## EXERCISE 4-5 (Continued)

### (b) Activity-based costing:

#### (1) Material handling costs

$$\$160,000 \div 500 (300 + 200) \text{ moves} = \$320 \text{ per move}$$

##### (a) One mobile safe:

$$300 \text{ moves} \times \$320 = \$96,000$$

$$\$96,000 \div 200 = \underline{\$480} \text{ each}$$

##### (b) One walk-in safe:

$$200 \text{ moves} \times \$320 = \$64,000$$

$$\$64,000 \div 50 = \underline{\$1,280} \text{ each}$$

#### (2) Purchasing activity costs

$$\$100,000 \div 800 (450 + 350) \text{ orders} = \$125 \text{ per order}$$

##### (a) One mobile safe:

$$450 \text{ orders} \times \$125 = \$56,250$$

$$\$56,250 \div 200 = \underline{\$281.25} \text{ each}$$

##### (b) One walk-in safe:

$$350 \text{ orders} \times \$125 = \$43,750$$

$$\$43,750 \div 50 = \underline{\$875} \text{ each}$$

### (c) The total amount of overhead allocated to each unit of the two products under the two allocation approaches is:

	<u>Traditional Costing</u>	<u>Activity-Based Costing</u>
Mobile safe	\$ 416	\$761.25*
Walk-in safe	\$3,536	\$ 2,155**

$$*\$480 + \$281.25$$

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## EXERCISE 4-6

<u>Budgeted Costs</u>	<u>Activity Cost Pool</u>	<u>Cost Driver</u>
Engineering design Engineering prototypes	} Engineering	Engineering hours
Depreciation, machinery Electricity, machinery	} Machinery	Machine hours
Machine setup, indirect labor Machine setup, indirect materials	} Machine setup	Number of setups
Inspections Tests	} Quality control	Number of tests or inspections
Depreciation, plant Insurance, plant Property taxes Oil, heating Electricity, plant lighting	} Factory utilities	Square feet or Machine hours
Machine maintenance wages	} Maintenance	Number of machines or Machine hours

## EXERCISE 4-7

The following cost drivers might be used to assign overhead:

1. Labor hours
2. Labor hours
3. Labor hours
4. Gallons of chemicals
5. Number of cartfuls or labor hours
6. Number of cartfuls
7. Gallons of juice
8. Gallons of juice
9. Gallons of wine or months of aging
10. Number of bottles
11. Number of bottles
12. Number of boxes
13. Number of shipments
14. Number of gallons processed
15. Number of gallons processed

## EXERCISE 4-8

1. Number of engineering change orders; hours of designing
2. Number of orders processed
3. Number of parts in stock
4. Weight of material; number of boxes or cartons
5. Employee turnover; number of employees hired
6. Machine hours; direct labor hours
7. Number of employees; number of parts; direct labor hours
8. Number of employees
9. Book or market value of assets
10. Cost of goods manufactured, direct labor hours; number of employees
11. Machine hours; number of machines
12. Gallons of paint; number of appliances

## EXERCISE 4-9

(a) The overhead rates are:

<u>Activity Cost Pools</u>	<u>Estimated Overhead</u> ÷	<u>Expected Use of Cost Drivers per Activity</u>	= <u>Activity-Based Overhead Rates</u>
Materials handling	\$40,000	1,000	\$40
Machine setups	21,500	500	43
Quality inspections	33,000	600	55

(b) The assignment of the overhead costs to products is as follows:

<u>Cost Driver</u>	<u>Instruments</u>		<u>Gauges</u>		<u>Cost Assigned</u>
	<u>Number</u>	<u>Cost</u>	<u>Number</u>	<u>Cost</u>	
Requisitions (\$40)	400	\$16,000	600	\$24,000	\$40,000
Machine setups (\$43)	200	8,600	300	12,900	21,500
Inspections (\$55)	200	<u>11,000</u>	400	<u>22,000</u>	<u>33,000</u>
Total costs assigned (a)		<u>\$35,600</u>		<u>\$58,900</u>	<u>\$94,500</u>
Units produced (b)		<u>50</u>		<u>300</u>	
Overhead cost per Unit (a) ÷ (b)		<u>\$ 712</u>		<u>\$ 196*</u>	

\*Rounded to nearest dollar

## EXERCISE 4-9 (Continued)

(c)

### MEMO

To: President, Air United, Inc.  
From: Student  
Re: Benefits of activity-based costing (ABC)

ABC focuses on the activities performed in producing a product. Overhead costs are assigned to products based on cost drivers that measure the activities performed on the product.

The primary benefit of ABC is more accurate and meaningful product costing. This improved cost data can lead to reduced costs as managers become more aware of the underlying causes of cost incurrence. Thus, control over costs is enhanced.

The improved cost data should also lead to better management decisions. More accurate product costing should contribute to setting selling prices which will help achieve desired profitability levels. In addition, it should be helpful in deciding whether to make or buy a product part or component, and sometimes even whether to eliminate a product.



## EXERCISE 4-10

(a) (1) Traditional product costing system:

$\$400,000 \times .70 = \$280,000$  Selling costs assigned in March to the “high intensity” product line.

(2) Activity-based costing system:

Activity Cost Pools	Cost Drivers Used	X	Activity- Based Overhead Rates	=	Overhead Cost Assigned
Sales commissions	\$900,000		\$.05		\$ 45,000
Advertising—TV	250		\$300		75,000
Advertising—Internet	2,000		\$10		20,000
Catalogs	60,000		\$2.50		150,000
Cost of catalog sales	9,000		\$1.00		9,000
Credit and collection	\$900,000		\$.03		27,000
Total assigned cost for March					<u>\$326,000</u>

(b) As compared to ABC, traditional costing grossly undercosts the selling costs assigned to the “high intensity” product line. The difference of \$46,000 ( $\$326,000 - \$280,000$ ) in the month of March is a 14.1% understatement.

## EXERCISE 4-11

(a) 1. Traditional product costing system:

Quality-control overhead costs assigned in June to the low-calorie breakfast line are \$11,900 ( $\$70,000 \times .17$ ).

2. Activity-based costing system:

<u>Activity Cost Pools</u>	<u>Cost Drivers Used</u>	X	<u>Activity- Based Overhead Rate</u>	=	<u>Overhead Cost Assigned</u>
Inspections of material received	6,000		\$ .90		\$ 5,400
In-process inspections	10,000		\$ .33		3,300
FDA certification	420		\$12.00		<u>5,040</u>
Total assigned cost for June					<u>\$13,740</u>

(b) As compared to ABC, the traditional costing system undercosts the quality-control overhead cost assigned to the low-calorie breakfast line by \$1,840 ( $\$13,740 - \$11,900$ ) in the month of June. That is a 13.4% understatement.

(c) All three activities, as quality-control related activities, are non-value-added activities.

## EXERCISE 4-12

<u>Activity Cost Pools</u>	<u>Activity Level</u>
Engineering	Product-level
Machinery	Unit-level
Machine setup	Batch-level
Quality control	Depends on frequency. Could be unit, batch, or product-level
Factory utilities	Facility-level
Maintenance	Facility-level

## EXERCISE 4-13

1. Facility-level activity
2. Product-level activity
3. Batch-level activity
4. Product-level activity
5. Product-level activity
6. Batch-level activity
7. Facility-level activity
8. Batch-level or unit-level activity
9. Unit-level activity
10. Unit-level activity

## EXERCISE 4-14

(a)

<u>Activity Cost Pools</u>	<u>Estimated Overhead</u>	÷	<u>Expected use of Cost Drivers</u>	=	<u>ABC Overhead Rates</u>
Scheduling and travel	\$85,000		1,250		\$ 68.00
Setup time	\$90,000		600		\$150.00
Supervision	\$60,000		\$400,000*		\$ .15

\*\$100,000 + \$300,000

<u>Commercial</u>					
<u>Activity Cost Pools</u>	<u>Expected use of Cost Drivers per Product</u>	X	<u>ABC Overhead Rates</u>	=	<u>Cost Assigned</u>
Scheduling and travel	750		\$ 68.00		\$ 51,000
Setup time	350		\$150.00		52,500
Supervision	\$100,000		\$ .15		<u>15,000</u>
Total assigned costs					<u>\$118,500</u>

<u>Residential</u>					
<u>Activity Cost Pools</u>	<u>Expected use of Cost Drivers per Product</u>	X	<u>ABC Overhead Rates</u>	=	<u>Cost Assigned</u>
Scheduling and travel	500		\$ 68.00		\$ 34,000
Setup time	250		\$150.00		37,500
Supervision	\$300,000		\$ .15		<u>45,000</u>
Total assigned costs					<u>\$116,500</u>

## EXERCISE 4-14 (Continued)

(b)		<u>Commercial</u>		<u>Residential</u>
Revenues		\$300,000		\$480,000
Direct material costs	\$ 30,000		\$ 50,000	
Direct labor costs	100,000		300,000	
Overhead costs	<u>118,500</u>	<u>248,500</u>	<u>116,500</u>	<u>466,500</u>
Operating income (loss)		<u>\$ 51,500</u>		<u>\$ 13,500</u>

- (c) Assuming that the cost drivers are a reasonable representation of what is occurring in the two product lines, it seems appropriate to switch to activity-based costing. By using this system, more accurate cost information is developed which should lead to better allocations of resources and more informative pricing decisions in the future.

## EXERCISE 4-15

The following activities might be identified at Snap Prints Company from your analysis of its operations and a discussion with the owner-manager, Terry Morton.

1. Hiring and training personnel
2. Purchasing supplies and materials
3. Selling, promoting, and marketing
4. Billing and collecting
5. Designing
6. Offset printing
7. Copying
8. Faxing
9. Collating
10. Cutting and folding
11. Maintenance and repairs
12. Delivery
13. Accounting

## EXERCISE 4-16

<u>Value-Added Activities</u>	<u>Hours</u>
Writing contracts and letters	1.5
Taking depositions	1.0
Contemplating legal strategy	1.0
Litigating a case in court	<u>2.5</u>
	<u>6.0</u>
<u>Non-Value-Added Activities</u>	<u>Hours</u>
Attending staff meetings	0.5
Doing research	1.0
Traveling to/from court	1.0
Eating lunch	1.0
Entertaining a prospective client	<u>1.5</u>
	<u>5.0</u>

### Questionable Classifications

Writing contracts is value-added; writing letters may be value-added if related to a specific case or it may be non-value-added if it is billing a client or collecting receivables. Research may be value-added if it is unique, related to a specific case, and is billable. Research may be non-value-added if it is something the attorney should already have known and is not billable to the client.

## EXERCISE 4-17

(a) The predetermined overhead rate under traditional costing would be:

$$\$42,000 \div 1,500 \text{ hours} = \$28$$

(b) The amount of overhead allocated to the average residential job would be:

$$\$28 \times .5 \text{ hours} = \$14$$

(c) The activity-based overhead rates for each cost pool would be

<u>Activity Cost Pools</u>	<u>Estimated Overhead</u>	$\div$	<u>Expected Use of Cost Drivers per Activity</u>	$=$	<u>Activity Based Overhead Rate</u>
Plowing	\$38,000	$\div$	200,000 square yards	$=$	\$0.19 per square yard
Snowthrowing	\$ 4,000	$\div$	50,000 linear feet	$=$	\$0.08 per linear foot

(d) The amount of overhead allocated to the average residential job under activity based costing would be:

	<u>Expected use of Cost Driver Per Job</u>	$\times$	<u>Activity Based Overhead Rate</u>	$=$	<u>Cost Allocated</u>
Plowing	20	$\times$	\$0.19	$=$	\$3.80
Snowthrowing	60	$\times$	\$0.08	$=$	4.80
					<u>\$8.60</u>

(e) The amount of overhead allocated to the average residential job under traditional costing is \$14, versus \$8.60 under ABC. This means that too much overhead is being allocated to residential jobs, and too little to commercial jobs under traditional costing. This would make the residential jobs appear less profitable than they actually are, and would overstate the profitability of the commercial jobs.