Chapter 12 – Sample Problems

Use the following information to answer questions 1-5.
You have been asked by the president of your company to evaluate the proposed acquisition of new equipment. The equipment's basic price is $177,000, and shipping costs will be $3,500. It will cost another $26,600 to modify it for special use by your firm, and an additional $12,400 to install the equipment. The equipment falls in the MACRS 3-year class, and it will be sold after three years for $22,000. The equipment is expected to generate revenues of $173,000 per year with annual operating costs of $81,000. The firm's tax rate is 30.0%.

MACRS Ownership year	3-year
1	33%
2	45%
3	15%
4	7%

1. What is the net investment (initial outlay) for the project?
a. $192,900
b. $177,000
c. $219,500
d. $203,600
e. $197,500

2. What is the operating cash flow for year 1?
a. $72,435
b. $13,695
c. $92,000
d. $19,565
e. $86,130

3. What is the operating cash flow for year 2?
a. $94,033
b. -$4,742
c. $92,000
d. -$6,775
e. $98,775

4. What is the operating cash flow for year 3?
a. $41,352
b. $74,277
c. $92,000
d. $59,075
e. $32,925

5. What is the value of the terminal year non-operating cash flows at the end of Year 3? (What is the after-tax cash flow associated with the sale of the equipment?)
a. $6,635
b. $15,400
c. $20,009
d. $4,644
e. $13,374

Use the following information to answer questions 6-10.
You have been asked by the president of your company to evaluate the proposed acquisition of new equipment. The equipment's basic price is $195,000, and shipping costs will be $3,900. It will cost another $23,400 to modify it for special use by your firm, and an additional $9,800 to install the equipment. The equipment falls in the MACRS 3-year class, and it will be sold after three years for $30,200. The equipment is expected to generate revenues of $179,000 per year with annual operating costs of $90,000. The firm's tax rate is 25.0%.

MACRS

Ownership year	3-year
1	33%
2	45%
3	15%
4	7%

6. What is the net investment (initial outlay) for the project?
a. $232,100
b. $195,000
c. $208,700
d. $218,400
e. $201,900

7. What is the operating cash flow for year 1?
a. $9,305
b. $85,898
c. $89,000
d. $12,407
e. $76,593

8. What is the operating cash flow for year 2?
a. $89,000
b. -$11,584
c. $92,861
d. -$15,445
e. $104,445

9. What is the operating cash flow for year 3?
a. $75,454
b. $40,639
c. $89,000
d. $54,185
e. $34,815

10. What is the value of the terminal year non-operating cash flows at the end of Year 3? (What is the after-tax cash flow associated with the sale of the equipment?)
a. $13,953
b. $22,650
c. $26,712
d. $10,465
e. $12,759

Answers:

1. c
2. e
3. a
4. b
5. c
6. a
7. b
8. c
9. a
10. c

Solutions
Problems 1-5
Initial Outlay

Base price	$177,000
Shipping	$3,500
Installation	$12,400
add'l changes	$26,600
TOTAL COST	$219,500

Depreciation

year	schedule	cost	DEP
1	0.33	$219,500	$72,435
2	0.45	$219,500	$98,775
3	0.15	$219,500	$32,925
4	0.07	$219,500	$15,365

Oper. cash flows	1	2	3
Revenue	$173,000	$173,000	$173,000
- oper costs	$81,000	$81,000	$81,000
- depreciation	$72,435	$98,775	$32,925
TAXABLE	$19,565	-$6,775	$59,075
TAXES	-$5,870	$2,033	-$17,723
NI	$13,695	-$4,742	$41,352
DEP	$72,435	$98,775	$32,925
operating ACFs	$86,130	$94,033	$74,277
			$20,009
Total ACFs	$86,130	$94,033	$94,286

Terminal CF	
salvage value	$22,000
- book value	$15,365
Taxable	$6,635
times tax rate	0.30
TAXES	$1,991
salvage value	$22,000
minus taxes	$1,991
net term CF	$20,009

Problems 6-10.

Initial Outlay

Base price	$195,000
Shipping	$3,900
Installation	$9,800
add'l changes	$23,400
TOTAL COST	$232,100

Depreciation

year	schedule	cost	DEP
1	0.33	$232,100	$76,593
2	0.45	$232,100	$104,445
3	0.15	$232,100	$34,815
4	0.07	$232,100	$16,247

Oper. cash flows	1	2	3
Revenue	$179,000	$179,000	$179,000
- oper costs	$90,000	$90,000	$90,000
- depreciation	$76,593	$104,445	$34,815
TAXABLE	$12,407	-$15,445	$54,185
TAXES	-$3,102	$3,861	-$13,546
NI	$9,305	-$11,584	$40,639
DEP	$76,593	$104,445	$34,815
operating ACFs	$85,898	$92,861	$75,454
			$26,712
Total ACFs	$85,898	$92,861	$102,166

Terminal CF	
salvage value	$30,200
- book value	$16,247
Taxable	$13,953
times tax rate	0.25
TAXES	$3,488
salvage value	$30,200
minus taxes	$3,488
net term CF	$26,712