MULTIPLE CHOICE

1. Gamma Electronics is considering the purchase of testing equipment that will cost $500,000. The equipment has a 5-year lifetime with no salvage value. Assume the new machine will generate after-tax savings of $100,000 per year for the five years.

If the firm has a 15% cost of capital, what is the equivalent annual cost of the equipment?

a. $32,924  
b. $42,746  
c. $49,158  
d. $37,863

ANS: C
NPV = -500,000 + 100,000/1.15 + 100,000/1.15² + 100,000/1.15³ + 100,000/1.15⁴ + 100,000/1.15⁵ = -164,784

Suppose the equivalent annual cost is x, then

x/1.15 + x/1.15² + x/1.15³ + x/1.15⁴ + x/1.15⁵ = -164,784

x = -49,158

DIF: M  REF: 9.4 Special Problems in Capital Budgeting

2. Thompson Manufacturing must choose between two types of furnaces to install. Model A has a 6 year life, and an NPV of $5,000. Model B has a 5 year life, and an NPV of $4,200. The relevant discount rate is 12%. Which model should be chosen? What’s the annual cash flow from that model?

a. Model B; $1,165  
b. Model B; $840  
c. Model A; $833  
d. Model A; $1,216

ANS: D
Suppose the annual annuity of model A is x, and that of model B is y.

x/1.12 + x/1.12² + x/1.12³ + x/1.12⁴ + x/1.12⁵ = 5000

x = $1216

y/1.12 + y/1.12² + y/1.12³ + y/1.12⁴ + y/1.12⁵ = 4200

y = $1165

DIF: M  REF: 9.4 Special Problems in Capital Budgeting

3. A firm is evaluating two machines. Both machines meet the firm’s quality standard. Machine A costs $40,000 initially and $1,000 per year to maintain. Machine B costs $24,000 initially and $2,000 per year to maintain. Machine A has a 6 year useful life and machine B has a 3 year useful life. Both machines have zero salvage value. Assume the firm will continue to replace worn-out machines with similar machines, and the discount rate is 7%. Which machine should the firm purchase?

a. Machine A  
b. Machine B  
c. The firm is indifferent to the two machines  
d. Can’t tell from the given information
Cash outflows for two machines:

<table>
<thead>
<tr>
<th>Year</th>
<th>Machine A</th>
<th>Machine B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>40,000</td>
<td>24,000</td>
</tr>
<tr>
<td>1</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>2</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>3</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>4</td>
<td>1,000</td>
<td>26,000</td>
</tr>
<tr>
<td>5</td>
<td>1,000</td>
<td>2,000</td>
</tr>
<tr>
<td>6</td>
<td>1,000</td>
<td>2,000</td>
</tr>
</tbody>
</table>

NPV: $44,767 $51,843

4. Capital budgeting must be placed on an incremental basis. This means that ______ must be ignored and ______ must be considered.
   a. sunk cost; opportunity cost
   b. sunk cost; financing cost
   c. cannibalization; opportunity cost
   d. opportunity cost; net working capital

ANS: A

5. Roger is considering the expansion of his business into a property he purchased two years ago. Which of the following items should not be included in the analysis of this expansion?
   a. Roger can lease the property to another company for $12,000 per year.
   b. Costs of hiring additional staff
   c. The property was extensively renovated last year at a cost of $15,000.
   d. The expansion will result in a slight increase of inventory carried.

ANS: C

6. You are given the following information. What is the initial cash outflow?

   Purchase and installation of new equipment $12,000
   Sale price of replaced equipment $4,000
   Book value of replaced equipment $3,000
   When the new equipment is installed:
     Inventory increase $2,000
     Accounts payable increase $1,000
     Tax rate 40%

   a. $9,400
   b. $9,000
   c. $13,000
   d. $10,600

ANS: A

12,000 - (4000 - 1000*.4) + (2000 - 1000) = $9,400
7. A machine costs $3 million and has zero salvage value. Assume a discount rate of 10% and a 40% tax rate. The machine is depreciated straight-line over 3 years for tax purpose. What is the present value of depreciation tax savings associated with this machine?
   a. $1,200,000
   b. $994,741
   c. $1,090,900
   d. $400,000
   ANS: B
   \[
   PV = \frac{0.4}{1.1} + \frac{0.4}{1.1^2} + \frac{0.4}{1.1^3} = 0.994741
   \]
   DIF: M

8. A machine costs $3 million and has zero salvage value. The machine qualifies under the 3-year MARCS category. Assume a discount rate of 10% and a 40% tax rate. What is the present value of depreciation tax savings associated with this machine? (MARCS tax depreciation schedule of a 3-year class asset: 33.33% in year 1, 44.45% in year 2, 14.81% in year 3, and 7.41% in year 4)
   a. $1,090,900
   b. $1,200,000
   c. $994,741
   d. $998,684
   ANS: D
   ![Depreciation Schedule Table]
   \[
   \text{Total: 998684}
   \]
   DIF: M

9. Alpha Car Rental purchased 5 cars for a total of $100,000 three years ago. Now it is replacing the cars with newer vehicles. The company has depreciated 92.59% of the old cars, and sold these cars for a total of $ 25,000. Assume a tax rate of 40%. What is the cash inflow from the sale of these vehicles?
   a. $25,000
   b. $15,000
   c. $17,964
   d. $16,500
   ANS: C
   \[
   25,000 - (25,000 - 100,000 \times 7.41\%) \times .4 = 17,964
   \]
   DIF: E

10. Net working capital decreases when
   a. inventory falls, accounts receivable falls, or accounts payable increases
   b. inventory increases, accounts receivable increases, or accounts payable falls
   c. cost of goods sold falls, or interest rate falls
   d. operating expenses fall, or current assets increase
   ANS: A
   DIF: M

11. The cash flows associated with an investment project are as follows:
Cash Flows

Initial Outflow $-7,000,000
Year 1 $100,000
Year 2 $200,000
Year 3 $540,000

In year 4 and beyond, cash flows would continue to grow at 4 percent per year. Assume a discount rate of 10%. What is the NPV of this investment?

a. $385,220
b. $423,742
c. $631,104
d. $694,215

ANS: D

As of year 3, the present value of cash flows in year 4 and beyond is

\[ PV = \frac{540,000 \times 1.04}{0.10 - 0.04} = \frac{540,000}{0.06} = 9,360,000 \]

\[ NPV = -7,000,000 + \frac{100,000}{1.1} + \frac{200,000}{1.1^2} + \frac{540,000 + 9,360,000}{1.1^3} = 694,215 \]

DIF: M

REF: 9.1 Types of Cash Flows

12. Georgia Food is exploring the possibility of bringing a new frozen pasta to the market. Which of the following items are not relevant for the project’s analysis?
   a. Cost of increasing shelf space at grocery stores
   b. Lost revenue from its frozen pizza sales since some customers will switch to purchase the new frozen pasta
   c. Cost of advertising the new product
   d. Market research funds the company has spent on testing the viability of the new product

ANS: D

13. A certain investment will require an immediate cash outflow of $3 million. At the end of each of the next three years, the investment will generate cash inflows of $1.3 million. If the discount rate is 10%, what is the project’s NPV?
   a. $211,734
   b. -$303,886
   c. $232,908
   d. -$276,260

ANS: C

\[ NPV = -3m + \frac{1.3m}{1.1} + \frac{1.3m}{1.1^2} + \frac{1.3m}{1.1^3} = 0.232908m \]

DIF: E

REF: 9.1 Types of Cash Flows

NARRBEGIN: Exhibit 9-1

Exhibit 9-1

A project requires an initial investment in equipment and machinery of $10 million. The equipment is expected to have a 5-year lifetime with no salvage value and will be depreciated on a straight-line basis. The project is expected to generate revenues of $5.1 million each year for the 5 years and have operating expenses (not including depreciation) amounting to 1/3 of revenues.

NARREND

14. Refer to Exhibit 9-1. The tax rate is 40%. What is the net cash flow in year 1?
1. Refer to Exhibit 9-1. Assume the tax rate is 40%, and the cost of capital is 10%. What is the present value of cash inflows from year 1 to year 5? What percentage of this present value is attributed to the tax benefits accruing from depreciation?
   a. $12.89m; 24%
   b. $10.77m; 28%
   c. 3.18m; 95%
   d. 7.73m; 39%
   e. $10.77m; 24%

   ANS: B

   Cash flow from year 1 to year 5 is the same.

   Revenue: 5.1m
   Expense: 1.7m
   Depreciation: 2.0m
   Pretax income: 1.4m
   Tax: 0.56m
   NI: 0.84m
   Depreciation: 2m
   Net cash flow: 2.84m

   PV of cash flows (y1-y5) = 2.84/1.1 + 2.84/1.1^2 + 2.84/1.1^3 + 2.84/1.1^4 + 2.84/1.1^5 = 10.77m

   PV of depreciation tax savings (y1-y5) = 0.8/1.1 + .8/1.1^2 + .8/1.1^3 + .8/1.1^4 + .8/1.1^5 = 3.03m

   3.03/10.77 = 28%

   DIF: M  REF: 9.1 Types of Cash Flows  NAR: Exhibit 9-1

16. Refer to Exhibit 9-1. Assume the tax rate is 40%, and the cost of capital is 10%. What is the net present value of the project?
   a. $2.89m
   b. $0.77m
   c. -$6.82m
   d. -$2.27m
17. Johnson Chemicals is considering an investment project. The project requires an initial $3 million outlay for equipment and machinery. Sales are projected to be $1.5 million per year for the next four years. The equipment will be fully depreciated straight-line by the end of year 4. Cost of goods sold and operating expense (not including depreciation) are predicted to be 30% of sales. The equipment can be sold for $400,000 at the end of year 4. Johnson Chemicals also needs to add net working capital of $100,000 immediately. The net working capital will be recovered in full at the end of the fourth year. Assume the tax rate is 40% and the cost of capital is 10%.

What is the NPV of this investment?

a. $89,290
b. $80,199
c. $189,482
d. $72,909

ANS: B

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rev</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Expense</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>Depreciation</td>
<td>.75</td>
<td>.75</td>
<td>.75</td>
<td>.75</td>
<td>.75</td>
</tr>
<tr>
<td>EBIT</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>NI</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>Depreciation</td>
<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>Operating cash flow</td>
<td>0.93</td>
<td>0.93</td>
<td>0.93</td>
<td>0.93</td>
<td>0.93</td>
</tr>
<tr>
<td>Change in NWC</td>
<td>-0.1</td>
<td></td>
<td></td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>Net investment</td>
<td>-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale of equipment</td>
<td></td>
<td></td>
<td></td>
<td>0.24 (=.4 - .4*.4)</td>
<td></td>
</tr>
<tr>
<td>Net cash flow</td>
<td>-3.1</td>
<td>.93</td>
<td>.93</td>
<td>.93</td>
<td>1.27</td>
</tr>
</tbody>
</table>

NPV = -3.1 + .93/1.1 + .93/1.1^2 + .93/1.1^3 + 1.27/1.1^4 = 0.080199m = 80,199

DIF: H  REF: 9.1 Types of Cash Flows

18. Which of the following items will lead to a rise in net working capital?

A. Raw materials are purchased prior to the sale of finished goods
B. The firm increases its cash balance
C. The firm makes a sale on credit
D. The firm buys inventory on credit
E. Short-term interest rates fall

a. A,B,C
b. A,B,D,E
c. A,C
d. A,B,C,D

ANS: A DIF: M REF: 9.1 Types of Cash Flows

19. A project will generate a real cash flow three years from now of $100,000. If the nominal discount rate is 10% and expected inflation is 3%, what is the nominal cash flow for year 3?
a. $112,551
b. $106,090
c. $109,273
d. $122,504

ANS: C

100,000\times1.03^3 = 109,273

DIF: E REF: 9.1 Types of Cash Flows

20. Paul earns $60,000 as an engineer, and he is considering quitting his job and going to graduate school. This $60,000 should be treated as a ________ if Paul runs an NPV analysis of his graduate degree.
a. sunk cost
b. opportunity cost
c. fixed cost
d. cannibalization cost

ANS: B

DIF: E REF: 9.2 The Relevant Cash Flows

21. Fox Entertainment is evaluating the NPV of launching a new iPet product. Fox paid a market research firm $120,000 last year to test the market viability of iPet. Fox Entertainment should treat this $120,000 as a ________ for the capital budgeting decision now confronting the firm.
a. fixed cost
b. opportunity cost
c. sunk cost
d. cannibalization cost

ANS: C

DIF: E REF: 9.2 The Relevant Cash Flows

NARRBEGIN: Exhibit 9-2

**Exhibit 9-2**
The following data are projected for a possible investment project:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$120,000</td>
<td>$140,000</td>
<td>$160,000</td>
<td>$180,000</td>
</tr>
<tr>
<td>Cost of Goods Sold</td>
<td>$36,000</td>
<td>$42,000</td>
<td>$48,000</td>
<td>$54,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>$80,000</td>
<td>$60,000</td>
<td>$40,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>EBIT</td>
<td>$4,000</td>
<td>$38,000</td>
<td>$72,000</td>
<td>$106,000</td>
</tr>
</tbody>
</table>

NARREND
22. Refer to Exhibit 9-2. The project requires an initial investment of $300,000. Working capital is anticipated to be variable at 10% of revenues; the working capital investment must be made at the beginning of each period, and will be recaptured in full at the end of year 4. The tax rate is 40%.

What is the initial cash outlay?

a. $300,000  

b. $312,000  

c. $232,000  

d. $220,000  

ANS: B  

Initial cash outlay = working capital $12,000 + initial investment $300,000  

DIF: M 

REF: 9.1 Types of Cash Flows  

NAR: Exhibit 9-2

23. Refer to Exhibit 9-2. The project requires an initial investment of $300,000. Working capital is anticipated to be variable at 10% of revenues; the working capital investment must be made at the beginning of each period, and will be recaptured in full at the end of year 4. The tax rate is 40%.

What is the net cash flow to the firm in year 1?

a. $400  

b. $82,400  

c. $68,400  

d. $80,400  

e. $2,400  

ANS: D  

Operating cash flow = 4,000*0.6 NI + 80,000 depreciation = 82,400  

Change in working capital = 12,000 - 14,000 = -2,000  

Net cash flow = 82,400 - 2,000 = 80,400  

DIF: M 

REF: 9.1 Types of Cash Flows  

NAR: Exhibit 9-2

24. Refer to Exhibit 9-2. The project requires an initial investment of $300,000 on equipment. Working capital is anticipated to be variable at 10% of revenues; the working capital investment must be made at the beginning of each period, and will be recovered in full at the end of year 4. Equipment will be sold at its book value at the end of year 4. The tax rate is 40%.

What is the net cash flow to the firm in year 4?

a. $101,600  

b. $201,600  

c. $183,600  

d. $161,600  

ANS: B  

Operating cash flow = 106,000*0.6 NI + 20,000 depreciation = 83,600  

Change in working capital = 18,000  

Sale of equipment at book value = 300,000 - (80,000+60,000+40,000+20,000) = 100,000  

Net cash flow = 83,600 + 18,000 + 100,000 = 201,600  

DIF: M 

REF: 9.1 Types of Cash Flows  

NAR: Exhibit 9-2
25. Refer to Exhibit 9-2. The project requires an initial investment of $300,000 on equipment. Working capital is anticipated to be variable at 10% of revenues; the working capital investment must be made at the beginning of each period, and will be recovered in full at the end of year 4. Equipment will be sold at its book value at the end of year 4. The tax rate is 40%.

What is the net present value of the project if the firm’s discount rate is 10%?

a. -$20,225
b. -$41,731
c. $24,155
d. $26,570

ANS: D

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income</td>
<td>2,400</td>
<td>22,800</td>
<td>43,200</td>
<td>63,600</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>80,000</td>
<td>60,000</td>
<td>40,000</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Operating cash flow</td>
<td>82,400</td>
<td>82,800</td>
<td>83,200</td>
<td>83,600</td>
<td></td>
</tr>
<tr>
<td>Change in NWC</td>
<td>-12,000</td>
<td>-2,000</td>
<td>-2,000</td>
<td>-2,000</td>
<td></td>
</tr>
<tr>
<td>Initial investment</td>
<td>-300,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sale of equipment</td>
<td>100,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net cash flow</td>
<td>-312,000</td>
<td>80,400</td>
<td>80,800</td>
<td>81,200</td>
<td>201,600</td>
</tr>
</tbody>
</table>

\[
\text{NPV} = -312,000 + \frac{80,400}{1.1} + \frac{80,800}{1.1^2} + \frac{81,200}{1.1^3} + \frac{201,600}{1.1^4} = 26,570
\]

DIF: H  
REF: 9.1 Types of Cash Flows  
NAR: Exhibit 9-2

26. Future Semiconductor is considering the purchase of photolithography equipment that will cost $3 million. The equipment requires maintenance of $5,000 at the end of each of the next five years. After five years it will be sold for $500,000. Assume a cost of capital of 15% and no taxes. What is the present value of the cost of the equipment? What is the equivalent annual cost of the equipment?

a. $3,016,761; $899,947
b. $2,516,760; $750,789
c. $2,407,106; $718,077
d. $2,768,172; $825,789

ANS: D

Present value of the equipment = 3,000,000 + 5,000/1.15 + 5,000/1.15^2 + 5,000/1.15^3 + 5,000/1.15^4 + 5,000/1.15^5 - 500,000/1.15^5 = 2,768,172

Suppose the EAC is x. Then
\[
x/1.15 + x/1.15^2 + x/1.15^3 + x/1.15^4 + x/1.15^5 = 2,768,172
\]
\[
x = 825,789
\]

DIF: M  
REF: 9.4 Special Problems in Capital Budgeting

27. Sam’s Insurance must choose between two types of printers. Both printers meet the firm’s quality standard. Printer A costs $3,500 and is expected to last 3 years with operating costs of $380 per year. Printer B costs $2,500 and is expected to last 2 years with operating costs of $400 per year. Assume a discount rate of 10%. Which printer should Sam’s Insurance purchase? What is the equivalent annual cost of this machine?

a. Printer B; $3,194
b. Printer A; $1,625
c. Printer B; $2,904
d. Printer A; $1,787

ANS: D

Present value of the cost of printer A = \(3500 + \frac{380}{1.1} + \frac{380}{1.1^2} + \frac{380}{1.1^3} = 4,445\)

Present value of the cost of printer B = \(2500 + \frac{400}{1.1} + \frac{400}{1.1^2} = 3,194\)

Suppose the EAC of printer A is \(x\). Then
\[ \frac{x}{1.1} + \frac{x}{1.1^2} + \frac{x}{1.1^3} = 4445 \]
\[ x = 1,787 \]

Suppose the EAC of printer B is \(y\). Then
\[ \frac{y}{1.1} + \frac{y}{1.1^2} = 3194 \]
\[ y = 1,840 \]

DIF: M

REF: 9.4 Special Problems in Capital Budgeting

28. Arizona Truck Company (ATC) is considering the replacement of an old truck. The old truck can be sold for $7,800 now. If it is sold in one year, the resale price will be $5,500, but ATC will spend $2,500 just before selling the truck to make it attractive to a buyer. Assume a cost of capital of 12%. What is the total cost of keeping the old truck for one more year? Express the cash flow in terms of its future value one year from now.

a. $5,121
b. $5,736
c. $4,800
d. $5,376
e. None of the above

ANS: B

Present value of the cost of keeping the old truck for one more year = \(7800 - \frac{5500}{1.12} + \frac{2500}{1.12} = 5,121\)

The future value one year from now is
\(5121\times 1.12 = 5,736\)

DIF: M

REF: 9.4 Special Problems in Capital Budgeting

29. A firm that manufactures DVD players for automakers currently has excess capacity. The firm expects that it will exhaust its excess capacity in three years. At that time it will have to invest $2 million to build new capacity. Suppose that the firm can accept additional work as a subcontractor for another company. By doing so, the firm will receive a net cash inflow of $120,000 immediately and in each of the next two years. However, the firm will have to begin expansion two years earlier than originally planned to bring new capacity on line. Assume a discount rate of 10%.

What is the NPV if the firm accepts the subcontractor job?

a. $328,264
b. -$18,843
c. $12,712
d. $298,422

eas. None of the above

ANS: C

NPV = \(120,000 + \frac{120,000}{1.1} + \frac{120,000}{1.1^2} - \frac{2,000,000}{1.1} + \frac{2,000,000}{1.1^2} = 12,712\)

DIF: H

REF: 9.4 Special Problems in Capital Budgeting

30. A project generates the following sequence of cash flows over two years:
Assume that cash flows after the second year grow at 2% annually in perpetuity, and the discount rate is 12%. What is the NPV of the project?

- a. $56.4m
- b. $54.8m
- c. $47.7 m
- d. $50.4m

ANS: A

The terminal value of the project at year 2 is:

\[ 10 \times 1.02 / (0.12 - 0.02) = 102 \]

NPV = \[ -40 + 8/1.12 + (10+102)/1.12^2 = 56.4 \]

31. Kelley Group is considering an investment of $2 million in an asset with an economic life of four years. The cash revenues and expenses in year 1 are expected to be $1.8m and $0.5m respectively. Both revenues and expenses are expected to grow at 3 percent per year. The asset will be fully depreciated to zero using the straight line method over its economic life. The salvage value of the asset is expected to be $0.3m at the end of the fourth year. Kelley Group also needs to add net working capital of $0.1m immediately, and this capital will be recovered in full at the end of the project’s life. The tax rate is 40%. What is the investment’s cash flow in year 4?

- a. $1.1323m
- b. $1.4523m
- c. $1.3323m
- d. $1.3579m

ANS: C

In year 4,

\[
\text{operating cash flow} + 0.1 \text{change of working capital} + 0.3 \times (1 - 0.4) \text{ sale of equipment} = 1.3323 \text{m}
\]

32. The value of a project at a given future point in time is known as:

- a. the terminal value.
- b. net working capital.
- c. opportunity cost.
- d. sunk cost.

ANS: A

33. The percentage of taxes owed on an incremental dollar of income is called:

- a. the minimum tax rate.
- b. the marginal tax rate.
- c. the average tax rate.
- d. the maximum tax rate.
34. Cash Flows that occur if and only if a project is accepted are:
   a. sunk costs.
   b. terminal costs.
   c. incremental cash flows.
   d. current cash flows.

   ANS: C  DIF: E  REF: 9.1 Types of Cash Flows

35. Cash flows on an alternative investment that a firm decides not to make are a(n):
   a. opportunity cost.
   b. sunk cost.
   c. terminal value.
   d. incremental cash flow.

   ANS: A  DIF: H  REF: 9.1 Types of Cash Flows

36. A cash outlay that has already been committed whether a project is accepted or not is known as a:
   a. opportunity cost.
   b. terminal value.
   c. net cost.
   d. sunk cost.

   ANS: D  DIF: E  REF: 9.2 The Relevant Cash Flows

37. The difference between current assets and current liabilities is known as:
   a. working capital.
   b. net working capital.
   c. terminal capital.
   d. marginal capital.

   ANS: B  DIF: E  REF: 9.1 Types of Cash Flows

38. When a firm introduces a new product and some of the new product’s sales come at the expense of the
 firm’s existing products, this is known as:
   a. sunk costs.
   b. incremental costs.
   c. marginal costs.
   d. cannibalization.

   ANS: D  DIF: E  REF: 9.2 The Relevant Cash Flows

39. The system in the U.S. which defines the allowable annual depreciation deductions for various classes
 of assets is known as:
   a. MACRS
   b. CAMRS
   c. RCMAS
   d. SCRMA

   ANS: A  DIF: E  REF: 9.1 Types of Cash Flows

40. Accountants measure inflows and outflows of business operations on:
   a. a cash basis.
   b. a profit basis.
   c. an accrual basis.
d. an expense basis.

ANS: C  DIF:  E  REF:  9.1 Types of Cash Flows

41. Financial analysts focus on _______ when evaluating potential investments.
   a. cash
   b. profit
   c. accruals
   d. expenses

ANS: A  DIF:  E  REF:  9.1 Types of Cash Flows

42. The relevant tax rate for capital budgeting purposes is the:
   a. average tax rate.
   b. maximum tax rate.
   c. minimum tax rate.
   d. marginal tax rate.

ANS: D  DIF:  E  REF:  9.1 Types of Cash Flows

43. An asset that falls into the 3-year MACRS asset class is fully depreciated over:
   a. 2 years.
   b. 3 years.
   c. 4 years.
   d. 5 years.

ANS: C  DIF:  M  REF:  9.1 Types of Cash Flows

44. An increase in net working capital represents:
   a. a cash inflow.
   b. a cash outflow.
   c. an increase in fixed assets.
   d. a decrease in fixed assets.

ANS: B  DIF:  M  REF:  9.1 Types of Cash Flows

45. An increase in inventory will ________ net working capital.
   a. increase
   b. decrease
   c. have no affect on
   d. cannot be determined.

ANS: A  DIF:  M  REF:  9.1 Types of Cash Flows

46. A decrease in accounts receivable will ________ net working capital.
   a. increase
   b. decrease
   c. have no affect on
   d. cannot be determined.

ANS: B  DIF:  M  REF:  9.1 Types of Cash Flows

47. When a firm cannot invest in every positive NPV project because of limited funds, this is known as:
   a. capital budgeting.
   b. capital investing.
   c. capital rationing.
DSSS Corporation is considering a new project to manufacture widgets. The cost of the manufacturing equipment is $125,000. The cost of shipping and installation is an additional $10,000. The asset will fall into the 3-year MACRS class. The year 1-4 MACRS percentages are 33.33%, 44.45%, 14.81%, and 7.41%, respectively. Sales are expected to be $225,000 per year. Cost of goods sold will be 60% of sales. The project will require an increase in net working capital of $10,000. At the end of three years, DSSS plans on ending the project and selling the manufacturing equipment for $25,000. The marginal tax rate is 40% and DSSS Corporation’s appropriate discount rate is 15%.

48. Refer to DSSS Corporation. What is the initial investment outlay for this project?
   a. $10,000
   b. $135,000
   c. $145,000
   d. $155,000

   ANS: C

   Initial Investment Outlay
   Cost of Machine $(135,000)
   Net Working Capital $(10,000)
   Total $(145,000)

49. Refer to DSSS Corporation. What is the depreciation expense in year 1?
   a. $44,996
   b. $10,004
   c. $60,008
   d. $19,994

   ANS: A

   Depreciation
   Basis $135,000
   Year % $ Amount
   1 33.33% $ 44,996
   2 44.45% $ 60,008
   3 14.81% $ 19,994
   4 7.41% $ 10,004
   100.00% $135,000

50. Refer to DSSS Corporation. What is the depreciation expense in year 2?
   a. $44,996
   b. $10,004
   c. $60,008
d. $19,994

ANS: C

<table>
<thead>
<tr>
<th>Depreciation Basis</th>
<th>$135,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>33.33%</td>
</tr>
<tr>
<td>2</td>
<td>44.45%</td>
</tr>
<tr>
<td>3</td>
<td>14.81%</td>
</tr>
<tr>
<td>4</td>
<td>7.41%</td>
</tr>
</tbody>
</table>

100.00%  $135,000

DIF: M  REF: 9.2 The Relevant Cash Flows  NAR: DSSS Corporation

51. Refer to DSSS Corporation. What is the depreciation expense in year 3?
   a. $44,996
   b. $10,004
   c. $60,008
   d. $19,994

ANS: D

<table>
<thead>
<tr>
<th>Depreciation Basis</th>
<th>$135,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>33.33%</td>
</tr>
<tr>
<td>2</td>
<td>44.45%</td>
</tr>
<tr>
<td>3</td>
<td>14.81%</td>
</tr>
<tr>
<td>4</td>
<td>7.41%</td>
</tr>
</tbody>
</table>

100.00%  $135,000

DIF: M  REF: 9.2 The Relevant Cash Flows  NAR: DSSS Corporation

52. Refer to DSSS Corporation. What is the book value of the machine at the end of year 3?
   a. $44,996
   b. $10,004
   c. $60,008
   d. $19,994

ANS: B

<table>
<thead>
<tr>
<th>Depreciation Basis</th>
<th>$135,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>33.33%</td>
</tr>
<tr>
<td>2</td>
<td>44.45%</td>
</tr>
<tr>
<td>3</td>
<td>14.81%</td>
</tr>
<tr>
<td>4</td>
<td>7.41%</td>
</tr>
</tbody>
</table>

100.00%  $135,000
53. Refer to DSSS Corporation. What is the operating cash flow for year 1?
   a. $54,797  
   b. $64,798  
   c. $70,803  
   d. $10,487  
   ANS:  B

Operating Cash Flows

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ Annual Sales</td>
<td>$225,000</td>
<td>$225,000</td>
<td>$225,000</td>
</tr>
<tr>
<td>- Δ Annual Costs</td>
<td>$135,000</td>
<td>$135,000</td>
<td>$135,000</td>
</tr>
<tr>
<td>- Δ Fixed Costs</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>- Δ Depreciation</td>
<td>$44,996</td>
<td>$60,008</td>
<td>$19,994</td>
</tr>
<tr>
<td>= Δ EBIT</td>
<td>$33,005</td>
<td>$17,993</td>
<td>$58,007</td>
</tr>
<tr>
<td>- Δ Taxes (40%)</td>
<td>$13,202</td>
<td>$7,197</td>
<td>$23,203</td>
</tr>
<tr>
<td>= Δ Earnings After-Tax</td>
<td>$19,803</td>
<td>$10,796</td>
<td>$34,804</td>
</tr>
<tr>
<td>+ Δ Depreciation</td>
<td>$44,996</td>
<td>$60,008</td>
<td>$19,994</td>
</tr>
<tr>
<td>= Operating Cash Flow</td>
<td>$64,798</td>
<td>$70,803</td>
<td>$54,797</td>
</tr>
</tbody>
</table>

DIF:  M  REF:  9.2 The Relevant Cash Flows  NAR:  DSSS Corporation

54. Refer to DSSS Corporation. What is the operating cash flow for year 2?
   a. $54,797  
   b. $64,798  
   c. $70,803  
   d. $10,487  
   ANS:  C

Operating Cash Flows

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ Annual Sales</td>
<td>$225,000</td>
<td>$225,000</td>
<td>$225,000</td>
</tr>
<tr>
<td>- Δ Annual Costs</td>
<td>$135,000</td>
<td>$135,000</td>
<td>$135,000</td>
</tr>
<tr>
<td>- Δ Fixed Costs</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>- Δ Depreciation</td>
<td>$44,996</td>
<td>$60,008</td>
<td>$19,994</td>
</tr>
<tr>
<td>= Δ EBIT</td>
<td>$33,005</td>
<td>$17,993</td>
<td>$58,007</td>
</tr>
<tr>
<td>- Δ Taxes (40%)</td>
<td>$13,202</td>
<td>$7,197</td>
<td>$23,203</td>
</tr>
<tr>
<td>= Δ Earnings After-Tax</td>
<td>$19,803</td>
<td>$10,796</td>
<td>$34,804</td>
</tr>
<tr>
<td>+ Δ Depreciation</td>
<td>$44,996</td>
<td>$60,008</td>
<td>$19,994</td>
</tr>
<tr>
<td>= Operating Cash Flow</td>
<td>$64,798</td>
<td>$70,803</td>
<td>$54,797</td>
</tr>
</tbody>
</table>

DIF:  M  REF:  9.2 The Relevant Cash Flows  NAR:  DSSS Corporation

55. Refer to DSSS Corporation. What is the operating cash flow for year 3?
   a. $54,797  
   b. $64,798  
   c. $70,803  
   d. $10,487
**Operating Cash Flows**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ Annual Sales</td>
<td>$225,000</td>
<td>$225,000</td>
<td>$225,000</td>
</tr>
<tr>
<td>- Δ Annual Costs</td>
<td>$135,000</td>
<td>$135,000</td>
<td>$135,000</td>
</tr>
<tr>
<td>- Δ Fixed Costs</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>- Δ Depreciation</td>
<td>$44,996</td>
<td>$60,008</td>
<td>$19,994</td>
</tr>
<tr>
<td>= Δ EBIT</td>
<td>$33,005</td>
<td>$17,993</td>
<td>$58,007</td>
</tr>
<tr>
<td>- Δ Taxes (40%)</td>
<td>$13,202</td>
<td>$7,197</td>
<td>$23,203</td>
</tr>
<tr>
<td>= Δ Earnings After-Tax</td>
<td>$19,803</td>
<td>$10,796</td>
<td>$34,804</td>
</tr>
<tr>
<td>+ Δ Depreciation</td>
<td>$44,996</td>
<td>$60,008</td>
<td>$19,994</td>
</tr>
<tr>
<td>= Operating Cash Flow</td>
<td>$64,798</td>
<td>$70,803</td>
<td>$54,797</td>
</tr>
</tbody>
</table>

**DIF:** M  
**REF:** 9.2 The Relevant Cash Flows  
**NAR:** DSSS Corporation

56. Refer to DSSS Corporation. What is the after-tax cash flow from selling the machine at the end of year 3?
   a. $25,000
   b. $5,999
   c. $7,214
   d. $19,001

**ANS:** D

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale of Machine</td>
<td>$25,000</td>
</tr>
<tr>
<td>Tax on (SV - BV) @ 40%</td>
<td>$(5,999)</td>
</tr>
<tr>
<td></td>
<td>$19,001</td>
</tr>
</tbody>
</table>

**DIF:** H  
**REF:** 9.2 The Relevant Cash Flows  
**NAR:** DSSS Corporation

57. Refer to DSSS Corporation. What is the total cash flow generated in year 3?
   a. $83,799
   b. $54,797
   c. $29,001
   d. $15,098

**ANS:** A

Operating Cash Flow + Terminal Cash Flow = $54,797 + $29,001 = $83,799

**Terminal Cash Flow**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale of Machine</td>
<td>$25,000</td>
</tr>
<tr>
<td>Tax on (SV - BV) @ 40%</td>
<td>$(5,999)</td>
</tr>
<tr>
<td>Net Working Capital</td>
<td>$10,000</td>
</tr>
<tr>
<td></td>
<td>$29,001</td>
</tr>
</tbody>
</table>

**DIF:** H  
**REF:** 9.2 The Relevant Cash Flows  
**NAR:** DSSS Corporation

58. Refer to DSSS Corporation. What is the NPV of the project?
   a. $14,732
   b. $12,986
   c. $19,983
d. -$19,983

ANS: C

Projected Total Cash Flows

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Initial Investment Outlay</td>
<td>$(145,000)</td>
<td></td>
</tr>
<tr>
<td>Operating Cash Flow</td>
<td>$64,798</td>
<td>$70,803</td>
</tr>
<tr>
<td>Terminal Cash Flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Project Cash Flow</td>
<td>$(145,000)</td>
<td>$64,798</td>
</tr>
</tbody>
</table>

Rate | 15%
NPV | $19,982.57

DIF: H
REF: 9.2 The Relevant Cash Flows
NAR: DSSS Corporation

59. Refer to DSSS Corporation. What is the IRR of the project?

a. 22.79%
b. -10.01%
c. 19.47%
d. 27.36%

ANS: A

Projected Total Cash Flows

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Initial Investment Outlay</td>
<td>$(145,000)</td>
<td></td>
</tr>
<tr>
<td>Operating Cash Flow</td>
<td>$64,798</td>
<td>$70,803</td>
</tr>
<tr>
<td>Terminal Cash Flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Project Cash Flow</td>
<td>$(145,000)</td>
<td>$64,798</td>
</tr>
</tbody>
</table>

IRR | 22.79%

DIF: H
REF: 9.2 The Relevant Cash Flows
NAR: DSSS Corporation

NARRBEGIN: FAR Corporation

FAR Corporation

FAR Corporation is considering a new project to manufacture widgets. The cost of the manufacturing equipment is $150,000. The cost of shipping and installation is an additional $15,000. The asset will fall into the 3-year MACRS class. The year 1-4 MACRS percentages are 33.33%, 44.45%, 14.81%, and 7.41%, respectively. Sales are expected to be $300,000 per year. Cost of goods sold will be 80% of sales. The project will require an increase in net working capital of $15,000. At the end of three years, FAR plans on ending the project and selling the manufacturing equipment for $35,000. The marginal tax rate is 40% and FAR Corporation’s appropriate discount rate is 12%.

NARREND

60. Refer to FAR Corporation. What is the initial investment outlay for this project?

a. $10,000
b. $135,000
c. $145,000
d. $165,000

ANS: D
Initial Investment Outlay
Cost of Machine $(150,000)
Net Working Capital $(15,000) $(165,000)

DIF: M REF: 9.2 The Relevant Cash Flows NAR: FAR Corporation

61. Refer to FAR Corporation. What is the depreciation expense in year 1?
   a. $49,995
   b. $22,215
   c. $11,115
   d. $66,675

ANS: A

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
<th>Depreciation Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33.33%</td>
<td>$49,995</td>
</tr>
<tr>
<td>2</td>
<td>44.45%</td>
<td>$66,675</td>
</tr>
<tr>
<td>3</td>
<td>14.81%</td>
<td>$22,215</td>
</tr>
<tr>
<td>4</td>
<td>7.41%</td>
<td>$11,115</td>
</tr>
<tr>
<td></td>
<td>100.00%</td>
<td>$150,000</td>
</tr>
</tbody>
</table>

DIF: M REF: 9.2 The Relevant Cash Flows NAR: FAR Corporation

62. Refer to FAR Corporation. What is the depreciation expense in year 2?
   a. $49,995
   b. $22,215
   c. $11,115
   d. $66,675

ANS: D

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
<th>Depreciation Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33.33%</td>
<td>$49,995</td>
</tr>
<tr>
<td>2</td>
<td>44.45%</td>
<td>$66,675</td>
</tr>
<tr>
<td>3</td>
<td>14.81%</td>
<td>$22,215</td>
</tr>
<tr>
<td>4</td>
<td>7.41%</td>
<td>$11,115</td>
</tr>
<tr>
<td></td>
<td>100.00%</td>
<td>$150,000</td>
</tr>
</tbody>
</table>

DIF: M REF: 9.2 The Relevant Cash Flows NAR: FAR Corporation

63. Refer to FAR Corporation. What is the depreciation expense in year 3?
   a. $49,995
   b. $22,215
   c. $11,115
   d. $66,675

ANS:
### Depreciation Basis

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33.33%</td>
<td>$49,995</td>
</tr>
<tr>
<td>2</td>
<td>44.45%</td>
<td>$66,675</td>
</tr>
<tr>
<td>3</td>
<td>14.81%</td>
<td>$22,215</td>
</tr>
<tr>
<td>4</td>
<td>7.41%</td>
<td>$11,115</td>
</tr>
<tr>
<td></td>
<td>100.00%</td>
<td>$150,000</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DIF:</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>REF:</td>
<td>9.2 The Relevant Cash Flows</td>
<td></td>
</tr>
<tr>
<td>NAR:</td>
<td>FAR Corporation</td>
<td></td>
</tr>
</tbody>
</table>

64. Refer to FAR Corporation. What is the book value of the machine at the end of year 3?
   a. $44,995
   b. $22,215
   c. $11,115
   d. $66,675

ANS: C

### Projected Total Cash Flows

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Investment Outlay</td>
<td>$(165,000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Cash Flow</td>
<td></td>
<td>$48,798</td>
<td>$55,470</td>
<td>$37,686</td>
</tr>
<tr>
<td>Terminal Cash Flow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Project Cash Flow</td>
<td>$(165,000)</td>
<td>$48,798</td>
<td>$55,470</td>
<td>$78,132</td>
</tr>
<tr>
<td>Rate</td>
<td>12%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPV</td>
<td></td>
<td>$(21,597.20)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DIF:</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>REF:</td>
<td>9.1 Types of Cash Flows</td>
<td></td>
</tr>
<tr>
<td>NAR:</td>
<td>FAR Corporation</td>
<td></td>
</tr>
</tbody>
</table>
66. Refer to FAR Corporation. What is the operating cash flow for year 1?
   a. $55,470
   b. $60,000
   c. $48,798
   d. $37,686

   ANS: C

   Operating Cash Flows
   \[
   \begin{array}{cccc}
   \text{Year} & 1 & 2 & 3 \\
   \Delta \text{Annual Sales} & \$300,000 & \$300,000 & \$300,000 \\
   - \Delta \text{Annual Costs} & \$240,000 & \$240,000 & \$240,000 \\
   - \Delta \text{Fixed Costs} & $12,000 & $12,000 & $12,000 \\
   - \Delta \text{Depreciation} & $49,995 & $66,675 & $22,215 \\
   = \Delta \text{EBIT} & $(1,995) & $(18,675) & $25,785 \\
   - \Delta \text{Taxes (40%)} & $(798) & $(7,470) & $10,314 \\
   = \Delta \text{Earnings After-Tax} & $(1,197) & $(11,205) & $15,471 \\
   + \Delta \text{Depreciation} & $49,995 & $66,675 & $22,215 \\
   = \text{Operating Cash Flow} & $48,798 & $55,470 & $37,686 \\
   \end{array}
   \]

   DIF: M       REF: 9.2 The Relevant Cash Flows       NAR: FAR Corporation

67. Refer to FAR Corporation. What is the operating cash flow for year 2?
   a. $55,470
   b. $60,000
   c. $48,798
   d. $37,686

   ANS: A

   Operating Cash Flows
   \[
   \begin{array}{cccc}
   \text{Year} & 1 & 2 & 3 \\
   \Delta \text{Annual Sales} & \$300,000 & \$300,000 & \$300,000 \\
   - \Delta \text{Annual Costs} & \$240,000 & \$240,000 & \$240,000 \\
   - \Delta \text{Fixed Costs} & $12,000 & $12,000 & $12,000 \\
   - \Delta \text{Depreciation} & $49,995 & $66,675 & $22,215 \\
   = \Delta \text{EBIT} & $(1,995) & $(18,675) & $25,785 \\
   - \Delta \text{Taxes (40%)} & $(798) & $(7,470) & $10,314 \\
   = \Delta \text{Earnings After-Tax} & $(1,197) & $(11,205) & $15,471 \\
   + \Delta \text{Depreciation} & $49,995 & $66,675 & $22,215 \\
   = \text{Operating Cash Flow} & $48,798 & $55,470 & $37,686 \\
   \end{array}
   \]

   DIF: M       REF: 9.2 The Relevant Cash Flows       NAR: FAR Corporation

68. Refer to FAR Corporation. What is the operating cash flow for year 3?
   a. $55,470
   b. $60,000
   c. $48,798
   d. $37,686

   ANS: D
### Operating Cash Flows

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Annual Sales</td>
<td>$300,000</td>
<td>$300,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>-$ $\Delta$ Annual Costs</td>
<td>$240,000</td>
<td>$240,000</td>
<td>$240,000</td>
</tr>
<tr>
<td>-$ $\Delta$ Fixed Costs</td>
<td>$12,000</td>
<td>$12,000</td>
<td>$12,000</td>
</tr>
<tr>
<td>-$ $\Delta$ Depreciation</td>
<td>$49,995</td>
<td>$66,675</td>
<td>$22,215</td>
</tr>
<tr>
<td>= $\Delta$ EBIT</td>
<td>$(1,995)</td>
<td>$(18,675)</td>
<td>$25,785</td>
</tr>
<tr>
<td>-$ $\Delta$ Taxes (40%)</td>
<td>$(798)</td>
<td>$(7,470)</td>
<td>$10,314</td>
</tr>
<tr>
<td>= $\Delta$ Earnings After-Tax</td>
<td>$(1,197)</td>
<td>$(11,205)</td>
<td>$15,471</td>
</tr>
<tr>
<td>+ $\Delta$ Depreciation</td>
<td>$49,995</td>
<td>$66,675</td>
<td>$22,215</td>
</tr>
<tr>
<td>= Operating Cash Flow</td>
<td>$48,798</td>
<td>$55,470</td>
<td>$37,686</td>
</tr>
</tbody>
</table>

DIF: M  REF: 9.2 The Relevant Cash Flows  NAR: FAR Corporation

69. Refer to FAR Corporation. What is the after-tax cash flow from selling the machine at the end of year 3?
   a. -$9,554
   b. $35,000
   c. $9,554
   d. $25,446

ANS: D

**Terminal Cash Flow**

Sale of Machine $35,000
Tax on (SV - BV) @ 40% $(9,554)
$25,446

DIF: H  REF: 9.2 The Relevant Cash Flows  NAR: FAR Corporation

70. Refer to FAR Corporation. What is the total cash flow generated in year 3?
   a. $35,000
   b. $9,554
   c. $15,000
   d. $40,446

ANS: D

**Terminal Cash Flow**

Sale of Machine $35,000
Tax on (SV - BV) @ 40% $(9,554)
Net Working Capital $15,000
$40,446

DIF: H  REF: 9.2 The Relevant Cash Flows  NAR: FAR Corporation

71. Refer to FAR Corporation. What is the IRR of the project?
   a. 12.01%
   b. 8.74%
   c. 5.92%
   d. 4.78%

ANS: D
Projected Total Cash Flows

<table>
<thead>
<tr>
<th>Year</th>
<th>Initial Investment</th>
<th>Outlay</th>
<th>Operating Cash Flow</th>
<th>Terminal Cash Flow</th>
<th>Total Project Cash Flow</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$(165,000)</td>
<td></td>
<td>$48,798</td>
<td>$40,446</td>
<td>$(165,000)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>$55,470</td>
<td></td>
<td>$48,798</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>$37,686</td>
<td></td>
<td>$55,470</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$78,132</td>
<td></td>
</tr>
</tbody>
</table>

72. Sunk costs:
   a. are irrelevant.
   b. should be considered when determining an investment’s relevant cash flows.
   c. are equal to the firm’s opportunity costs.
   d. all of the above.
   ANS: A

73. Opportunity costs:
   a. are irrelevant.
   b. should be considered when determining an investment’s relevant cash flows.
   c. are equal to the firm’s sunk costs.
   d. all of the above.
   ANS: B

74. To help rank projects in a capital rationing environment, managers often use the:
   a. profitability index.
   b. internal rate of return.
   c. payback method.
   d. accounting rate of return.
   ANS: A

75. The ________ makes capital budgeting ________ complicated.
   a. human element, less
   b. human element, more
   c. human analysis, more
   d. human analysis, less
   ANS: B