**Question 1.**

You can earn $40 in interest on a $1,000 deposit for 8 months. If the EAR is the same regardless of the length of the investment, how much interest will you earn on a

$1,000 deposit for:

a. 2 months.

b. 1 year.

c. 1.5 years.

a. 2​-months.

For a 2​-month, $1,000 deposit you will earn

​$. (Round to the nearest cent).

b. 1-year.

For a ​1-year, $1,000 deposit you will earn

​$. (Round to the nearest cent).

c. 1.5​-years.

For a 1.5​-year, $1,000 deposit you will earn

​$. (Round to the nearest cent).

**Question 2.**

You have decided to refinance your mortgage. You plan to borrow whatever is outstanding on your current mortgage. The current monthly payment is $3,053 and you have made every payment on time. The original term of the mortgage was 30 years, and the mortgage is exactly four years and eight months old. You have just made your monthly payment. The mortgage interest rate is 5.798% (APR). How much do you owe on the mortgage today?

The amount you owe today is

​$. (Round to the nearest dollar.)

**Question 3.**

Consider a project that requires an initial investment of $100,000 and will produce a single cash flow of

$150,000 in 5 years.

a. What is the NPV of this project if the 5​-year interest rate is 5.0% (EAR)?

b. What is the NPV of this project if the 5​-year interest rate is 10.0% (EAR)?

c. What is the highest 5​-year interest rate such that this project is still profitable?

a. What is the NPV of this project if the 5​-year interest rate is 5.0% (EAR)?

The NPV in this case (EAR equals 5.0 %) is $. (Round to the nearest​ dollar.)

b. What is the NPV of this project if the 5​-year interest rate is 10.0% (EAR)?

The NPV in this case (EAR equals 10.0 %) is $. (Round to the nearest​ dollar.)

c. What is the highest 5​-year interest rate such that this project is still​ profitable?

The highest EAR such that this project is still profitable is ​% ​(Round to two decimal​ places.)

**Question 4.**

In the summer of 2008, at Heathrow airport in London, Bestofthebest​ (BB), a private​ company, offered a lottery to win a Ferrari or 87,000 British​ pounds, equivalent at the time to about $174,000. Both the Ferrari and the​money, in 100 pound notes, were on display. If the U.K. interest rate was 4% per year, and the dollar interest rate was 2% per year (EARs), how much did it cost the company in dollars each month to keep the cash on display? That is, what was the opportunity cost of keeping it on display rather than in a bank account? (Ignore taxes.)​Hint: Make sure to round all intermediate calculations to at least five decimal places.

The opportunity cost of keeping it on display rather than in a bank account is £ per month.  ​(Round to two decimal​ places).

**Question 5.**

A 30​-year bond with a face value of $1,000 has a coupon rate of 5.50%​, with semiannual payments.

a. What is the coupon payment for this​ bond?

b. Enter the cash flows for the bond on a timeline

a. What is the coupon payment for this​ bond?

The coupon payment for this bond is $. (Round to the nearest​ cent.)

b. Enter the cash flows for the bond on a timeline.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cash Flow | *CF*1 | *CF*2 | *CF*59 | *CF*60 |
| Amount ​(Round to the nearest cent.) | ​$ | ​$ | ​$ | ​$  |

**Question 6.**

Your brother wants to borrow $10,000 from you. He has offered to pay you back $12,750 in a year. If the cost of capital of this investment opportunity is 8%​, what is its​ NPV? Should you undertake the investment​ opportunity? Calculate the IRR and use it to determine the maximum deviation allowable in the cost of capital estimate to leave the decision unchanged.

If the cost of capital of this investment opportunity is 8%​, what is its​ NPV?

The NPV of the investment is $. (Round to the nearest​ cent.)

Should you undertake the investment​ opportunity?

Since the NPV is you should the​ deal! ​ (Select from the​ drop-down menus.)

Calculate the IRR and use it to determine the maximum deviation allowable in the cost of capital estimate to leave the decision unchanged.

The IRR is ​%. (Round to two decimal​ places.)

The maximum deviation allowable in the cost of capital is ​%. (Round to two decimal​ places.)

**Question 7.**

You are considering an investment in a clothes distributer. The company needs $100,000

today and expects to repay you $120,000 in a year from now. What is the IRR of this investment​ opportunity? Given the riskiness of the investment​ opportunity, your cost of capital is 10%. What does the IRR rule say about whether you should​ invest?

What is the IRR of this investment​ opportunity?

The IRR of this investment opportunity is ​%. (Round to one decimal​ place.)

Given the riskiness of the investment​ opportunity, your cost of capital is 10%. What does the IRR rule say about whether you should​ invest?

The IRR rule says that you



should not invest

should not invest

should invest

should be indifferent

.

​ (Select from the​ drop-down menu.)

**QUESTION 8.**

You are considering making a movie. The movie is expected to cost $10.5 million upfront and take a year to make. After​ that, it is expected to make $4.6 million in the first year it is released​ (end of year​ 2) and $1.7 million for the following four years​ (end of years 3 through​ 6) . What is the payback period of this​ investment? If you require a payback period of two​ years, will you make the​ movie? What is the NPV of the movie if the cost of capital is 10.3%​? According to the NPV​ rule, should you make this​ movie?

What is the payback period of this​ investment?

The payback period is  years.  ​(Round up to nearest​ integer.)

Based on the payback period​ requirement, would you make this​ movie? 

▼

What is the NPV of the movie if the cost of capital is 10.3%​?

The NPV is $ million. ​ (Round to three decimal​ places.)

According to the NPV​ rule, should you make this​ movie?

According to the NPV rule you should



▼

make

not make

the movie.  ​(Select from the​ drop-down menu.)

**QUESTION 9.**

Kokomochi is considering the launch of an advertising campaign for its latest dessert product, the Mini Mochi Munch. Kokomochi plans to spend $5.45 million on TV, radio, and print advertising this year for the campaign. The ads are expected to boost sales of the Mini Mochi Munch by $8.96 million this year and $6.96 million next year. In addition, the company expects that new consumers who try the Mini Mochi Munch will be more likely to try​ Kokomochi's other products. As a result, sales of other products are expected to rise by $3.03 million each year. Kokomochi's gross profit margin for the Mini Mochi Munch is 33%, and its gross profit margin averages 25% for all other products. The company’s marginal corporate tax rate is 30% both this year and next year. What are the incremental earnings associated with the advertising campaign?

​Note: Assume that the company has adequate positive income to take advantage of the tax benefits provided by any net losses associated with this campaign.

Calculate the incremental earnings for year 1 below:  ​(Round to three decimal places.)

|  |
| --- |
| **Year 1** |
| Incremental Earnings Forecast ($ million) |   |   |
| Sales of Mini Mochi Munch | $ | \_\_\_\_\_\_\_\_\_\_  |
| Other Sales | $ | \_\_\_\_\_\_\_\_\_\_  |
| Cost of Goods Sold | $ |   |
| Gross Profit | $ | \_\_\_\_\_\_\_\_\_\_  |
| Selling, General, and Administrative | $ | \_\_\_\_\_\_\_\_\_\_  |
| Depreciation | $ |   |
| EBIT | $ | \_\_\_\_\_\_\_\_\_\_\_  |
| Income Tax at 30% | $ |   |
| Incremental Earnings | $ |   |

Calculate the incremental earnings for year 2 below: ​ (Round to three decimal places.)

|  |
| --- |
| **Year 2** |
| Incremental Earnings Forecast ($ million) |   |   |
| Sales of Mini Mochi Munch | $ | \_\_\_\_\_\_\_\_\_\_  |
| Other Sales | $ | \_\_\_\_\_\_\_\_\_\_  |
| Cost of Goods Sold | $ |   |
| Gross Profit | $ | \_\_\_\_\_\_\_\_\_\_  |
| Selling, General, and Administrative | $ | \_\_\_\_\_\_\_\_\_\_  |
| Depreciation | $ |   |
| EBIT | $ | \_\_\_\_\_\_\_\_\_\_  |
| Income Tax at 30% | $ |   |
| Incremental Earnings | $ |   |

**QUESTION 10.**

Cellular Access​ Inc., is a cellular telephone service provider that reported net operating profit after tax​ (NOPAT) of $250 million for the most recent fiscal year. The firm had depreciation expenses of $100 million, capital expenditures of $200 million, and no interest expenses. Working capital increased by $10

million. Calculate the free cash flow for Cellular Access for the most recent fiscal year.

The free cash flow is $ million. ​ (Round to the nearest integer.)

**QUESTION 11.**

You are evaluating the HomeNet project under the following assumptions: Sales of 50,000 units in year 1 increasing by 52,000 units per year over the life of the project, a year 1 sales price of $260​/unit, decreasing by 9% annually and a year 1 cost of $120​/unit decreasing by 22% annually. In addition, new tax laws allow you to depreciate the equipment, costing $7.5 million, over three years using straight-line depreciation. Research and development expenditures total $15 million in year 0 and selling, general, and administrative expenses are $2.8 million per year​ (assuming there is no​ cannibalization).

Also assume HomeNet will have no incremental cash or inventory requirements​(products will be shipped directly from the contract manufacturer to​customers). ​ However, receivables related to HomeNet are expected to account for 15% of annual sales, and payables are expected to be 15% of the annual cost of goods sold.

Under these assumptions the unlevered net income, net working capital requirements and free cash flow are shown in the Table BELOW

.Using the FCF projections given:

a. Calculate the NPV of the HomeNet project assuming a cost of capital of 10%, 12% and 14%.

b. What is the IRR of the project in this case?

a. Calculate the NPV of the HomeNet project assuming a cost of capital of 10%, 12% and 14%.

The NPV of the FCF’s of the HomeNet project assuming a cost of capital of 10% is $ .

​ (Round to the nearest thousand dollars.)

The NPV of the​FCF’s of the HomeNet project assuming a cost of capital of 12% is $ .

​ (Round to the nearest thousand dollars.)

The NPV of the FCF’s of the HomeNet project assuming a cost of capital of 14% is $ .

​(Round to the nearest thousand dollars.)

b. What is the IRR of the project in this case?

The IRR is

 ​%. (Round to one decimal place.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Year | 0 | 1 | 2 | 3 | 4 | 5 |
|  | HomeNet |  |  |  |  |  |  |  |
|  | Units Sales​ (000s) | 5252 |  | 50 | 102102 | 154154 | 206206 | ​- |
|  | Sales Price​ ($/unit) | 99​% |  | 260 | 236.60236.60 | 215.31215.31 | 195.93195.93 |  |
|  | Cost of Goods Sold​ ($/unit) | 22 %22% |  | 120 | 93.6093.60 | 73.0173.01 | 56.9556.95 | ​- |
|  | Operating Expenses​ ($000s) |  |  |  |  |  |  | ​- |
|  | Hardware​ & Software Develop. |  | ​(15,000) |  |  |  |  | ​- |
|  | Marketing​ & Technical Support |  |  | ​(2,800) | ​(2,800) | ​(2,800) | ​(2,800) | ​- |
|  | Capital Expenditures |  |  |  |  |  |  | ​- |
|  | Lab Equipment |  | ​(7,500) |  |  |  |  | ​- |
|  | Depreciation |  |  | ​33% | ​33% | ​33% | ​- | ​- |
|  | Marginal Corporate Tax Rate |  | ​40% | ​40% | ​40% | ​40% | ​40% | ​- |
|  | Year | 0 | 1 | 2 | 3 | 4 | 5 |
| Incremental Earnings Forecast​ ($000) |  |  |  |  |  |  |
| 1 | Sales | ​- | 13 comma 00013,000 | 24 comma 13324,133 | 33 comma 15833,158 | 40 comma 36240,362 | ​- |
| 2 | Cost of Goods Sold | ​- | ( 6 comma 000 )(6,000) | ( 9 comma 547 )(9,547) | ( 11 comma 244 )(11,244) | ( 11 comma 732 )(11,732) | ​- |
| 3 | Gross Profits | ​- | 7 comma 0007,000 | 14 comma 58614,586 | 21 comma 91421,914 | 28 comma 63028,630 | ​- |
| 4 | ​Selling, General, and Administrative | ​- | ​(2,800) | ​(2,800) | ​(2,800) | ​(2,800) | ​- |
| 5 | Research and Development | ​(15,000) | ​- | ​- | ​- | ​- | ​- |
| 6 | Depreciation | ​- | ​(2,500) | ​(2,500) | ​(2,500) | ​- | ​- |
| 7 | EBIT | ​(15,000) | 1 comma 7001,700 | 9 comma 2869,286 | 16 comma 61416,614 | 25 comma 83025,830 | ​- |
| 8 | Income Tax at​ 40% | ​6,000 | ( 680 )(680) | ( 3 comma 714 )(3,714) | ( 6 comma 646 )(6,646) | ( 10 comma 332 )(10,332) | ​- |
| 9 | Unlevered Net Income | ​(9,000) | 1 comma 0201,020 | 5 comma 5725,572 | 9 comma 9689,968 | 15 comma 49815,498 | ​- |
| Free Cash Flow​ ($000) |  |  |  |  |  |  |
| 10 | ​Plus: Depreciation | ​- | ​2,500 | ​2,500 | ​2,500 | ​- | ​- |
| 11 | ​Less: Capital Expenditures | ​(7,500) | ​- | ​- | ​- | ​- | ​- |
| 12 | ​Less: Increases in NWC |  | ​(1 comma 0501,050​) | ( 1 comma 138 )(1,138) | ( 1 comma 099 )(1,099) | ( 1 comma 007 )(1,007) |  |
| 13 | Free Cash Flow | ( 16 comma 500 )(16,500) | 2 comma 4702,470 | 6 comma 9346,934 | 11 comma 36911,369 | 14 comma 49114,491 | 4 comma 2944,294 |