# Module 3 Practice Quiz 3

**6/6** points earned (100%)

Excellent!

Retake

[Course Home](https://www.coursera.org/learn/corporate-finance/home/welcome)

Correct

1 / 1 points

1. Consider the following data

* A machine costs $700 and is depreciated using the straight line method over 5 years. That is, depreciation is 140 every year.
* The machine will generate operating profits before depreciation of $300 per year for 5 years. The first cash flow happens at the end of the first year after the machine is put in place.
* The tax rate is 30%
* Working capital needs will increase by $80 when the machine is placed in service and will be recaptured at the end of the life of the machine.
* There is no salvage value at the end of the five years (the machine is worthless).

The initial investment on the machine is \_\_\_\_\_\_\_\_.

1. **-780**

**Correct Response**

The initial investment is 700 plus the increase in working capital, so 780. Recall that these investments do not reduce taxes, so the tax rate is irrelevant here.

1. -700
2. -840
3. -546

Correct

1 / 1 points

2. Consider the following data

* A machine costs $700 and is depreciated using the straight line method over 5 years. That is, depreciation is 140 every year.
* The machine will generate operating profits before depreciation of $300 per year for 5 years. The first cash flow happens at the end of the first year after the machine is put in place.
* The tax rate is 30%
* Working capital needs will increase by $80 when the machine is placed in service and will be recaptured at the end of the life of the machine.
* There is no salvage value at the end of the five years (the machine is worthless).

The cash flows are \_\_\_\_\_\_\_\_\_.

1. 112 every year from year 1 to year 4 and 192 in year 5
2. **252 every year from year 1 to year 4 and 332 in year 5**

**Correct Response**

The cash flow in year 1 can be computed as:

|  |  |
| --- | --- |
| Profit | 300 |
| (-) depreciation | 140 |
| (=) income before tax | 160 |
| (-) taxes | 48 |
| (=) Earnings | 112 |
| (+) depreciation | 140 |
| (=) Cash flow | 252 |

Recall that depreciation is tax deductible so you need to deduct it from profits before calculating taxes. Then you need to add it back to calculate cash flow (depreciation does not reduce cash flows).

In year 5 you recoup the working capital investment, and thus, the final cash flow is 252 + 80.

1. 252 every year until year 5
2. 210 every year from year 1 to year 4 and 290 in year 5

Correct

1 / 1 points

3. Consider the following data

* A machine costs $700 and is depreciated using the straight line method over 5 years. That is, depreciation is 140 every year.
* The machine will generate operating profits before depreciation of $300 per year for 5 years. The first cash flow happens at the end of the first year after the machine is put in place.
* The tax rate is 30%
* Working capital needs will increase by $80 when the machine is placed in service and will be recaptured at the end of the life of the machine.
* There is no salvage value at the end of the five years (the machine is worthless).

The project's IRR is \_\_\_\_\_\_\_\_\_\_\_.

1. You cannot compute the IRR if you do not know the discount rate.
2. 15.4%
3. **20.3%**

**Correct Response**

The timeline with cash flows is

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 |
| -780 | 252 | 252 | 252 | 252 | 332 |

You can use Excel to find the IRR (or set the NPV to zero).

1. 12.6%

Correct

1 / 1 points

4. Consider the following data

* A machine costs $700 and is depreciated using the straight line method over 5 years. That is, depreciation is 140 every year.
* The machine will generate operating profits before depreciation of $300 per year for 5 years. The first cash flow happens at the end of the first year after the machine is put in place.
* The tax rate is 30%
* Working capital needs will increase by $80 when the machine is placed in service and will be recaptured at the end of the life of the machine.
* There is no salvage value at the end of the five years (the machine is worthless).

Suppose the discount rate is 15%. Which statement is incorrect?

1. You should buy this machine and use it for five years.
2. **You should not invest in this machine because it takes too long for you to recoup your investment.**

**Correct Response**

Since the IRR is bigger than the discount rate, the NPV is positive. You should invest in the machine. It does take several years to recoup the initial investment, but this is taken into account through the discounting of cash flows.

1. Buying the machine will increase shareholder wealth.
2. The NPV is positive.

Correct

1 / 1 points

5. A company currently operates a machine that generates cash flows of 35,000 a year for the next five years (machine 1). You are considering whether to replace this machine today with another more powerful machine that will produce cash flows of 45,000 a year for the same period of five years (machine 2). Both machines will be worthless at the end of the five years. Replacing machine 1 with machine 2 will require an initial investment of 25,000 today. This investment already takes into account the cost of machine 1 and today’s resale value of machine 2. In addition, you paid 100,000 for machine 1 last year.

Which of the following statements is incorrect?

1. The main benefit of replacing machine 1 with machine 2 is the incremental cash flow of 10,000 a year for the next five years.
2. **Since you paid 100,000 for machine 1 last year, you should not replace machine 1 until you can recoup that investment.**

**Correct Response**

The amount that you paid last year is a sunk cost, and thus, it is irrelevant. The incremental cash flow is in fact 10,000, and you do need a discount rate to calculate the NPV and make a decision.

1. The amount that you paid for machine 1 last year is irrelevant.
2. In order to decide between machine 1 and machine 2, you need to know the company's discount rate.

Correct

1 / 1 points

6. A company currently operates a machine that generates cash flows of 35,000 a year for the next five years (machine 1). You are considering whether to replace this machine today with another more powerful machine that will produce cash flows of 45,000 a year for the same period of five years (machine 2). Both machines will be worthless at the end of the five years. Replacing machine 1 with machine 2 will require an initial investment of 25,000 today. This investment already takes into account the cost of machine 1 and today’s resale value of machine 2. In addition, you paid 100,000 for machine 1 last year.

Suppose the discount rate is 15%. The NPV of replacing machine 1 with machine 2 is \_\_\_\_\_\_\_\_\_\_\_\_.

1. -1,850
2. 7,475
3. **8,522**

**Correct Response**

The relevant cash flows are

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 |
| -25000 | 10000 | 10000 | 10000 | 10000 | 10000 |

So the NPV is

-25,000 + 10,000/(1+15%) + 10,000/(1 + 15%)^2 + 10,000/(1 + 15%)^3 + 10,000/(1 + 15%)^4 + 10,000/(1 + 15%)^5 = 8,522

You can use Excel to calculate this NPV.

1. 6,212