FROM INITIAL TO TERMINAL
How to estimate project cash flows

2) DIFFERENTIAL CASH FLOWS
The machine makes you money

Yr 1 Yr 2 Yr 3 Yr 4 Yr 5

1) INITIAL OUTLAY
You buy a machine.

3) TERMINAL CASH FLOW
You sell the machine.
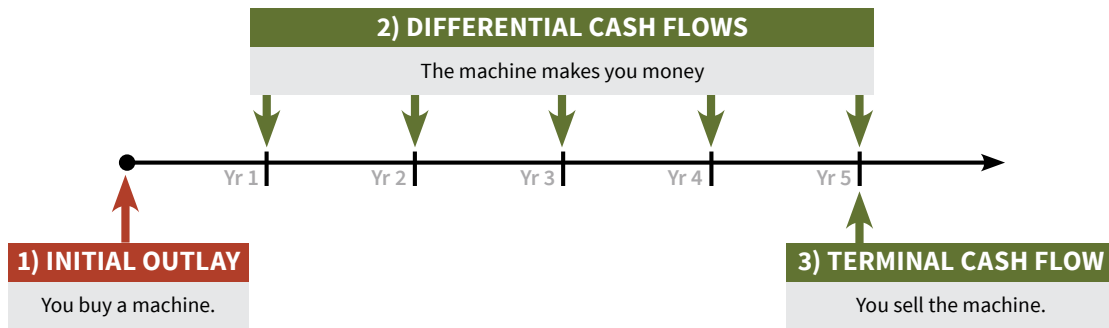
INITIAL OUTLAY

Depreciable Asset

All of these costs factor in when you're buying a new machine:

Cost

Shipping

Installation / Preparation

Training

You'll total up all of these to get the depreciable amount (although the questions almost never list training).

INITIAL OUTLAY	
	New machine cost
+	Shipping
+	Installation
+	Training
=	Depreciable Asset
+	Additional NWC
–	Cash from old sale
+/–	Tax bill / tax shield
=	Initial Outlay

Additional Net Working Capital

Your NWC (Net Working Capital) will be increased as you invest in additional inventory to run through the machine.

Don't forget to subtract this amount at the end when calculating Terminal Cash Flow!

Cash From Sale of Old Machine

If you're replacing an old machine, you'll probably have a buyer for it, or at least get salvage value. This cash will help offset what you're spending on the new machine.

Tax Bill or Tax Shield from Sale of Old Machine

There will also be tax to deal with when you sell the old machine. Depending on the Book Value (what the old machine is worth after depreciation), you will either have a tax bill or a tax shield.

If you sell the old machine for more than the book value, you'll have to pay tax on the profit.

If you sell the old machine for less than the book value, you'll get a tax shield on the loss.

Check out the sheet "Depreciation & Taxes" for more info.

DIFFERENTIAL CASH FLOWS

Revenue

The machine is going to make you money. This is usually described as "increased revenues."

DIFFERENTIAL CASH FLOW	
	Revenue
–	Costs
–	Depreciation
=	EBIT
–	Tax
+	Depreciation
–	Change in NWC
=	After-tax Free Cash Flow

Costs

Most of the time, they will also list increased costs that you have to account for.

Depreciation

Sometimes the problem will specify how much depreciation will be produced per year. Other times, you'll have to figure it out based on the information given. If it's straight-line, it'll be the same amount each year. If it's MACRS, it'll be a different amount each year. Check out the sheet "Depreciation & Taxes" to see how to calculate this.

EBIT

Sometimes the problem will just tell you what the change in EBIT will be. This will save you from calcluating everything above it, however you'll still need to know the depreciation amount because you'll be adding it back in.

*Remember that EBIT is also called "Operating Profit" and "Operating Income."

Tax

If taxes factor in, they will always give you the tax rate. Just multiply the tax rate by EBIT to find out what the tax bill will be.

Depreciation Again?

Yes! Remember, we took out depreciation for tax purposes, but since it is a non-cash expense, we put it back in for measuring cash flow.

Change in Net Working Capital

The change in NWC is

Change in Current Assets – Change in Current Liabilities

Sometimes you'll have to figure that out based on being told how Accounts Receivable, Inventory, Accounts Payable, etc. are changing. Make sure you review the sheet on The Balance Sheet if you're not clear on this.

Sometimes the problem will not include a yearly change in NWC at all.

TERMINAL CASH FLOW

Selling It or Scrap It

You'll either sell the machine for cash, or scrap it (meaning it will get thrown away outright, making you no money).

TERMINAL CASH FLOW	
	Sale price / salvage value
+/–	Tax shield / tax bill
+	Recoup of NWC
=	Terminal Cash Flow

Tax Shield / Tax Bill

The tax benefit or liability will be based on the depreciated book value of the machine. See the sheet "Depreciation & Taxes."

Recoup of NWC

It's easy to forget, but the extra Net Working Capital you put out during the initial outlay is no longer needed now that the project is over. That cash is coming back to you now, so remember to add it back in to the Terminal Cash Flow total.

Make sure you know what they're asking!

Sometimes they want to know the just the terminal cash flow. Other times they want to know the final year's cash, which would include the terminal cash flow AND the final year's differential cash flow.