Problem 1

Answer: A decrease in cash

Working capital (WC) is the difference between current assets (CA) and current liabilities (CL). Then what would produce an increase in WC?

1. There's an increase in current assets, and/or
2. there's a decrease in current liabilities.

Recall that an increase in CA represents a cash drain. The same is true for a decrease in CL. Therefore, an increase in net working capital means **a decrease in cash**.

Problem 2

Answer: \$140 million

To compute the free cash flow (FCF), we need to take the operating profit, and then
▷ subtract the increase in working capital;
▷ add the depreciation back;
▷ subtract the capital expenditure; and
▷ add the after-tax salvage value.
In this problem, we have the following:
▷ operating profit: \$100 million;
▷ no change in working capital;
▷ no depreciation;
▷ capital expenditure: \$10 million;
▷ salvage value: \$50 million.
Then, in units of \$1 million, we can write the FCF as

$$\text{FCF} = 100 - 0 + 0 - 10 + 50 = 140. \tag{1}$$

Therefore, the company's free cash flow for the year is \$140 million.

Problem 3

Answer: \$466,666.67

We're going to denote the annual depreciation amount by d. By using this variable, we can express the depreciated value of the investment for every year:
▷ Year 0: $1,400,000$;
▷ Year 1: $1,400,000 - d$;
▷ Year 2: $1,400,000 - 2d$;
▷ Year 3: $1,400,000 - 3d = 0$.
To obtain the value of d, we solve the above equation:

$$\begin{aligned} 1,400,000 - 3d &= 0 \\ 3d &= 1,400,000 \\ d &= \frac{1,400,000}{3} \\ d &\approx 466,666.67 \end{aligned} \tag{2}$$

Therefore, the annual depreciation amount is approximately \$466,666.67.

Problem 4

Answer: \$224,000

This subject is not explained in the lectures. But it seems that the right thing to do is to compute the profit from sales, and then use the tax rate to obtain the amount to be paid in taxes. By using the sales values given in the problem statement, it's easy to compute the profit: \$640,000. It's also simple to check that 35% of this amount is \$224,000. This is how much we have to pay in taxes.

Problem 5

Answer: \$163,333.33

This subject isn't clearly explained in the lectures either. So I'll just do what seems to be the most reasonable thing. We already know that the annual depreciation amount is \$466,666.67. From the previous problem, we also know that the tax rate is 35%. Then the tax savings from depreciation must correspond to 35% of \$466,666.67. It's easy to check that this amount is approximately \$163,333.33.

Problem 6

Answer: \$579,333.33

Let's begin by summarizing the information we have so far. From the other problems, we know the following:
▷ the revenue is \$1,120,000;
▷ the cost is \$480,000;
▷ the amount to be paid in taxes is \$224,000;
▷ the tax savings from depreciation is \$163,333.33.
We can use these values to compute the operating cash flow (OCF) as follows:

$$\text{OCF} = 1,120,000 - 480,000 - 224,000 + 163,333.33 = 579,333.33. \tag{3}$$

Problem 7

Answer: \$100 million

In this problem, we shall express amounts in units of \$1 million. Then we have the following:
▷ XYZ has revenues of 500;
▷ the cost of goods sold (COGS) is 300;
▷ the depreciation amount is 100.
As explained in the lectures, the EBIT is computed as follows:

$$\text{EBIT} = \text{Revenues} - \text{COGS} - \text{Depreciation}. \tag{4}$$

Hence:

$$\text{EBIT} = 500 - 300 - 100 = 100. \tag{5}$$

Therefore, the company's EBIT is \$100 million.

Problem 8

Answer: \$70 million

We already know the value of the EBIT. Then we can use this value, along with the tax rate, to compute how much the company has to pay in taxes. Since this rate is $r = 0.3$, the tax amount T can be determined as follows:

$$\begin{aligned} T &= \text{EBIT} \times r \\ &= 100 \times 0.3 \\ &= 30. \end{aligned} \tag{6}$$

This means the company needs to pay \$30 million in taxes. Now, to obtain the NOPAT, we simply subtract T from the EBIT. After all, NOPAT represents the profit generated by the company after accounting for both operating expenses and taxes. Hence:

$$\begin{aligned} \text{NOPAT} &= \text{EBIT} - T \\ &= 100 - 30 \\ &= 70. \end{aligned} \tag{7}$$

Therefore, the company's NOPAT is \$70 million.

Problem 9

Answer: \$110 million

We already know the amount corresponding to the NOPAT. Then, to compute the free cash flow (FCF), we need to take the NOPAT, and
▷ add back the depreciation;
▷ subtract the increase in working capital;
▷ subtract the capital expenditure.
The values for the relevant amounts are
▷ NOPAT: 70;
▷ Depreciation: 100;
▷ Working capital increase: 50;
▷ Capital expenditure: 10.
Hence:

$$\text{FCF} = 70 + 100 - 50 - 10 = 110. \tag{8}$$

Therefore, the company's free cash flow is \$110 million.