1. Problem 2.16

$$\begin{aligned}
\text{Depreciation} &= \frac{\$500 - \$50}{10}\ \text{MM/yr} = \$45\ \text{MM/yr} \\
\text{Sales} &= \$1000/\text{ton} \cdot \text{Production} \\
\text{AOC} &= \$250/\text{ton} \cdot \text{Production} \\
\text{Fixed charges} &= \$45\ \text{MM/yr} + \$30\ \text{MM/yr} + \$250/\text{ton} \cdot \text{Production} \\
\$1000/\text{yr} \cdot \text{Production} &= \$45\ \text{MM/yr} + \$30\ \text{MM/yr} + \$250/\text{ton} \cdot \text{Production} \\
&\boxed{\text{Production} = 100,000\ \text{ton/yr}}
\end{aligned}$$

2. Problem 2.17

$$\begin{aligned}
\text{Production} &= \frac{1}{3} \cdot 300000\ \text{ton/yr} = 100000\ \text{ton/yr} \\
\text{Sales} &= \text{Price} \cdot 100000\ \text{ton/yr} \\
\text{AOC} &= \$250/\text{ton} \cdot 100000\ \text{ton/yr} = \$25\ \text{MM/yr} \\
\text{Fixed charges} &= \$45\ \text{MM/yr} + \$30\ \text{MM/yr} + \$25\ \text{MM/yr} = \$100\ \text{MM/yr} \\
\text{Price} \cdot 100000\ \text{ton/yr} &= \$100\ \text{MM/yr} \\
&\boxed{\text{Price} = \$1,000/\text{ton}}
\end{aligned}$$

3. Problem 2.18

$$\begin{aligned}
P &= \$10000 \cdot (1 + 0.06)^{10} \\
&\boxed{P = \$17,909}
\end{aligned}$$

4. Problem 2.19

$$\begin{aligned}
P &= \$10000 \cdot (1 + 0.005)^{10 \cdot 12} \\
&\boxed{P = \$18,194}
\end{aligned}$$

Compounding interest more often leads to higher interest payments. This problem and the one before appear to both have a 6% interest rate, but this problem has a higher interest payment due to more frequent compounding.

5. Problem 2.20

Present sum of annuity

$$\begin{aligned}
A &= \$24000 \cdot \frac{(1 + 0.08)^{20} - 1}{0.08 \cdot (1 + 0.08)^{20}} \\
A &= \$235636 \\
\text{Max} &= \$235636 + \$20000 \\
&\boxed{\text{Max} = \$255,636}
\end{aligned}$$