Accounting Waiver Examination

Sample Questions and Solutions

This document contains two exams that cover different topics. The actual waiver exam is just one exam that covers both sets of topics. There will be only one set of financial statement excerpts to which the waiver exam questions will refer.

For each sample exam, there are three sets of material: the questions, the financial statement excerpts that are relevant, and the solutions.

Name ____

ACCOUNTING 6130
Sample Midterm Exam

Instructions:

- Please print your name in the space provided above
- The exam is open-book, open-notes; electronic devices are allowed.
- The exam is to be done individually!

Question	Points Possible	Points Scored
Question I (Mechanics)	31	______
Question II (Miscellaneous)	20	______
Question III (Revenue Recognition)	21	______
Question IV (FS Analysis)	17	______
Question V (Cash Flow)	17	______
Total.	106	______

Question I: (31 points) Journal Entries

Give me the Journal Entries for each of the following transactions / events. Answer each of these independently

1. (3 pts) A firm borrows $10,000 in cash in the form of a long-term note.

2. (3 pts) A firm buys Inventory on Credit for $20,000.

3. (3 pts) A firm records $30,000 of Depreciation Expense.

4. (4 pts) Employees earn $40,000 in wages this year. Of this amount, $35,000 was paid in cash and the remainder will be paid next year.

5. (8 pts) A firm sells Inventory that originally cost them $60,000. The inventory had been purchased and paid for last year. The firm receives $25,000 in Cash and also receives a Receivable in the amount of $40,000.

   - What are the journal entries this year?

   - How does the above transaction show up on the cash flow statement? (Give me the effect on income and the applicable adjusting entries, if any)

6. (10 pts) A firm sells land that it had purchased many years ago for $100,000. It receives shares of stock (from the selling company) valued at $900,000. The firm's main business does not involve buying and selling land.

   - What are the journal entries?

   - Are any adjusting entries required on the cash flow statement? Explain.

   - Is a footnote to the cash flow statement required related to this transaction? Explain.

Question II (20 points) Miscellaneous

Answer each of the following independently

1. (4 pts) Suppose the Beginning Balance of Inventory was \$100,000. The firm purchased \$20,000 of inventory for cash and \$30,000 of inventory on credit that it has not yet paid. Ending Inventory was \$40,000.

   How much was the Cost of Goods Sold?

2. (8 pts) Suppose that Retained Earnings was \$150,000 at the beginning of the year. During the year, we did the following (all of this has already been entered into the accounts, and the closing entries have taken place): Some of these might not be relevant!

Issued Shares (for cash) worth	\$ 40,000
Bought Back Shares (for cash) worth	\$ 20,000
Issued Long Term Debt (for cash) worth	\$ 17,000
Recognized Net Income of	\$ 90,000
Invested in Long Term Assets (for cash) worth	\$ 5,000
Sold Marketable Securities (for cash) worth	\$ 20,000
Declared and Paid Dividends of	\$ 30,000

(a) (4 pts) What was the ending balance for Retained Earnings?

(b) (4 pts) How much was Cash From Financing Activities?

3. (8 pts) **Closing Entry** - THIS IS INDEPENDENT OF THE PRIOR PROBLEMS

At the end of the year, the company's books contain the following Trial Balances (All Adjusting Entries have already been made). That is, **all** entries have been made except the closing entries. Note that not all balance sheet accounts are shown.

	Adjusted Trial Balance
Accounts Payable	100,000
Accumulated Depreciation and Amortization	200,000
Common Stock	350,000
Cost of Goods Sold	300,000
Depreciation and Amortization Expense	50,000
Dividends Payable	10,000
Interest Expense	40,000
Interest Payable	220,000
Inventory	140,,000
Litigation Loss	60,000
Retained Earnings	2,000,000
Sales Revenue	1,000,000
Selling and Administrative Expenses	400,000

- **(5 pts) What is the Closing Journal Entry for the year?**

Account Titles	**Debit**	**Credit**

- **(3 pts) How much was NET INCOME for the year? Be sure to indicate if it's a profit or it's a loss.**

Question III (21 points) – Revenue Recognition

On January 1, 2022, a firm signs a customer to a 4-year, noncancelable contract for subscription services. The total cost is $4800, payable in annual installments. The service commences immediately (on January 1, 2022). The bill each year is sent on January 1, and it is due in 30 days.

1. (4 pts) What journal entry (or entries) does the firm make on January 1, 2022? (if any)

2. (3 pts) What journal entry (or entries) does the firm make when the customer makes the first payment (if any)? Assume it was made on time.

3. (3 pts) What journal entry (or entries) does the firm make at the end of each month to record pro-rata delivery of service (if any)?

4. (3 pts) What is the balance for Unearned Revenue on the balance sheet on December 31, 2022?

5. (3 pts) How much cash has the firm not yet collected on this contract at the end of December 31, 2022?

6. (5 pts) A consultant claims that if the firm billed for the entire 4 years up front at the beginning of the contract (i.e., $4800), it could report revenue quicker. Do you agree? Explain.

Question IV (17 points) Financial Statement Analysis

Below are selected financial ratios for two years from a company. **Note that ROE, which is an important measure of firm profitability, is higher in year 2 than in year 1**.

	Year 2	Year 1
ROE = Net Income / Stockholders Equity	83.33%	73.91%
Quick Ratio = Quick Assets / Current Liabilities	0.75	0.69
Profit Margin = Net Income / Sales	12.50%	9.71%
Leverage Ratio Version A = Liabilities / Stockholders Equity	2.33	1.17
Leverage Ratio Version B = Assets / Stockholders Equity	3.33	2.17
Leverage Ratio Version C = Liabilities / Total Assets	0.70	0.54
Return on Assets = Net Income / Total Assets	25.00%	34.00%
Current Ratio = Current Assets / Current Liabilities	1.25	1.25
Asset Turnover Ratio = Sales / Assets	2.00	3.50

1. (13 pts) Given the ratios above, explain what the drivers were of the increase in ROE. Provide as much detail as you can. Explain which specific ratios you are referring to, and use the numbers to explain the magnitudes of the effects (not just the directions). NOTE THAT I AM ONLY INTERESTED IN PROFITABILITY HERE – NOT LIQUIDITY OR SOLVENCY. HINT – SOME OF THE RATIOS ARE IRRELEVANT!

2. (4 pts) Based on the numbers above, are there any potential "negative consequences" associated with how the firm increased its ROE? Explain.

Question V – (17 points) Cash Flow Statement

Refer to the excerpts (contained at the back of this booklet) from the 2021 Annual Report of Procter and Gamble (P&G)

1. (3 pts) How much did P&G spend on business acquisitions in 2019? **NOTE THE YEAR!**

2. (3 pts) In which year did Accounts Receivable increase the most? Explain.

3. (3 pts) In which year did Depreciation and Amortization add the most cash flow? Explain.

4. (4 pts) P&G had a huge outflow of cash in 2021 related to FINANCING Activities. What were the two types of financing activities for which P&G's outflows were most different than for the corresponding activity in 2020?

5. (4 pts) For the three years of data provided, why are Cash From Operations and Net Income most different from each other in 2019 compared to the other two years? I don't want a detailed dollar-for-dollar reconciliation; **I want the biggest factor**. Also, EXPLAIN WHY this item causes income and cash to be different from each other.

Consolidated Statements of Cash Flows

Amounts in millions; Years ended June 30	2021	2020	2019
CASH, CASH EQUIVALENTS AND RESTRICTED CASH, BEGINNING OF YEAR	**$ 16,181**	$ 4,239	$ 2,569
OPERATING ACTIVITIES			
Net earnings	**14,352**	13,103	3,966
Depreciation and amortization	**2,735**	3,013	2,824
Loss on early extinguishment of debt	**512**	—	—
Share-based compensation expense	**540**	558	515
Deferred income taxes	**(258)**	(596)	(411)
Loss/(gain) on sale of assets	**(16)**	7	(678)
Goodwill and indefinite-lived intangible impairment charges	**—**	—	8,345
Change in accounts receivable	**(342)**	634	(276)
Change in inventories	**(309)**	(637)	(239)
Change in accounts payable, accrued and other liabilities	**1,391**	1,923	1,856
Change in other operating assets and liabilities	**(369)**	(710)	(973)
Other	**135**	108	313
TOTAL OPERATING ACTIVITIES	**18,371**	17,403	15,242
INVESTING ACTIVITIES			
Capital expenditures	**(2,787)**	(3,073)	(3,347)
Proceeds from asset sales	**42**	30	394
Acquisitions, net of cash acquired	**(34)**	(58)	(3,945)
Purchases of investment securities	**(55)**	—	(158)
Proceeds from sales and maturities of investment securities	**—**	6,151	3,628
Change in other investments	**—**	(5)	(62)
TOTAL INVESTING ACTIVITIES	**(2,834)**	3,045	(3,490)
FINANCING ACTIVITIES			
Dividends to shareholders	**(8,263)**	(7,789)	(7,498)
Increases/(reductions) in short-term debt	**(3,333)**	2,345	(2,215)
Additions to long-term debt	**4,417**	4,951	2,367
Reductions of long-term debt [(1)]	**(4,987)**	(2,447)	(969)
Treasury stock purchases	**(11,009)**	(7,405)	(5,003)
Impact of stock options and other	**1,644**	1,978	3,324
TOTAL FINANCING ACTIVITIES	**(21,531)**	(8,367)	(9,994)
EFFECT OF EXCHANGE RATE CHANGES ON CASH, CASH EQUIVALENTS AND RESTRICTED CASH	**101**	(139)	(88)
CHANGE IN CASH, CASH EQUIVALENTS AND RESTRICTED CASH	**(5,893)**	11,942	1,670
CASH, CASH EQUIVALENTS AND RESTRICTED CASH, END OF YEAR	**$ 10,288**	$ 16,181	$ 4,239
SUPPLEMENTAL DISCLOSURE			
Cash payments for interest	**$ 531**	$ 434	$ 497
Cash payments for income taxes	**3,822**	3,550	3,064

(1) Includes early extinguishment of debt costs of $512 in 2021.

See accompanying Notes to Consolidated Financial Statements.

Name ______________________________

ACCOUNTING 6130
Sample Midterm Exam -- SOLUTION

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Total.	106	______

Question I: (31 points) Journal Entries

Give me the Journal Entries for each of the following transactions / events. Answer each of these independently

1. (3 pts) A firm borrows $10,000 in cash in the form of a long-term note.

Dr	Cash		10,000	
	Cr	Notes Payable		10,000

2. (3 pts) A firm buys Inventory on Credit for $20,000.

Dr	Inventory		20,000	
	Cr	Accounts Payable		20,000

3. (3 pts) A firm records $30,000 of Depreciation Expense.

Dr	Depreciation Expense		30,000	
	Cr	Accumulated Depreciation		30,000

4. (4 pts) Employees earn $40,000 in wages this year. Of this amount, $35,000 was paid in cash and the remainder will be paid next year.

Dr	Wage Expense		40,000	
	Cr	Cash		35,000
		Wages Payable		5,000

5. (8 pts) A firm sells Inventory that originally cost them $60,000. The inventory had been purchased and paid for last year. The firm receives $25,000 in Cash and also receives a Receivable in the amount of $40,000.

- What are the journal entries this year?

Dr	Cash	25,000	
	Accounts Receivable	40,000	
	Cr Sales Revenue		65,000
Dr	COGS	60,000	
	Cr Inventory		60,000

- How does the above transaction show up on the cash flow statement? (Give me the effect on income and the applicable adjusting entries, if any)

Impact on Net Income = Revenue – COGS = 65,000 – 60,000 =	5,000
Adjustments	
Increase in Accounts Receivables	(40,000)
Decrease in Inventory	60,000
Cash From Operations	25,000

6. (10 pts) A firm sells land that it had purchased many years ago for $100,000. It receives shares of stock (from the selling company) valued at $900,000. The firm's main business does not involve buying and selling land.

- What are the journal entries?

Dr	Common Stock	900,000	
	Cr Land		100,000
	Gain on Sale		800,000

Note that the buyer was holding some of our shares worth $900,000. Therefore, we're getting some of our shares back. The Debit could have been to Treasury Stock as well.

If instead you interpreted the problem as saying the buyer gave 900,000 worth of his own stock, then the debit would be to a Marketable Securities type account. This was perfectly fine too.

- Are any adjusting entries required on the cash flow statement? Explain.

Yes. Net Income, which is the starting point for cash from operations contains the gain of $800,000. This is not cash so we have to adjust it out. We do this with a "negative adjustment" – we subtract out the gain. Note that there is no cash at all from this transaction!

- Is a footnote to the cash flow statement required related to this transaction? Explain.

Yes, this is a noncash investing /financing activity

Question II (20 points) Miscellaneous

Answer each of the following independently

1. (4 pts) Suppose the Beginning Balance of Inventory was $100,000. The firm purchased $20,000 of inventory for cash and $30,000 of inventory on credit that it has not yet paid. Ending Inventory was $40,000.

   How much was the Cost of Goods Sold?

   Ending Inv = Beg Inv + Cost of Purchases – COGS

   40,000 = 100,000 + (20,000 + 30,000) – COGS

   COGS = 110,000

Inventory went down by 60,000, so we much have sold 60,000 more than we bought. We bough 50,000, so the COGS has to be 110,000

2. (8 pts) Suppose that Retained Earnings was $150,000 at the beginning of the year. During the year, we did the following (all of this has already been entered into the accounts, and the closing entries have taken place): Some of these might not be relevant!

Issued Shares (for cash) worth	$ 40,000
Bought Back Shares (for cash) worth	$ 20,000
Issued Long Term Debt (for cash) worth	$ 17,000
Recognized Net Income of	$ 90,000
Invested in Long Term Assets (for cash) worth	$ 5,000
Sold Marketable Securities (for cash) worth	$ 20,000
Declared and Paid Dividends of	$ 30,000

(a) (4 pts) What was the ending balance for Retained Earnings?

Ending RE = Beg RE + Net Income – Dividends
= 150,000 + 90,000 – 30,000 = 150,000 + 60,000 = 210,000

(b) (4 pts) How much was Cash From Financing Activities?

Issued Shares gives us cash	40,000
Buying back shares costs us cash	(20,000)
Issuing long term debt gives us cash	17,000
Paying a dividend costs us cash	(30,000)
Cash from Financing	7,000

3. (8 pts) **Closing Entry** - THIS IS INDEPENDENT OF THE PRIOR PROBLEMS

At the end of the year, the company's books contain the following Trial Balances (All Adjusting Entries have already been made). That is, **all** entries have been made except the closing entries. Note that not all balance sheet accounts are shown.

	Adjusted Trial Balance
Accounts Payable	100,000
Accumulated Depreciation and Amortization	200,000
Common Stock	350,000
Cost of Goods Sold	**300,000**
Depreciation and Amortization Expense	**50,000**
Dividends Payable	10,000
Interest Expense	**40,000**
Interest Payable	220,000
Inventory	140,,000
Litigation Loss	**60,000**
Retained Earnings	2,000,000
Sales Revenue	**1,000,000**
Selling and Administrative Expenses	**400,000**

- **(5 pts) What is the Closing Journal Entry for the year?**

Account Titles	**Debit**	**Credit**
Sales Revenue	**1,000,000**	
COGS		**300,000**
Selling and Admin Expenses		**400,000**
Depreciation and Amortiz Expense		**50,000**
Litigation Loss		**60,000**
Interest Expense		**40,000**
Retained Earnings (plug)		**150,000**

- **(3 pts) How much was NET INCOME for the year? Be sure to indicate if it's a profit or it's a loss.**

Net Income = 1,000,000 – (300,000 + 400,000 + 50,000 + 60,000 + 40,000) = 150,000

Ending Balance of RE = Beginning Balance + NI = 2,000,000 +150,000 = 2,150,000

Question III (21 points) – Revenue Recognition

On January 1, 2022, a firm signs a customer to a 4-year, noncancelable contract for subscription services. The total cost is $4800, payable in annual installments. The service commences immediately (on January 1, 2022). The bill each year is sent on January 1, and it is due in 30 days.

1. (4 pts) What journal entry (or entries) does the firm make on January 1, 2022? (if any)

   On January 1 we commenced providing service and we sent a bill

Dr	Accounts Receivable	1200		(=4800 / 4)
	Cr Unearned Revenue		1200	

   You Could use Deferred Revenue or Advances from Customers account titles instead

   Technically we could also record a day's worth of revenue.

2. (3 pts) What journal entry (or entries) does the firm make when the customer makes the first payment (if any)? Assume it was made on time.

Dr	Cash	1200	
	Cr Accounts Receivable		1200

   Note that receiving cash does not trigger any recognition of revenue.

3. (3 pts) What journal entry (or entries) does the firm make at the end of each month to record pro-rata delivery of service (if any)?

Dr	Unearned Revenue	100		($1/12^{th}$ of the annual amount)
	Sales Revenue		100	

4. (3 pts) What is the balance for Unearned Revenue on the balance sheet on December 31, 2022?

   ZERO – note that we haven't billed anything for the next year yet

5. (3 pts) How much cash has the firm not yet collected on this contract at the end of December 31, 2022?

   \$3600 – this is not on the balance sheet anywhere, but you could disclose it in a footnote

6. (5 pts) A consultant claims that if the firm billed for the entire 4 years up front at the beginning of the contract (i.e., \$4800), it could report revenue quicker. Do you agree? Explain.

   No. This speeds up the collection of cash (which could be a good thing), but it does not speed up the recognition of revenue. We recognize revenue as we deliver the service (it will still be \$100 a month).

   A negative consequence is that we may lose customers if the whole thing is due up front, or we might have to lower the price (to compensate for the time value of money)

Question IV (17 points) Financial Statement Analysis

Below are selected financial ratios for two years from a company. **Note that ROE, which is an important measure of firm profitability, is higher in year 2 than in year 1**.

	Year 2	Year 1
ROE = Net Income / Stockholders Equity	83.33%	73.91%
Quick Ratio = Quick Assets / Current Liabilities	0.75	0.69
Profit Margin = Net Income / Sales	12.50%	9.71%
Leverage Ratio Version A = Liabilities / Stockholders Equity	2.33	1.17
Leverage Ratio Version B = Assets / Stockholders Equity	3.33	2.17
Leverage Ratio Version C = Liabilities / Total Assets	0.70	0.54
Return on Assets = Net Income / Total Assets	25.00%	34.00%
Current Ratio = Current Assets / Current Liabilities	1.25	1.25
Asset Turnover Ratio = Sales / Assets	2.00	3.50

1. (13 pts) Given the ratios above, explain what the drivers were of the increase in ROE. Provide as much detail as you can. Explain which specific ratios you are referring to, and use the numbers to explain the magnitudes of the effects (not just the directions). NOTE THAT I AM ONLY INTERESTED IN PROFITABILITY HERE – NOT LIQUIDITY OR SOLVENCY. HINT – SOME OF THE RATIOS ARE IRRELEVANT!

First, we can decompose ROE into two drivers: Operating Performance and Financial Leverage

Operating Performance is Measured by ROA

Financial Leverage is Measure by Leverage Ratio B (Assets / Stockholders Equity)

$$\text{ROE} = \frac{\text{Net Income}}{\text{Share Equity}} = \frac{\text{Net Income}}{\text{Assets}} \times \frac{\text{Total Assets}}{\text{Share Equity}}$$

	Year 2	Year 1
ROE	83.33%	73.91%
ROA	25.00%	34.00%
Leverage Ratio B	3.33	2.17
Check: ROA x Lev	83.33%	73.91%

Note that the increase in ROE in year 2 is entirely driven by the increase in leverage! Operating Performance (ROA) is actually worse.

The firm did worse with its assets (in terms of ROA) but used a lot of debt to leverage this into a higher return for shareholders (but see the next part)

Next, we can decompose ROA into two drivers: Profit Margin and Asset Turnover

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}}$$

	Year 2	**Year 1**
ROA	25.00%	34.00%
Profit Margin	12.50%	9.71%
Asset Turnover	2.00	3.50
Check: PM x AT	25.00%	34.00%

Vulcan's ROA in year 2 was lower despite a higher profit margin. This is because assets did not generate as many dollars in sales as in year 1.

If we had more detailed data, we could explore the reasons for the higher profit margin (and if we thought it was recurring). We could also look at why assets are not generating as much sales.

(maybe there is a big increase in assets – funded by debt – and it will take more time to see the increase in sales?)

2. (4 pts) Based on the numbers above, are there any potential "negative consequences" associated with how the firm increased its ROE? Explain.

One of the factors that caused ROE to go up is the higher leverage. Higher leverage means more debt in the capital structure, which implies a greater risk of default.

Question V – (17 points) Cash Flow Statement

Refer to the excerpts (contained at the back of this booklet) from the 2021 Annual Report of Procter and Gamble (P&G)

1. (3 pts) How much did P&G spend on business acquisitions in 2019? **NOTE THE YEAR!**

   From the Investing Section: Acquisitions 3945

2. (3 pts) In which year did Accounts Receivable increase the most? Explain.

   An increase in receivables is a NEGATIVE adjustment on the cash flow statement
   The largest negative adjustment is (342) in 2021

3. (3 pts) In which year did Depreciation and Amortization add the most cash flow? Explain.

   Depreciation doesn't add cash. This adjustment exists to offset the noncash charge in the income statement related to depreciation

(4 pts) P&G had a huge outflow of cash in 2021 related to FINANCING Activities. What were the two types of financing activities for which P&G's outflows were most different than for the corresponding activity in 2020?

Comparing 2021 and 2020 in the Financing Section, the biggest differences are

Reduction in Short Term debt: (3333) in 2021 compared to +2,345 in 2020
That is, the incurred more short term debt in 2020, and bought it back (or paid it off) in 2021

Treasury stock repurchases: (11,009) in 2021 compared to (7,405) in 2020
They bought back a lot more of their own shares

4. (4 pts) For the three years of data provided, why are Cash From Operations and Net Income most different from each other in 2019 compared to the other two years? I don't want a detailed dollar-for-dollar reconciliation; **I want the biggest factor**. Also, EXPLAIN WHY this item causes income and cash to be different from each other.

   Net Income in 2019: $ 3,966
   Cash from Operations in 2019: $15,242

   The biggest adjustment to get from NI to CFO is Goodwill and indefinite lived intangible impairment charges of 8,345

   These are long term assets that P&G wrote down in 2019. These reduce income in 2019. However, these are not cash outflows, so the cash flow statement adds them back.

   Note that even though these are not cash outflows this year, they are a signal that future cash inflows will be lower.

Name ________________________________

Accounting 6130
Sample Final Exam

- Please print your name in the space provided above
- The points allocated to each problem are noted at the bottom of this page and at the beginning of each problem.
- The exam is open-book, open-notes
- The exam is to be done individually!

PROBLEM	MAXIMUM	SCORE
I. Accounts Receivable (Dow)	19	________
II. Long Term Assets (Dow)	21	________
III. Stockholders' Equity (Dow)	25	________
IV. Income Taxes (Dow)	28	________
V. Inventory (Valero)	15	________
VI. Long Term Debt (Valero)	28	________
TOTAL	136	________

Question I (19 points) Accounts Receivable -- DOW

Refer to the excerpts from **Dow's** financial statements. Assume a tax rate of 20% if necessary.

1. (3 pts) How much do customers owe to Dow at the end of 2021? Use the Trade Accounts Receivable, not the "Other" Accounts Receivable. Also ignore Noncurrent Receivables.

2. (4 pts) What was the journal entry for Dow's bad debt expense in 2021?

3. (3 pts) How much was Dow allowed to deduct on their income taxes related to bad debt / writeoffs / customer defaults during 2021?

4. (5 pts) Assume that Dow's bad debt expense is contained in their Selling, General and Administrative Expense line on the income statement. How much did Dow collect from customers in 2021?

5. (4 pts) Suppose (hypothetically) that a large set of Dow's customers went bankrupt, and Dow had to write off $40 (in millions) in Accounts Receivable. How would this likely affect pre-tax income (if at all)? I'm not looking for a numerical calculation – just explain your reasoning.

Question II. (21 Points) Long Term Assets -- DOW

Refer to the excerpts from **Dow's** financial statements. If you need to **assume** a tax rate, use a 20% tax rate.

1. (2 pts) How much was Dow's R&D Expense in 2021?

2. (5 pts) How much of Dow's total "Depreciation and Amortization" is Depreciation?

3. (3 pts) How much Goodwill did Dow write down (impair) in **2019**? (Note the year!)

4. (4 pts) Dow's Goodwill also went down in 2021. Was this also from impairment? Explain.

5. (3 pts) What is Dow's largest identifiable intangible asset (not including goodwill) in 2021?

6. (4 pts) Accumulated Amortization for Dow's "Software" intangible asset went DOWN, not UP during 2021? How can this be?

Question III (25 points) Shareholders' Equity -- DOW

Refer to the excerpts from **Dow's** financial statements. If you need to **assume** a tax rate, use a 20% tax rate.

1. (2 pts) What is the **par value** per share of Dow's common shares?

2. (3 pts) How many common shares **outstanding** does Dow have at the END of 2021?

3. (3 pts) What is the average price Dow has paid for the Treasury shares still listed on its balance sheet at the end of 2021? (not how much did they pay IN 2021)

4. (2 pts) How much did Dow pay (in cash) in dividends to stockholders in 2021?

5. (2 pts) What is the balance for Accumulated Other Comprehensive Income (AOCI) at the end of 2021?

6. (3 pts) Which of these has had the biggest impact on AOCI through the end of 2021 (not necessarily DURING 2021)? (Circle one)

    - Unrealized Gains and Losses on Investments
    - Cumulative Translation Adjustment (on foreign assets and liabilities)
    - Pensions and Other Post Retirement Benefits
    - Derivatives

7. (2 pts) How much in stock-based compensation expense did Dow recognize during 2021?

8. (3 pts) How many exercisable options does Dow have at the end of 2021?

9. (5 pts) Suppose Dow grants employees new options this year (e.g., Year 1) with an exercise price equal the market price at the date of grant. The options have a three-year vesting period. During Year 2, Dow's stock price goes up. Explain TWO reasons why these options lower Dow's DILUTED Earnings Per Share in Year 2. (no numerical calculations are needed)

Question IV (28 points) Income Taxes -- DOW

Refer to the excerpts from **Dow's** financial statements. If you need to **assume** a tax rate, use a 20% tax rate. (Of course, if you're asked to calculate a tax rate, 20% is probably not the right answer for this question).

1. (2 pts) How much is DOW's **income tax expense** (on continuing operations) in year 2021? (You do not need to separately provide Federal, State and Foreign tax expenses, just the total). Be sure to indicate if this is an expense or a benefit.

2. (2 pts) How much is DOW's **Current Portion of their Income Tax Expense** in 2021? (You do not need to separately provide Federal, State and Foreign components of this, just the total). Be sure to indicate if this is an expense or a benefit.

3. (3 pts) What was Dow's effective tax rate in 2021?

4. (5 pts) Calculate Dow's "cash effective tax rate" in 2021. This is the ratio of "cash taxes paid" to Pre-tax Book Income. (this is what the new tax bill will look at to establish a minimum tax).

5. (4 pts) Did Dow face a higher or lower tax rate on its foreign income relative to the US federal rate of 21% in 2021? Explain.

6. (4 pts) What is the biggest reason why Dow's effective tax rate is so much HIGHER than the US Federal rate in 2020? (**NOTE THE YEAR!**) Give me the "line item" and explain why this increases Dow's effective tax rate

7. (4 pts) Dow's pre-tax book income is negative in **2019** (note the year). Do you think the income they reported to taxing authorities in 2019 was negative? Explain.

8. (4 pts) How much of Dow's Tax Operating Loss Carryforwards expire more than 5 years from now? Give me a dollar amount. Does Dow's calculation of this Deferred Tax Asset reflect the time value of money? Explain.

V. Inventory (15 points) - VALERO

Refer to the excerpts from **Valero** Corporation's financial statements. Valero is an Oil and Gas Company. Assume a 20% tax rate if necessary.

1. (3 pts) How much is Valero's LIFO Reserve at the end of 2021? (give me a number)

2. (4 pts) Valero's pre-tax income in 2021 was $1,543 (in millions). What would their pre-tax income have been in 2021 had they always been using FIFO for their inventory valuation? (give me a number)

3. (4 pts) How much has Valero saved in taxes cumulatively through the end of 2021 through the use of LIFO? (assume a 20% tax rate has always applied)

4. (4 pts) Valero's footnotes report that in 2020 they experienced a Lower of Cost or Market Adjustment. This is essentially a write-down of inventory. Explain why Inventory write downs are less common for firms that use LIFO compared to firms that use FIFO.

Question VI (28 points) Long Term Debt -- VALERO

Refer to the excerpts from **Valero's** financial statements. Valero is an Oil and Gas company. If you need to **assume** a tax rate, use a 20% tax rate.

1. (3 pts) How much in LEASES are included in Valero's Debt line of the balance sheet at the end of 2021? (give me a dollar number)

2. (4 pts) If debt was issued at a discount, which of the following is true (Circle one)

    - Interest Expense is smaller than Coupon Payment
    - Interest Expense is equal to the Coupon Payment
    - Interest Expense is greater than the Coupon Payment

3. (3 pts) What is the fair value of Valero's debt (excluding leases) at the end of 2021? (give me a dollar number)

4. (4 pts) Based on the comparison of Valero's book value and fair value of their debt (excluding leases), what has happened to market interest rates, on average, since their debt was issued? (Circle one)

    - Interest Rates Went Down
    - Interest Rates Have Stayed the Same
    - Interest Rates Went Up

5. (14 pts) Consider Valero's **4% Senior Notes due in 2029**. For convenience, assume that the interest payments are due on June 30 and December 31. Therefore, this debt is due exactly 8 years (or 16 semi-annual periods) from the date of the financial statements. Suppose market interest rates jumped to 10% at the end of December 31, 2021 (remember that we have to use semi-annual compounding).

    a. (4 pts) What is the semi-annual coupon payment that Valero makes on this debt?

    b. (3 pts) What is the (updated) present value of the stream of **coupon payments** Valero will be making on this debt (as assessed on December 31, 2021 – the date the interest rates jumped up)?

    c. (3 pts) What is the market value of this debt (on December 31, 2021)?

    d. (4 pts) What effect does this spike in interest rates have on the **book value** of this Senior Note? (circle one)

        - Decreases the Book Value
        - Has No Effect on the Book Value
        - Increases the Book Value

ACCOUNTING 6130

Final Exam

Excerpts from Financing Statements

Note: This booklet contains excerpts from TWO sets of financial statements: Dow and Valero

Make sure you're referring to the correct set of financial statements when answering a problem!

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☑ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended **December 31, 2021**

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from __________to__________

Commission File Number	Exact Name of Registrant as Specified in its Charter, Principal Office Address and Telephone Number	State of Incorporation or Organization	I.R.S. Employer Identification No.
001-38646	**Dow Inc.** 2211 H.H. Dow Way, Midland, MI 48674 (989) 636-1000	Delaware	30-1128146
001-03433	**The Dow Chemical Company** 2211 H.H. Dow Way, Midland, MI 48674 (989) 636-1000	Delaware	38-1285128

Dow Inc. and Subsidiaries
Consolidated Statements of Income

(In millions, except per share amounts) For the years ended Dec 31,	2021	2020	2019
Net sales	$ 54,968	$ 38,542	$ 42,951
Cost of sales	44,191	33,346	36,657
Research and development expenses	857	768	765
Selling, general and administrative expenses	1,645	1,471	1,590
Amortization of intangibles	388	401	419
Restructuring, goodwill impairment and asset related charges - net	6	708	3,219
Integration and separation costs	—	239	1,063
Equity in earnings (losses) of nonconsolidated affiliates	975	(18)	(94)
Sundry income (expense) - net	(35)	1,269	461
Interest income	55	38	81
Interest expense and amortization of debt discount	731	827	933
Income (loss) from continuing operations before income taxes	8,145	2,071	(1,247)
Provision for income taxes on continuing operations	1,740	777	470
Income (loss) from continuing operations, net of tax	6,405	1,294	(1,717)
Income from discontinued operations, net of tax	—	—	445
Net income (loss)	6,405	1,294	(1,272)
Net income attributable to noncontrolling interests	94	69	87
Net income (loss) available for Dow Inc. common stockholders	$ 6,311	$ 1,225	$ (1,359)

Per common share data:			
Earnings (loss) per common share from continuing operations - basic	$ 8.44	$ 1.64	$ (2.42)
Earnings per common share from discontinued operations - basic	—	—	0.58
Earnings (loss) per common share - basic	$ 8.44	$ 1.64	$ (1.84)
Earnings (loss) per common share from continuing operations - diluted	$ 8.38	$ 1.64	$ (2.42)
Earnings per common share from discontinued operations - diluted	—	—	0.58
Earnings (loss) per common share - diluted	$ 8.38	$ 1.64	$ (1.84)

Weighted-average common shares outstanding - basic	743.6	740.5	742.5
Weighted-average common shares outstanding - diluted	749.0	742.3	742.5

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries

Consolidated Statements of Comprehensive Income

(In millions) For the years ended Dec 31,	2021	2020	2019
Net income (loss)	$ 6,405	$ 1,294	$ (1,272)
Other comprehensive income (loss), net of tax			
Unrealized gains (losses) on investments	(45)	40	115
Cumulative translation adjustments	(425)	205	(32)
Pension and other postretirement benefit plans	2,225	(778)	(899)
Derivative instruments	123	(76)	(338)
Total other comprehensive income (loss)	1,878	(609)	(1,154)
Comprehensive income (loss)	8,283	685	(2,426)
Comprehensive income attributable to noncontrolling interests, net of tax	94	69	99
Comprehensive income (loss) attributable to Dow Inc.	$ 8,189	$ 616	$ (2,525)

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries

Consolidated Balance Sheets

(In millions, except share amounts) At Dec 31,	2021	2020
Assets		
Current Assets		
Cash and cash equivalents	$ 2,988	$ 5,104
Accounts and notes receivable:		
Trade (net of allowance for doubtful receivables - 2021: $54; 2020: $51)	6,841	5,090
Other	2,713	2,300
Inventories	7,372	5,701
Other current assets	934	889
Total current assets	20,848	19,084
Investments		
Investment in nonconsolidated affiliates	2,045	1,327
Other investments (investments carried at fair value - 2021: $2,079; 2020: $1,674)	3,193	2,775
Noncurrent receivables	478	465
Total investments	5,716	4,567
Property		
Property	57,604	56,325
Less: Accumulated depreciation	37,049	36,086
Net property	20,555	20,239
Other Assets		
Goodwill	8,764	8,908
Other intangible assets (net of accumulated amortization - 2021: $4,725; 2020: $4,428)	2,881	3,352
Operating lease right-of-use assets	1,412	1,856
Deferred income tax assets	1,358	2,215
Deferred charges and other assets	1,456	1,249
Total other assets	15,871	17,580
Total Assets	$ 62,990	$ 61,470
Liabilities and Equity		
Current Liabilities		
Notes payable	$ 161	$ 156
Long-term debt due within one year	231	460
Accounts payable:		
Trade	5,577	3,763
Other	2,839	2,126
Operating lease liabilities - current	314	416
Income taxes payable	623	397
Accrued and other current liabilities	3,481	3,790
Total current liabilities	13,226	11,108
Long-Term Debt	14,280	16,491
Other Noncurrent Liabilities		
Deferred income tax liabilities	506	405
Pension and other postretirement benefits - noncurrent	7,557	11,648
Asbestos-related liabilities - noncurrent	931	1,013
Operating lease liabilities - noncurrent	1,149	1,521
Other noncurrent obligations	6,602	6,279
Total other noncurrent liabilities	16,745	20,866
Stockholders' Equity		
Common stock (authorized 5,000,000,000 shares of $0.01 par value each; issued 2021: 764,226,882 shares; 2020: 755,993,198 shares)	8	8
Additional paid-in capital	8,151	7,595
Retained earnings	20,623	16,361
Accumulated other comprehensive loss	(8,977)	(10,855)
Unearned ESOP shares	(15)	(49)
Treasury stock at cost (2021: 29,011,573 shares; 2020: 12,803,303 shares)	(1,625)	(625)
Dow Inc.'s stockholders' equity	18,165	12,435
Noncontrolling interests	574	570
Total equity	18,739	13,005
Total Liabilities and Equity	$ 62,990	$ 61,470

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries

Consolidated Statements of Cash Flows

(In millions) For the years ended Dec 31,	2021	2020	2019
Operating Activities			
Net income (loss)	$ 6,405	$ 1,294	$ (1,272)
Less: Income from discontinued operations, net of tax	—	—	445
Income (loss) from continuing operations, net of tax	6,405	1,294	(1,717)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	2,842	2,874	2,938
Provision (credit) for deferred income tax	278	258	(228)
Earnings of nonconsolidated affiliates less than (in excess of) dividends received	(651)	443	1,114
Net periodic pension benefit cost	39	266	144
Pension contributions	(1,219)	(299)	(261)
Net gain on sales of assets, businesses and investments	(105)	(802)	(81)
Restructuring, goodwill impairment and asset related charges - net	6	708	3,219
Other net loss	921	318	198
Changes in assets and liabilities, net of effects of acquired and divested companies:			
Accounts and notes receivable	(2,132)	171	1,253
Inventories	(1,768)	515	668
Accounts payable	2,458	(84)	(948)
Other assets and liabilities, net	(5)	590	(586)
Cash provided by operating activities - continuing operations	7,069	6,252	5,713
Cash provided by (used for) operating activities - discontinued operations	(60)	(26)	217
Cash provided by operating activities	7,009	6,226	5,930
Investing Activities			
Capital expenditures	(1,501)	(1,252)	(1,961)
Investment in gas field developments	(92)	(5)	(76)
Purchases of previously leased assets	(694)	(5)	(9)
Proceeds from sales of property and businesses, net of cash divested	68	929	84
Acquisitions of property and businesses, net of cash acquired	(129)	(130)	—
Investments in and loans to nonconsolidated affiliates	—	(333)	(638)
Distributions and loan repayments from nonconsolidated affiliates	51	7	89
Purchases of investments	(1,366)	(1,203)	(899)
Proceeds from sales and maturities of investments	759	1,122	1,252
Other investing activities, net	(10)	29	—
Cash used for investing activities - continuing operations	(2,914)	(841)	(2,158)
Cash used for investing activities - discontinued operations	—	—	(34)
Cash used for investing activities	(2,914)	(841)	(2,192)
Financing Activities			
Changes in short-term notes payable	(48)	(431)	307
Proceeds from issuance of short-term debt greater than three months	144	163	—
Payments on short-term debt greater than three months	(130)	(163)	—
Proceeds from issuance of long-term debt	109	4,672	2,287
Payments on long-term debt	(2,771)	(4,653)	(5,561)
Purchases of treasury stock	(1,000)	(125)	(500)
Proceeds from issuance of stock	320	108	93
Transaction financing, debt issuance and other costs	(537)	(175)	(119)
Employee taxes paid for share-based payment arrangements	(12)	(27)	(60)
Distributions to noncontrolling interests	(73)	(62)	(77)
Purchases of noncontrolling interests	—	—	(297)
Dividends paid to stockholders	(2,073)	(2,071)	(1,550)
Dividends paid to DowDuPont Inc.	—	—	(535)
Settlements and transfers related to separation from DowDuPont Inc.	—	—	1,935
Cash used for financing activities - continuing operations	(6,071)	(2,764)	(4,077)
Cash used for financing activities - discontinued operations	—	—	(18)
Cash used for financing activities	(6,071)	(2,764)	(4,095)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(99)	107	(27)
Summary			
Increase (decrease) in cash, cash equivalents and restricted cash	(2,075)	2,728	(384)
Cash, cash equivalents and restricted cash at beginning of year	5,108	2,380	2,764
Cash, cash equivalents and restricted cash at end of year	$ 3,033	$ 5,108	$ 2,380
Less: Restricted cash and cash equivalents, included in "Other current assets"	45	4	13
Cash and cash equivalents at end of year	$ 2,988	$ 5,104	$ 2,367

See Notes to the Consolidated Financial Statements.

Dow Inc. and Subsidiaries

Consolidated Statements of Equity

(In millions, except per share amounts) For the years ended Dec 31,	2021	2020	2019
Common Stock			
Balance at beginning of year	$ 8	$ 8	$ —
Common stock issued	—	—	8
Balance at end of year	8	8	8
Additional Paid-in Capital			
Balance at beginning of year	7,595	7,325	7,042
Common stock issued / sold	320	108	57
Issuance of parent company stock - DowDuPont Inc.	—	—	28
Stock-based compensation and allocation of ESOP shares	236	162	235
Other	—	—	(37)
Balance at end of year	8,151	7,595	7,325
Retained Earnings			
Balance at beginning of year	16,361	17,045	35,460
Net income (loss) available for Dow Inc.'s common stockholders	6,311	1,225	(1,359)
Dividends to stockholders	(2,073)	(2,071)	(1,550)
Dividends to DowDuPont Inc.	—	—	(535)
Common control transaction	46	177	(14,806)
Adoption of accounting standards	—	—	(151)
Other	(22)	(15)	(14)
Balance at end of year	20,623	16,361	17,045
Accumulated Other Comprehensive Loss			
Balance at beginning of year	(10,855)	(10,246)	(9,885)
Other comprehensive income (loss)	1,878	(609)	(1,154)
Common control transaction	—	—	793
Balance at end of year	(8,977)	(10,855)	(10,246)
Unearned ESOP Shares			
Balance at beginning of year	(49)	(91)	(134)
Stock-based compensation and allocation of ESOP shares	34	42	45
ESOP shares acquired	—	—	(2)
Balance at end of year	(15)	(49)	(91)
Treasury Stock			
Balance at beginning of year	(625)	(500)	—
Treasury stock purchases	(1,000)	(125)	(500)
Balance at end of year	(1,625)	(625)	(500)
Dow Inc.'s stockholders' equity	18,165	12,435	13,541
Noncontrolling Interests	574	570	553
Total Equity	$ 18,739	$ 13,005	$ 14,094

Dividends declared per share of common stock	$ 2.80	$ 2.80	$ 2.10

See Notes to the Consolidated Financial Statements.

NOTE 6 – RESTRUCTURING, GOODWILL IMPAIRMENT AND ASSET RELATED CHARGES - NET

The "Restructuring, goodwill impairment and asset related charges - net" line in the consolidated statements of income is used to record charges for restructuring programs, goodwill impairments, and other asset related charges, which includes other asset impairments.

2019 Goodwill Impairment
Upon completion of the goodwill impairment testing in the fourth quarter of 2019, the Company determined the fair value of the Coatings & Performance Monomers reporting unit was lower than its carrying amount. As a result, the Company recorded an impairment charge of $1,039 million in the fourth quarter of 2019, related to Performance Materials & Coatings. See Note 13 for additional information.

Asset Related Charges
2020 Charges
In 2020, the Company recognized pretax impairment charges of $49 million, including additional pretax impairment charges for capital additions made to a bio-ethanol manufacturing facility in Santa Vitoria, Minas Gerais, Brazil ("Santa Vitoria"), which was impaired in 2017 and divested in 2020, as well as charges for miscellaneous write-offs and write-downs of non-manufacturing assets and the write-down of certain corporate leased equipment. The impairment charges related to Packaging & Specialty Plastics ($19 million), Performance Materials & Coatings ($15 million) and Corporate ($15 million). See Note 23 for additional information.

2019 Charges
the fourth quarter of 2019, upon completion of an evaluation of its equity method investment in Sadara Chemical Company ("Sadara") for other-than-temporary impairment, the Company determined that its investment in Sadara was other-than-temporarily impaired and it was written down to zero. Additionally, as part of Dow's evaluation of Sadara, the Company reserved certain of its notes and accounts receivable with Sadara due to uncertainty on the timing of collection. As a result, the Company recorded a $1,755 million charge, related to Packaging & Specialty Plastics ($370 million), Industrial Intermediates & Infrastructure ($1,168 million) and Corporate ($217 million). See Notes 12 and 23 for additional information.

Supplemental Cash Flow Information

The following table shows cash paid for interest and income taxes for the years ended December 31, 2021, 2020 and 2019:

Supplemental Cash Flow Information In millions	*2021*	*2020*	*2019*
Cash paid during year for:			
Interest	$ 801	$ 842	$ 993
Income taxes	$ 731	$ 518	$ 881

NOTE 8 – INCOME TAXES

The financial statements for Dow Inc. and TDCC are substantially similar, including the reporting of current and deferred tax expense (benefit), provision for income taxes on continuing operations, and deferred tax asset and liability balances. As a result, the following income tax discussion pertains to Dow Inc. only.

Geographic Allocation of Income and Provision for Income Taxes on Continuing Operations In millions	*2021*	*2020*	*2019*
Income (loss) from continuing operations before income taxes			
Domestic [1]	$ 1,523	$ (681)	$ (1,196)
Foreign [2]	6,622	2,752	(51)
Income (loss) from continuing operations before income taxes	$ 8,145	$ 2,071	$ (1,247)
Current tax expense (benefit)			
Federal	$ (46)	$ (176)	$ (287)
State and local	48	4	25
Foreign	1,460	691	960
Total current tax expense	$ 1,462	$ 519	$ 698
Deferred tax expense (benefit)			
Federal	$ 130	$ 184	$ 52
State and local	26	19	19
Foreign	122	55	(299)
Total deferred tax expense (benefit)	$ 278	$ 258	$ (228)
Provision for income taxes on continuing operations	$ 1,740	$ 777	$ 470
Income (loss) from continuing operations, net of tax	$ 6,405	$ 1,294	$ (1,717)

1. The 2019 amount includes approximately $1.4 billion of expense related to goodwill impairment and environmental matters. See Notes 13 and 16 for additional information.
2. The 2019 amount includes approximately $1.8 billion of expense for Sadara related charges. See Note 12 for additional information.

Reconciliation to U.S. Statutory Rate	2021	2020 [1]	2019 [1]
Statutory U.S. federal income tax rate	21.0 %	21.0 %	21.0 %
Equity earnings effect	(2.2)	0.2	(3.2)
Foreign income taxed at rates other than the statutory U.S. federal income tax rate	(1.3)	(2.3)	(14.8)
U.S. tax effect of foreign earnings and dividends	1.7	3.9	1.9
Unrecognized tax benefits	4.7	7.3	1.0
Divestitures [2]	—	(5.1)	—
Changes in valuation allowances	2.6	12.6	—
Impact of tax reform [3]	—	—	11.1
Federal tax accrual adjustment [4]	(5.3)	0.3	10.4
State and local income taxes	0.2	0.3	(4.4)
Sadara related charges [5]	—	—	(29.5)
Goodwill impairment [6]	—	—	(17.5)
Other - net	—	(0.7)	(13.7)
Effective tax rate	21.4 %	37.5 %	(37.7)%

1. Certain prior year rates have been adjusted to conform with the current year presentation.
2. The 2020 impact relates to the divestiture of a bio-ethanol manufacturing facility in Brazil. See Note 6 for additional information.
3. Includes the impact of tax reform in Switzerland and the United States.
4. The 2021 impact represents a capital loss incurred on an internal restructuring fully offset by a valuation allowance reported in "Changes in valuation allowances" line item. The 2019 impact primarily relates to the favorable impact of the restoration of tax basis in assets, driven by a court judgment that did not involve the Company.
5. See Note 12 for additional information.
6. See Note 13 for additional information.

The Coronavirus Aid, Relief, and Economic Security Act (“CARES Act”) was enacted on March 27, 2020 in the United States. While the CARES Act had no significant impact on the Company's provision for income taxes on continuing operations in 2020, the Company filed a tax loss carryback claim for $291 million in accordance with the provisions of the CARES Act in 2020. This resulted in an increase in "Accounts and notes receivable - other" and a decrease in "Deferred income tax assets" in the consolidated balance sheets. In 2021, the Company received $247 million of the tax loss carryback claim with the residual balance expected to be received in 2022.

In the fourth quarter of 2020, a valuation allowance of $260 million was recorded in the United States, primarily due to filing of the final combined Dow and DuPont tax return and related unutilized foreign tax credits. In 2021, the Company's strong earnings and revised projections resulted in a reversal of the valuation allowance.

Deferred Tax Balances at Dec 31	2021		2020 [1]	
In millions	Assets	Liabilities	Assets	Liabilities
Property	$ 484	$ 3,150	$ 448	$ 3,337
Tax loss and credit carryforwards	1,784	—	2,004	—
Postretirement benefit obligations	1,753	303	2,712	250
Other accruals and reserves	1,487	191	1,542	78
Intangibles	108	556	124	638
Inventory	33	203	30	198
Investments	31	26	142	51
Other – net	1,093	101	858	196
Subtotal	$ 6,773	$ 4,530	$ 7,860	$ 4,748
Valuation allowances	(1,391)	—	(1,302)	—
Total	$ 5,382	$ 4,530	$ 6,558	$ 4,748

1. Certain prior year balances have been adjusted to conform with the current year presentation.

Operating Loss and Tax Credit Carryforwards at Dec 31	*2021*	*2020*
In millions	*Assets*	*Assets*
Operating loss carryforwards		
Expire within 5 years	$ 240	$ 274
Expire after 5 years or indefinite expiration	817	1,031
Total operating loss carryforwards	$ 1,057	$ 1,305
Tax credit carryforwards		
Expire within 5 years	$ 227	$ 434
Expire after 5 years or indefinite expiration	103	265
Total tax credit carryforwards	$ 330	$ 699
Capital loss carryforwards		
Expire within 5 years	$ 397	$ —
Total tax loss and tax credit carryforwards	$ 1,784	$ 2,004

NOTE 13 – GOODWILL AND OTHER INTANGIBLE ASSETS

The following table shows changes in the carrying amounts of goodwill by reportable segment for the years ended December 31, 2021 and 2020:

Goodwill In millions	*Packaging & Specialty Plastics*	*Industrial Intermediates & Infrastructure*	*Performance Materials & Coatings*	*Total*
Balance at Jan 1, 2020	$ 5,109	$ 1,100	$ 2,587	$ 8,796
Foreign currency impact	12	4	106	122
Sale of rail infrastructure	(2)	—	—	(2)
Sale of marine and terminal infrastructure	(4)	(4)	—	(8)
Balance at Dec 31, 2020	$ 5,115	$ 1,100	$ 2,693	$ 8,908
Foreign currency impact	(10)	(4)	(130)	(144)
Balance at Dec 31, 2021	$ 5,105	$ 1,096	$ 2,563	$ 8,764

The separation from DowDuPont did not impact the composition of the Company's six reporting units: Coatings & Performance Monomers, Consumer Solutions, Hydrocarbons & Energy, Industrial Solutions, Packaging and Specialty Plastics and Polyurethanes & Construction Chemicals. The ECP businesses received as part of the separation from DowDuPont are included in the Hydrocarbons & Energy and Packaging and Specialty Plastics reporting units. At December 31, 2021, goodwill was carried by all reporting units except Coatings & Performance Monomers (“C&PM”).

Goodwill Impairments

The carrying amounts of goodwill at December 31, 2021 and 2020 were net of accumulated impairments of $309 million in Industrial Intermediates & Infrastructure and $2,530 million in Performance Materials & Coatings.

Goodwill Impairment Testing

The Company performs an impairment test of goodwill annually in the fourth quarter. In 2021, the Company performed qualitative testing for all reporting units that carried goodwill. Based on the results of the qualitative testing, the Company did not perform quantitative testing on any reporting units (one in 2020 and two in 2019). The qualitative testing on the reporting units indicated that it was not more likely than not that fair value was less than the carrying value for the reporting units.

The quantitative testing conducted in 2020 concluded that no goodwill impairments existed.

Upon completion of the quantitative testing in the fourth quarter of 2019, the Company determined the C&PM reporting unit was impaired. During 2019, the C&PM reporting unit did not consistently meet expected financial performance targets, primarily due to the industry’s increased captive use of coatings products, which led to volume reductions; reduced margins for products across the portfolio due to changes in customer buying patterns and supply and demand balances; as well as a continuous trend of customer consolidation in end-markets, which reduced growth opportunities. As a result, the C&PM reporting unit lowered its future revenue and profitability projections. The fair value of the C&PM reporting unit was determined using a discounted cash flow methodology that reflected reductions in projected revenue growth rates due to lower sales volume and price assumptions, as well as reductions to future growth rates. These discounted cash flows did not support the carrying value of the C&PM reporting unit. As a result, the Company recorded a goodwill impairment charge of $1,039 million in the fourth quarter of 2019, included in “Restructuring, goodwill impairment and asset related charges - net” in the consolidated statements of income and related to the Performance Materials & Coatings segment. The carrying value of the C&PM reporting unit's goodwill was zero at December 31, 2019. No other goodwill impairments were identified as a result of the 2019 testing.

Other Intangible Assets
The following table provides information regarding the Company's other intangible assets:

Other Intangible Assets at Dec 31	*2021*			*2020*		
In millions	*Gross Carrying Amount*	*Accum Amort*	*Net*	*Gross Carrying Amount*	*Accum Amort*	*Net*
Intangible assets with finite lives:						
Developed technology	$ 2,637	$ (1,871)	$ 766	$ 2,638	$ (1,677)	$ 961
Software	1,396	(945)	451	1,489	(989)	500
Trademarks/tradenames	352	(344)	8	352	(343)	9
Customer-related	3,204	(1,565)	1,639	3,301	(1,419)	1,882
Total other intangible assets, finite lives	$ 7,589	$ (4,725)	$ 2,864	$ 7,780	$ (4,428)	$ 3,352
In-process research and development	17	—	17	—	—	—
Total other intangible assets	$ 7,606	$ (4,725)	$ 2,881	$ 7,780	$ (4,428)	$ 3,352

The following table provides information regarding amortization expense from continuing operations related to intangible assets:

Amortization Expense from Continuing Operations In millions	*2021*	*2020*	*2019*
Other intangible assets, excluding software	$ 388	$ 401	$ 419
Software, included in "Cost of sales"	$ 90	$ 96	$ 96

Accumulated Other Comprehensive Loss

The changes in each component of AOCL for the years ended December 31, 2021, 2020 and 2019 were as follows:

Accumulated Other Comprehensive Loss In millions	*2021*	*2020*	*2019*
Unrealized Gains (Losses) on Investments			
Beginning balance	$ 104	$ 64	$ (51)
Unrealized gains (losses) on investments	(21)	104	178
Tax (expense) benefit	5	(23)	(38)
Net unrealized gains (losses) on investments	(16)	81	140
(Gains) losses reclassified from AOCL to net income [1]	(38)	(54)	(33)
Tax expense (benefit) [2]	9	13	8
Net (gains) losses reclassified from AOCL to net income	(29)	(41)	(25)
Other comprehensive income (loss), net of tax	(45)	40	115
Ending balance	$ 59	$ 104	$ 64
Cumulative Translation Adjustment			
Beginning balance	$ (930)	$ (1,135)	$ (1,813)
Gains (losses) on foreign currency translation	(375)	227	59
Tax (expense) benefit	(40)	25	(2)
Net gains (losses) on foreign currency translation	(415)	252	57
(Gains) losses reclassified from AOCL to net income [3]	(10)	(47)	(89)
Other comprehensive income (loss), net of tax	(425)	205	(32)
Impact of common control transaction [4]	—	—	710
Ending balance	$ (1,355)	$ (930)	$ (1,135)
Pension and Other Postretirement Benefits			
Beginning balance	$ (9,559)	$ (8,781)	$ (7,965)
Gains (losses) arising during the period	2,094	(1,769)	(1,699)
Tax (expense) benefit	(464)	411	413
Net gains (losses) arising during the period	1,630	(1,358)	(1,286)
Amortization of net loss and prior service credits reclassified from AOCL to net income [5]	776	753	504
Tax expense (benefit) [2]	(181)	(173)	(117)
Net loss and prior service credits reclassified from AOCL to net income	595	580	387
Other comprehensive income (loss), net of tax	2,225	(778)	(899)
Impact of common control transaction [4]	—	—	83
Ending balance	$ (7,334)	$ (9,559)	$ (8,781)
Derivative Instruments			
Beginning balance	$ (470)	$ (394)	$ (56)
Gains (losses) on derivative instruments	155	(96)	(470)
Tax (expense) benefit	3	(1)	101
Net gains (losses) on derivative instruments	158	(97)	(369)
(Gains) losses reclassified from AOCL to net income [6]	(38)	30	44
Tax expense (benefit) [2]	3	(9)	(13)
Net (gains) losses reclassified from AOCL to net income	(35)	21	31
Other comprehensive income (loss), net of tax	123	(76)	(338)
Ending balance	$ (347)	$ (470)	$ (394)
Total AOCL ending balance	$ (8,977)	$ (10,855)	$ (10,246)

1. Reclassified to "Net sales" and "Sundry income (expense) - net."
2. Reclassified to "Provision for income taxes on continuing operations."
3. Reclassified to "Sundry income (expense) - net."
4. Reclassified to "Retained earnings" as a result of the separation from DowDuPont on April 1, 2019. See Note 3 for additional information.
5. These AOCL components are included in the computation of net periodic benefit cost of the Company's defined benefit pension and other postretirement benefit plans. See Note 20 for additional information.
6. Reclassified to "Cost of sales," "Sundry income (expense) - net" and "Interest expense and amortization of debt discount."

NOTE 21 – STOCK-BASED COMPENSATION

The Company provides stock-based compensation in the form of the Employee Stock Purchase Plan, which grants eligible employees the right to purchase shares of the Company's common stock at a discounted price. The Company also grants stock-based compensation to employees and non-employee directors under stock incentive plans, in the form of stock options, stock appreciation rights, PSUs and RSUs.

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The total stock-based compensation expense included in continuing operations in the consolidated statements of income was $276 million, $171 million and $158 million in 2021, 2020 and 2019, respectively. The income tax benefits related to stock-based compensation arrangements were $62 million, $39 million and $36 million in 2021, 2020 and 2019, respectively. Amounts disclosed throughout the remainder of this footnote are inclusive of activity attributable to both continuing operations and discontinued operations, as the impact of discontinued operations is not significant.

Accounting for Stock-Based Compensation

The Company grants stock-based compensation awards that vest over a specified period or upon employees meeting certain performance and/or retirement eligibility criteria. The fair value of equity instruments issued to employees is measured on the grant date. The fair value of equity and liability instruments is expensed over the vesting period or, in the case of retirement, from the grant date to the date on which retirement eligibility provisions have been met and additional service is no longer required. The Company estimates expected forfeitures based on historical activity.

Stock Incentive Plan

Stock Options

The Company grants stock options to certain employees, subject to certain annual and individual limits, with terms of the grants fixed at the grant date. The exercise price of each stock option equals the market price of the common stock on the grant date. Options vest from one year to three years and have a maximum term of ten years. The following table summarizes stock option activity for 2021:

Stock Options Shares in thousands	*2021* *Shares*	 *Exercise Price* [1]
Outstanding at Jan 1, 2021	20,252	$ 47.44
Granted	1,309	$ 57.67
Exercised	(5,179)	$ 39.97
Forfeited/Expired	(102)	$ 60.36
Outstanding at Dec 31, 2021	16,280	$ 50.56
Remaining contractual life in years		4.65
Aggregate intrinsic value in millions	$ 141	
Exercisable at Dec 31, 2021	13,106	$ 49.96
Remaining contractual life in years		3.75
Aggregate intrinsic value in millions	$ 128	

1. Weighted-average per share.

Additional Information about Stock Options In millions, except per share amounts	*2021*	*2020*	*2019*
Weighted-average fair value per share of options granted	$ 10.37	$ 5.89	$ 7.99
Total compensation expense for stock option plans	$ 14	$ 22	$ 23
Related tax benefit	$ 3	$ 5	$ 5
Total amount of cash received from the exercise of options	$ 217	$ 108	$ 93
Total intrinsic value of options exercised [1]	$ 121	$ 41	$ 77
Related tax benefit	$ 27	$ 9	$ 17

1. Difference between the market price at exercise and the price paid by the employee to exercise the options.

Total unrecognized compensation cost related to unvested stock option awards of $5 million at December 31, 2021, is expected to be recognized over a weighted-average period of 1.47 years.

Dow Inc. and Subsidiaries
The Dow Chemical Company and Subsidiaries
Valuation and Qualifying Accounts

Schedule II

(In millions) For the years ended Dec 31,	2021	2020	2019
Accounts Receivable - Allowance for Doubtful Receivables			
Balance at beginning of year	$ 51	$ 45	$ 42
Additions charged to expenses [1]	16	22	24
Deductions from reserves [2]	(13)	(16)	(21)
Balance at end of year	$ 54	$ 51	$ 45
Inventory - Obsolescence Reserve			
Balance at beginning of year	$ 23	$ 35	$ 23
Additions charged to expenses	3	2	19
Deductions from reserves [3]	(12)	(14)	(7)
Balance at end of year	$ 14	$ 23	$ 35
Reserves for Other Investments and Noncurrent Receivables			
Balance at beginning of year	$ 2,093	$ 2,215	$ 460
Additions charged to expenses [1]	19	7	1,758
Deductions from reserves [4]	(79)	(129)	(3)
Balance at end of year	$ 2,033	$ 2,093	$ 2,215
Deferred Tax Assets - Valuation Allowance			
Balance at beginning of year	$ 1,302	$ 1,262	$ 1,225
Additions charged to expenses	201	313	140
Deductions from reserves	(112)	(273)	(103)
Balance at end of year	$ 1,391	$ 1,302	$ 1,262

1. In 2019, additions charged to expenses for "Accounts Receivable - Allowance for Doubtful Receivables" included $2 million and additions charged to expenses for "Reserves for Other Investments and Noncurrent Receivables" included $1,753 million related to the Company's investment in Sadara Chemical Company ("Sadara"). See Note 12 to the Consolidated Financial Statements for additional information.
2. Deductions included write-offs, recoveries, currency translation adjustments and other miscellaneous items.
3. Deductions included disposals and currency translation adjustments.
4. Deductions from reserves for "Reserves for Other Investments and Noncurrent Receivables" included $77 million in 2021 and 2020 related to the Company's investment in Sadara. See Note 12 to the Consolidated Financial Statements for additional information.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☑ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2021

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _______________ to _______________

Commission file number 001-13175

VALERO ENERGY CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**74-1828067**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

One Valero Way
San Antonio, Texas 78249

(Address of principal executive offices) (Zip Code)

Registrant’s telephone number, including area code: **(210) 345-2000**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock	VLO	New York Stock Exchange

VALERO ENERGY CORPORATION
CONSOLIDATED BALANCE SHEETS
(millions of dollars, except par value)

	December 31, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 4,122	$ 3,313
Receivables, net	10,378	6,109
Inventories	6,265	6,038
Prepaid expenses and other	400	384
Total current assets	21,165	15,844
Property, plant, and equipment, at cost	49,072	46,967
Accumulated depreciation	(18,225)	(16,578)
Property, plant, and equipment, net	30,847	30,389
Deferred charges and other assets, net	5,876	5,541
Total assets	$ 57,888	$ 51,774
LIABILITIES AND EQUITY		
Current liabilities:		
Current portion of debt and finance lease obligations	$ 1,264	$ 723
Accounts payable	12,495	6,082
Accrued expenses	1,253	994
Taxes other than income taxes payable	1,461	1,372
Income taxes payable	378	112
Total current liabilities	16,851	9,283
Debt and finance lease obligations, less current portion	12,606	13,954
Deferred income tax liabilities	5,210	5,275
Other long-term liabilities	3,404	3,620
Commitments and contingencies		
Equity:		
Valero Energy Corporation stockholders’ equity:		
Common stock, \$0.01 par value; 1,200,000,000 shares authorized; 673,501,593 and 673,501,593 shares issued	7	7
Additional paid-in capital	6,827	6,814
Treasury stock, at cost; 264,305,955 and 265,096,171 common shares	(15,677)	(15,719)
Retained earnings	28,281	28,953
Accumulated other comprehensive loss	(1,008)	(1,254)
Total Valero Energy Corporation stockholders’ equity	18,430	18,801
Noncontrolling interests	1,387	841
Total equity	19,817	19,642
Total liabilities and equity	$ 57,888	$ 51,774

See Notes to Consolidated Financial Statements.

5. INVENTORIES

Inventories consisted of the following (in millions):

	December 31,	
	2021	2020
Refinery feedstocks	$ 1,995	$ 1,979
Refined petroleum products and blendstocks	3,567	3,425
Renewable diesel feedstocks and products	135	50
Ethanol feedstocks and products	273	297
Materials and supplies	295	287
Inventories	$ 6,265	$ 6,038

We compare the market value of inventories to their cost on an aggregate basis, excluding materials and supplies. In determining the market value of our inventories, we assume that feedstocks are converted into refined products, which requires us to make estimates regarding the refined products expected to be produced from those feedstocks and the conversion costs required to convert those feedstocks into refined products. We also estimate the usual and customary transportation costs required to move the inventory from our plants to the appropriate points of sale. We then apply an estimated selling price to our inventories. If the aggregate market value is less than the aggregate cost, we recognize a loss for the difference in our statements of income.

The market value of our LIFO inventories fell below their LIFO inventory carrying amounts as of March 31, 2020, and as a result, we recorded an LCM inventory valuation reserve of $2.5 billion in order to state our inventories at market.

As of December 31, 2021 and 2020, the replacement cost (market value) of LIFO inventories exceeded their LIFO carrying amounts by $5.2 billion and $1.3 billion, respectively.

VALERO ENERGY CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

10. DEBT AND FINANCE LEASE OBLIGATIONS

Debt, at stated values, and finance lease obligations consisted of the following (in millions):

	Final Maturity	December 31, 2021	December 31, 2020
Credit facilities:			
Valero Revolver	2024	$ —	$ —
Canadian Revolver	2022	—	—
Accounts Receivable Sales Facility	2022	—	—
364-Day Revolving Credit Facility	2021	—	—
DGD Revolver	2024	100	—
DGD Loan Agreement	2022	25	—
IEnova Revolver	2028	679	598
Public debt:			
Valero Senior Notes			
6.625%	2037	1,500	1,500
3.400%	2026	1,250	1,250
2.850%	2025	1,050	1,050
4.000%	2029	1,000	1,000
3.650%	2051	950	—
4.350%	2028	750	750
7.5%	2032	750	750
4.90%	2045	650	650
2.150%	2027	600	600
2.800%	2031	500	—
3.65%	2025	324	600
8.75%	2030	200	200
1.200%	2024	169	925
10.500%	2039	113	250
7.45%	2097	100	100
6.75%	2037	24	24
2.700%	2023	—	850
Floating Rate Notes at 1.3665%	2023	—	575
VLP Senior Notes			
4.500%	2028	500	500
4.375%	2026	376	500
Gulf Opportunity Zone Revenue Bonds, Series 2010, 4.00%	2040	300	300
Debenture, 7.65%	2026	100	100
Other debt	2023	26	31
Net unamortized debt issuance costs and other		(86)	(90)
Total debt		11,950	13,013
Finance lease obligations (see Note 6)		1,920	1,664
Total debt and finance lease obligations		13,870	14,677
Less: Current portion		1,264	723
Debt and finance lease obligations, less current portion		$ 12,606	$ 13,954

Other Financial Instruments

Financial instruments that we recognize in our balance sheets at their carrying amounts are shown in the following table along with their associated fair values (in millions):

		December 31, 2021		December 31, 2020	
	Fair Value Hierarchy	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Financial assets:					
Cash and cash equivalents	Level 1	$ 4,122	$ 4,122	$ 3,313	$ 3,313
Financial liabilities:					
Debt (excluding finance leases)	Level 2	11,950	13,668	13,013	15,103

Name ______________________________

Accounting 6130
Sample Final Exam – Solution

- Please print your name in the space provided above
- The points allocated to each problem are noted at the bottom of this page and at the beginning of each problem.
- You have **three hours** for the exam. **Please budget your time carefully.**
- The exam is open-book, open-notes.
- The exam is to be done individually!

PROBLEM	**MAXIMUM**	**SCORE**
I. Accounts Receivable (Dow)	**19**	________
II. Long Term Assets (Dow)	**21**	________
III. Stockholders' Equity (Dow)	**25**	________
IV. Income Taxes (Dow)	**28**	________
V. Inventory (Valero)	**15**	________
VI. Long Term Debt (Valero)	**28**	________
TOTAL	**136**	________

Question I (19 points) Accounts Receivable -- DOW

Refer to the excerpts from **Dow's** financial statements. Assume a tax rate of 20% if necessary.

1. (3 pts) How much do customers owe to Dow at the end of 2021? Use the Trade Accounts Receivable, not the "Other" Accounts Receivable. Also ignore Noncurrent Receivables.

   From the Balance Sheet: Gross Receivables = Net Receivables + Allowance
   = 6841 + 54 = 6895

2. (4 pts) What was the journal entry for Dow's bad debt expense in 2021?

   From Schedule II on p. 167, Bad Debt Expense = 16

Dr	Bad Debt Expense	16	
Cr	Allowance for Doubtful Accounts		16

3. (3 pts) How much was Dow allowed to deduct on their income taxes related to bad debt / writeoffs / customer defaults during 2021?

   This is the writeoffs. Also from Schedule II on p. 166
   Writeoffs = 13

4. (5 pts) Assume that Dow's bad debt expense is contained in their Selling, General and Administrative Expense line on the income statement. How much did Dow collect from customers in 2021?

   Cash Collected = Sales Revenue – BD Expense – Change in Net AR from the cash flow statement

   = 54,968 – 16 – 2,132 = 52,820

5. (4 pts) Suppose (hypothetically) that a large set of Dow's customers went bankrupt, and Dow had to write off $40 (in millions) in Accounts Receivable. How would this likely affect pre-tax income (if at all)? I'm not looking for a numerical calculation – just explain your reasoning.

   There is no direct effect on income. The Journal Entry would be

Dr	Allowance for Uncollectibles	40	
	Cr Accounts Receivable		40

   However, this would bring the Allowance for Doubtful Accounts down from 54 to 14. This is probably too small. To check this we would need to re-assess the credit-worthiness of the remaining customers is to decide what the proper allowance should be for them. If we need to increase the Allowance to get it an appropriate amount, we'd recognize that amount of extra bad debt expense. For example, if we thought we needed to bring the Allowance from 14 up to 20, we'd record

Dr	Bad Debt Expense	6		
	Cr Allowance for Uncollectibles		6	(to bring it from 14 up to 20)

Question II. (21 Points) Long Term Assets -- DOW

Refer to the excerpts from **Dow's** financial statements. If you need to **assume** a tax rate, use a 20% tax rate.

1. (2 pts) How much was Dow's R&D Expense in 2021?

   From the Income Statement, R&D Expense = 857

2. (5 pts) How much of Dow's total "Depreciation and Amortization" is Depreciation?

From the Cash Flow Statement, Depreciation and Amortization =	2,842
From the Income Statement, Amortization of Intangibles =	<u>388</u>
Depreciation	2,454

   They also mention there is 90 of Amortization of their software intangible in the cost of sales line. If that was also part of what was added back in the Depreciation and Amortization line (unlikely), we'd have to subtract that from the number above

3. (3 pts) How much Goodwill did Dow write down (impair) in **<u>2019</u>**? (Note the year!)

   From p. 97, the impairment in 2019 was 1,039

4. (4 pts) Dow's Goodwill also went down in 2021. Was this also from impairment? Explain.

No, from the Table in the Goodwill footnote on p. 107, this decrease came from change in foreign currency exchange rates.

5. (3 pts) What is Dow’s largest identifiable intangible asset (not including goodwill) in 2021?

   From the “Other Intangible Asset” table at the top of p. 108, the largest is “Customer-related”

6. (4 pts) Accumulated Amortization for Dow’s “Software” intangible asset went DOWN, not UP during 2021? How can this be?

   New amortization expense should make the accumulated amortization balance go up. But the balance will go down when you sell or retire an asset. At that point, you remove both the original cost and any accumulated amortization associate with that asset.

   For Dow’s software asset, the latter effect must have been the larger of the two for the balance to go down.

Question III (25 points) Shareholders' Equity -- DOW

Refer to the excerpts from **Dow's** financial statements. If you need to **assume** a tax rate, use a 20% tax rate.

1. (2 pts) What is the **par value** per share of Dow's common shares?

   From the Balance sheet: par value = $0.01

2. (3 pts) How many common shares **outstanding** does Dow have at the END of 2021?

   Shares Outstanding = Shares Issued – Treasury Shares

Shares Issued	764,226,882
Minus Treasury Shares	29,011,573
Shares Outstanding	735,215,309

3. (3 pts) What is the average price Dow has paid for the Treasury shares still listed on its balance sheet at the end of 2021? (not how much did they pay IN 2021)

   Be careful to get the numbers in a consistent order of magnitude

   $$\text{Avg price paid} = \frac{\text{Treasury stock balance}}{\text{Number of Treasury Shares}} \qquad \frac{1{,}625}{29.011573} = \$56.01$$

4. (2 pts) How much did Dow pay (in cash) in dividends to stockholders in 2021?

From the Cash Flow Statement

Cash Paid for Dividends = 2,073

5. (2 pts) What is the balance for Accumulated Other Comprehensive Income (AOCI) at the end of 2021?

   From the Balance sheet or the table in the footnotes on p. 126
   Accumulated Other Comprehensive Income = (8,977) -- a loss

6. (3 pts) Which of these has had the biggest impact on AOCI through the end of 2021 (not necessarily DURING 2021)? (Circle one)

   - Unrealized Gains and Losses on Investments
   - Cumulative Translation Adjustment (on foreign assets and liabilities)
   - ***Pensions and Other Post Retirement Benefits***
   - Derivatives

7. (2 pts) How much in stock-based compensation expense did Dow recognize during 2021?

   From the footnotes, p. 136
   Stock compensation expense = 276

8. (3 pts) How many exercisable options does Dow have at the end of 2021?

   From the footnotes, p. 137
   Stock Options Exercisable =13,106

9. (5 pts) Suppose Dow grants employees new options this year (e.g., Year 1) with an exercise price equal the market price at the date of grant. The options have a three-year vesting period. During Year 2, Dow's stock price goes up. Explain TWO reasons why these options lower Dow's DILUTED Earnings Per Share in Year 2. (no numerical calculations are needed)

The options are valued at the date of the grant, and this value is spread over the vesting period. So there is an expense in year 2 associated with these options, and this decreases the numerator of earnings per share.

Moreover, when the options move "into the money," they are considered dilutive and the increase the denominator of the diluted EPS calculation.

<u>Question IV (28 points) Income Taxes -- DOW</u>

Refer to the excerpts from **Dow's** financial statements. If you need to **assume** a tax rate, use a 20% tax rate. (Of course, if you're asked to calculate a tax rate, 20% is probably not the right answer for this question).

1. (2 pts) How much is DOW's **income tax expense** (on continuing operations) in year 2021? (You do not need to separately provide Federal, State and Foreign tax expenses, just the total). Be sure to indicate if this is an expense or a benefit.

   From Income Statement, Income Tax Expense = $1,740 (this is an expense)

2. (2 pts) How much is DOW's **Current Portion of their Income Tax Expense** in 2021? (You do not need to separately provide Federal, State and Foreign components of this, just the total). Be sure to indicate if this is an expense or a benefit.

   From Tax footnote, p. 99 Current Portion = $1,462 (also an expense)

3. (3 pts) What was Dow's effective tax rate in 2021?

   $$\text{Effective Tax Rate} = \frac{\text{Income Tax Expense}}{\text{Pre-tax Book Income}} = \frac{1{,}740}{8{,}145} = 21.4\%$$

   This is already calculated in the Income Tax Footnote, p. 100

4. (5 pts) Calculate Dow's "cash effective tax rate" in 2021. This is the ratio of "cash taxes paid" to Pre-tax Book Income. (this is what the new tax bill will look at to establish a minimum tax).

   We can get cash taxes paid from the "footnote" to the cash flow statement. It's at the top of p. 99

   $$\text{Cash effective tax rate} = \frac{\text{Cash Taxes Paid}}{\text{Pre-tax Book Income}} = \frac{731}{8{,}145} = 8.97\%$$

5. (4 pts) Did Dow face a higher or lower tax rate on its foreign income relative to its US federal rate of 21% in 2021? Explain.

The easiest way to answer this is look at the Reconciliation of the Effective tax rate to the US Federal Statutory rate. There is a line called "foreign income taxed at rates other than the US Federal rate," and the number is negative; it's (1.3). Technically, what this is says that the income tax rate on foreign profits has the effect of lowering the overall effective tax rate by 1.3% (relative to the statutory rate of 21%). This was an acceptable answer.

If you also noted that the next line says "US Tax Effect of foreign income and dividends" and then add this positive 1.7 to the (1.3) number above, the overall effect of both adjustments was positive, that was also acceptable (and better!)

6. (4 pts) What is the biggest reason why Dow's effective tax rate is so much HIGHER than the US Federal rate in 2020? (**NOTE THE YEAR!**) Give me the "line item" and explain why this increases Dow's effective tax rate

The line item "Valuation Allowance" caused the effective tax rate to go up by 12.6% relative to the US Federal rate.
This is because Dow increased their Valuation Allowance. This is an indicator that Dow does not expect to recover as much of their Deferred Tax Assets as they thought at the beginning of the year.
The journal entry would be

Dr	Income tax expense	x	
	Cr Valuation Allowance		x

7. (4 pts) Dow's pre-tax book income is negative in **2019** (note the year). Do you think the income they reported to taxing authorities in 2019 was negative? Explain.

No …

Note that book income for 2019 includes a large impairment charge for goodwill and a large writedown of their equity investment in a company called Sadara. Some of that was not tax deductible
Also note that the current portion of income tax expense in 2019 was positive.
Also note that cash taxes paid for 2019 was positive

8. (4 pts) How much of Dow's Tax Operating Loss Carryforwards expire more than 5 years from now? Give me a dollar amount. Does Dow's calculation of this Deferred Tax Asset reflect the time value of money? Explain.

From p. 101

Tax Operating Loss Carryforwards	Expiring After 5 years	817

Deferred Tax assets don't consider the time value of money. They only look at when the timing difference will reverse and what the tax rate will be at that time.

V. Inventory (15 points) - VALERO

Refer to the excerpts from **Valero** Corporation's financial statements. Valero is an Oil and Gas Company. Assume a 20% tax rate if necessary.

1. (3 pts) How much is Valero's LIFO Reserve at the end of 2021? (give me a number)

   From the inventory footnote on p. 86, LIFO Reserve = 5.2 (billion)

2. (4 pts) Valero's pre-tax income in 2021 was $1,543 (in millions). What would their pre-tax income have been in 2021 had they always been using FIFO for their inventory valuation? (give me a number)

   Change in LIFO Reserve = 5.2 – 1.3 = 3.9 billion

   FIFO pre-tax income (in millions) = LIFO Income + Change in LIFO Reserve
   = 1,543 + 3,900 = $5,443

   A HUGE DIFFERENCE!

3. (4 pts) How much has Valero saved in taxes cumulatively through the end of 2021 through the use of LIFO? (assume a 20% tax rate has always applied)

   Cumulative Tax Savings = LIFO Reserve x tax rate
   = 5.2 x .2 = $1.04

4. (4 pts) Valero's footnotes report that in 2020 they experienced a Lower of Cost or Market Adjustment. This is essentially a write-down of inventory. Explain why Inventory write downs are less common for firms that use LIFO compared to firms that use FIFO.

   Firms have to write down inventory if the current market value falls below the amount the inventory is being carried at on the books.
   LIFO has old costs in inventory. When costs have been increasing (which is often the case), these old cost are low costs. Therefore, the market value has to fall below these old costs before a writedown is necessary.
   On the other hand, under FIFO, the newer costs are in inventory. Market prices do not have drop much to fall below these more recent costs.

Question VI (28 points) Long Term Debt -- VALERO

Refer to the excerpts from **Valero's** financial statements. Valero is an Oil and Gas company. If you need to **assume** a tax rate, use a 20% tax rate.

1. (3 pts) How much in LEASES are included in Valero's Debt line of the balance sheet at the end of 2021? (give me a dollar number)

   Near the bottom of the Debt Footnote

   Finance Lease Obligations: 1,920
   (this is more than 10% of their total debt)

2. (4 pts) If debt was issued at a discount, which of the following is true (Circle one)

   - Interest Expense is smaller than Coupon Payment
   - Interest Expense is equal to the Coupon Payment
   - ***Interest Expense is greater than the Coupon Payment***

   The extra interest expense increases the liability balance (or reduces the discount). The book value of the liability increases over time, and it eventually approaches the face value.

3. (3 pts) What is the fair value of Valero's debt (excluding leases) at the end of 2021? (give me a dollar number)

   From the last page, Fair Value of debt (excluding leases) 13,668

   Note that this is bigger than the book value of debt (excluding leases) of 11,950

4. (4 pts) Based on the comparison of Valero's book value and fair value of their debt (excluding leases), what has happened to market interest rates, on average, since their debt was issued? (Circle one)

   - ***Interest Rates Went Down***
   - Interest Rates Have Stayed the Same
   - Interest Rates Went Up

   The fair value of the debt is the present value of the remaining cash flows, discounted back at the current market rate of interest. The book value of the debt is the present value of the remaining cash flows, discounted back at the historical market rate of interest. If the fair value is higher, the current discount rate has to be lower.

5. (14 pts) Consider Valero's **4% Senior Notes due in 2029**. For convenience, assume that the interest payments are due on June 30 and December 31. Therefore, this debt is due exactly 8 years (or 16 semi-annual periods) from the date of the financial statements. Suppose market interest rates jumped to 10% at the end of December 31, 2021 (remember that we have to use semi-annual compounding).

   a. (4 pts) What is the semi-annual coupon payment that Valero makes on this debt?

      Coupon payment = face value x coupon rate / 2 = 1,000 x .04 / 2 = 20

   b. (3 pts) What is the (updated) present value of the stream of **coupon payments** Valero will be making on this debt (as assessed on December 31, 2021 – the date the interest rates jumped up)?

      This is the present value of 16 more coupon payments of $20, discounted back at the market rate of interest, which is 10%/2 = 5%

      -PV (.05, 16, 20) = $216.76

   c. (3 pts) What is the market value of this debt (on December 31, 2021)?

      Now we have to add the market value of the face value. The PV is 1000 discounted back 16 periods at 5%, which is

PV of Coupon Payments	216.76
PV of Face Value	458.11
Total Value	$674.87

   d. (4 pts) What effect does this spike in interest rates have on the **book value** of this Senior Note? (circle one)

      - Decreases the Book Value
      - ***Has No Effect on the Book Value***
      - Increases the Book Value

Under historical cost accounting (which is what Dow is using), the book values ignore subsequent changes in market rates