

Unit 2

Planning and Tracking

Lesson 2A:

The Inventory Game—Net Worth and Cash Flow

Rule 2: Have a Plan.

Financial success depends primarily on two things: (i) developing a plan to meet your established goals and (ii) tracking your progress with respect to that plan. Too often people set vague goals (“I want to be rich.”), make unrealistic plans, or never bother to assess the progress toward their goals. These lessons look at important financial indicators you should understand and monitor both in setting goals and attaining them.

Lesson Description

Students physically move into and out of a “wallet” (a specified area in the room) and note the change in the number of students in the wallet over time, as well as the inflow and outflow rates. This demonstration is then related to the stock (an amount at a point in time) concepts of assets and liabilities and the flow (an amount per unit of time) concepts of income and expenses. Students use this distinction to determine net worth, cash flow, and the relationship between them.

Standards and Benchmarks (see page 35)

Grade Level

9-12

Concepts

- Assets
- Cash flow
- Expenses
- Flows
- Income
- Liabilities
- Net worth
- Stocks

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Compelling Question

How do cash inflows and outflows affect a person's net worth?

Objectives

Students will be able to

- distinguish between stock and flow concepts,
 - describe net worth as the value of a person's assets minus the value of the individual's liabilities at a point in time,
 - provide examples of assets and liabilities,
 - describe cash flow as the difference between a person's income and expenses over a given period, and
 - provide examples of income and expenses over a given period.
-

Materials

- Handout 2A.1: Classroom Station Signs, one copy cut into signs
 - Handout 2A.2: Activity Prompts, one copy cut into cards
 - Handout 2A.3: Net Worth and Cash Flow, one copy for each student
 - Handout 2A.3: Net Worth and Cash Flow—Answer Key
 - Handout 2A.4: Assessment, one copy for each student
 - Two timekeeping devices or a classroom clock that tracks seconds
 - Masking tape to mark off an area on the classroom floor
 - "IN" sign and "OUT" sign
-

Time Required

45 minutes

Preparation

Using masking tape, mark off an area of the classroom large enough to hold one-third to one-half of the students in the class. Mark an entrance on one side of this area with an "IN" sign and an exit on the opposite side with an "OUT" sign.

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Procedure

1. Tell students the designated (taped-off) area is a wallet. Explain the following:
 - The class will be investigating the effect on the number of dollars in the wallet as a result of changing the rate at which dollars move into and out of the wallet.
 - There will be five separate rounds of two minutes each.
 - Each student represents one dollar.
 - There will be two timekeepers, one at the “IN” entrance and one at the “OUT” exit.
 - The timekeepers will tell students when to move into or out of the wallet by saying “IN” or “OUT” at designated time intervals.
 - Once students move out of the wallet, they are to get back in the line at the “IN” entrance.
 - The same number of students (dollars) will start in the wallet at the beginning of each round.
2. Move students into position as follows:
 - Have one-third to one-half of the students in the class stand in the wallet. (Remember, you will start each round with the same number of students/dollars in the wallet.)
 - Note the number of students in the wallet by writing it on the board.
 - Assign one student with a watch (or view of a clock) to stand at the “IN” sign and another student with a watch (or view of a clock) to stand at the “OUT” sign.
 - Have the remainder of the class form a single-file line outside the “IN” entrance.
3. At the beginning of each two-minute round, tell the timekeepers the following time intervals for the given round (the numbers in parentheses are the expected change in the number of students in the wallet during that round). At the end of each round, record on the board the number of students in the wallet. (Option: Complete only the first four rounds and have the students predict the results of the fifth round given the rates already recorded.)

Round 1 IN: One every 12 seconds
OUT: One every 12 seconds
(0)

Round 2 IN: One every 10 seconds
OUT: One every 12 seconds
(+2)

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Round 3 IN: One every 10 seconds
OUT: One every 15 seconds
(+4)

Round 4 IN: One every 15 seconds
OUT: One every 10 seconds
(−4)

Round 5 IN: Three every 20 seconds
OUT: Two every 10 seconds
(−6)

4. After the final round, discuss the following:
 - What impact did changing the inflow and outflow rate of students/dollars have on the number of students/dollars in the wallet? (*When the inflow rate exceeds the outflow rate [Rounds 2 and 3], the number of students/dollars in the wallet grows; conversely, when the outflow rate exceeds the inflow rate, the number of students/dollars in the wallet falls [Rounds 4 and 5]. When the inflow and outflow rates are equal, the number of students/dollars in the wallet remains unchanged [Round 1].*)
5. Explain that the wallet demonstration illustrated two economics concepts: **flows** and **stocks**. Flows are based on units of time. For example, a given number of students/dollars flowed into the wallet each minute. Stocks are the inventory, or stock, of dollars at a given time. In this case, the stocks are the number of the students/dollars in the wallet at any given time.
6. Discuss the following:
 - What are some examples of an inflow of money? (*Answers will vary, but use the following as an example: A person's income from working—for example, \$500 per week—or the interest he or she earns on his or her savings account—for example, \$50 per quarter—would be inflow. Note the time element of these payments.*)
 - What are some examples of an outflow of money? (*Answers will vary, but use the following as an example: Expenditures that a person makes—for example, a cell phone bill of \$40 per month, a rental payment of \$400 per month, or an auto insurance payment of \$300 every six months—would be outflows. Again, emphasize the time element involved in these payments.*)
7. Explain that the dollars in the wallet represent a person's wealth. What does the demonstration suggest about how you can grow your wealth over time? (*Your inflow—or income—needs to exceed your outflows, or expenditures.*)

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8. Explain the following:
 - Your wealth is typically measured by your **net worth**. Net worth is the value of a person's **assets** minus the value of his or her **liabilities**. Your assets are things that you *own* such as a house, stocks, bonds, jewelry, cars, money in a savings account, or cash.
 - Your liabilities are things you *owe*, such as unpaid bills, a mortgage, a car loan, or unpaid taxes.
 - Your **cash flow** is defined as your **income** (dollars coming in, usually from working) minus your **expenses** (dollars going out, usually to buy goods and services). Since income and expenses are both flows, they often have a time element associated with them. If your cash flow is *positive*—that is, your income exceeds your expenses over a given period—then, as the wallet demonstration showed, your net worth will tend to rise. Conversely, if your cash flow is *negative*, your net worth will tend to fall.
 - An important element of financial planning is keeping track of these two things: your net worth (a statement of your assets and liabilities) and your cash flow (your monthly budget or flow of funds).
9. Tape the signs (expenses, income, assets, and liabilities) from *Handout 2A:1: Classroom Station Signs* in the four corners of the room.
10. Distribute one prompt card from *Handout 2A:2: Activity Prompts* to each student.
NOTE: All prompts do not need to be used, but be sure to use *all of the prompts with a black square*. Instruct the students to read the prompt received, then think about whether the text describes an expense, income, asset, or liability. After they decide, they should stand by the sign that best describes what is printed on their prompt.
11. Once students have found their stations, explain that all of the cards together represent the expenses, income, assets, and liabilities of one person. Have each student read what is printed on his or her prompt and explain why he or she chose the sign they are standing by. If students are standing by the wrong sign, ask the other students for guidance.

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Expenses	Income
Cable/internet \$100/month	Income from side job \$250/month
Car loan payment \$400/month	Interest on savings \$60/quarter (\$20/month)
Cell phone service \$60/month	Stock dividends \$75/quarter (\$25/month)
Doctor visits \$60/month after insurance	Wages \$36,000/year (\$3,000/month)*
Electricity bill \$60/month	
Gasoline \$75/month	Total \$3,295/month
Groceries \$200/week (\$800/month)	*After income and payroll taxes
Health club membership \$40/month	
Insurance premiums \$100/month	
Mortgage payment \$1,400/month	
Property taxes \$300/quarter (\$100/month)	
Streaming television service \$20/month	
Total \$3,215/month	

Assets	Liabilities
50-inch TV \$700	Car loan balance \$5,000
Car value \$9,000	Credit card balance \$1,600
Certificate of deposit \$2,000	Emergency credit card balance \$500
Emergency cash \$600	Mortgage balance \$150,000
Gold coins \$2,500	Unpaid IOU \$1,000
House value \$200,000	
Motor scooter value \$500	Total \$158,100
Savings \$4,000	
Stocks owned \$10,000	
Total \$229,300	

12. Instruct the groups to now calculate a total for their category. Remind the students that some income and expenses will need to be converted to monthly values. The information will then be used to calculate the person’s net worth and cash flow.
13. Allow time for the groups to work, then write “Net worth = Assets – Liabilities” and “Cash flow = Income – Expenses” on the board. Discuss the following:
 - What are the person’s total assets and total liabilities? *(If all prompts were used, as shown above, the total assets are \$229,300 and total liabilities are \$158,100. However, answers will vary depending on how many and which prompts were used.)*
 - What is this person’s net worth? *(If all prompts were used, \$229,300 – \$158,100 = \$71,200.)*

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- What are this person's total income and total expenses? (*If all prompts were used, total income is \$3,295/month and total expenses are \$3,215/month.*)
 - What is this person's cash flow? (*If all prompts were used, income exceeds expenses by \$80 per month.*)
 - Is this person's net worth likely to increase or decrease over time? (*If all prompts were used, the person's net worth will likely increase because the person's income exceeds expenses, which means savings will grow.*)
14. Distribute a copy of *Handout 2A.3: Net Worth and Cash Flow* to each student. Divide the class into small groups of three to four students and instruct them to complete Part A of the handout.
15. Display Part A of *Handout 2A.3: Net Worth and Cash Flow—Answer Key* and discuss the answers. (Note that all income and expense items have a time period associated with them, while the asset and liability items do not.)
16. Have the groups complete Parts B and C of Handout 2A.3 (after correcting any errors in Part A).
17. Display Parts B and C (page 2 of 2) of *Handout 2A.3: Net Worth and Cash Flow—Answer Key* and discuss the answers. Explain the following:
- Since this person's monthly expenses (outflow) exceed his or her monthly income (inflow), his or her net worth will fall over time if nothing changes.
 - The person will have to draw down his or her savings account, increase the balance on his or her credit card, or get a new loan. If the cash-flow situation isn't changed, each of those options would lower the person's net worth.
 - If the value of this person's assets or liabilities changes over time—for example, the value of his or her stock rises—then it is possible that the person's net worth will not fall. However, this is still not a good cash-flow situation if the person wants his or her net worth to grow.
18. Discuss the following:
- Why would people want to increase their net worth? (*A larger net worth offers greater financial security, which most people desire. Should unexpected expenses occur, it provides a means to pay them. A larger net worth also provides greater financial opportunities—for example, to take advantage of good deals, invest in new opportunities, or even lower their insurance premiums by raising their deductibles.*)

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Closure

19. Explain the following:

- In personal finance, it is important to know your financial situation. The two basic measures of your financial situation are your net worth and cash flow.
- Your net worth is a stock, or inventory, that tells you where you currently stand financially.
- Your cash flow is a measure that gives you a good indication of how the first measure is likely to change over time.
- If your inflow (your income) exceeds your outflow (your expenses), your net worth is likely to rise over time.
- If, however, your outflow (your expenses) exceeds your inflow (your income), your net worth is likely to fall over time.

20. Tell the students you will read three scenarios. They are to give a thumbs-up if they predict that cash flow or net worth will increase or a thumbs-down if they predict that cash flow or net worth will decrease. Tell them a pencil and paper might be useful.

- Sam has a part-time job earning \$75 dollars after taxes each week. Sam spends \$30 a week on gas, food, and entertainment.
 - Is Sam's cash flow positive (thumbs-up) or negative (thumbs-down)?
(*Positive—thumbs-up*)
 - What is likely to happen to Sam's net worth as a result? (*Increase—thumbs-up*)
- Madison has a part time job during the school year. She earns \$200 per *month*. Her cell phone bill is \$75 per *month*, and she spends \$50 per *week* on snacks, movies, and having fun with friends.
 - Is Madison's cash flow positive (thumbs-up) or negative (thumbs-down)?
(*Madison's inflow is \$200 per month; her outflow is \$275 per month.*
Negative—thumbs-down)
 - What is likely to happen to Madison's net worth as a result? (*Decrease—thumbs-down*)
- Emma's summer job pays her \$200 per *week*. Her *monthly* expenses are a \$250 car payment, a \$100 car insurance payment, a \$75 cell phone bill, and \$100 for living expenses.
 - For one month—four weeks—is Emma's cash flow positive (thumbs-up) or negative (thumbs-down)? (*Emma's inflow is \$800 per month, her outflow is \$525 per month. Positive—thumbs-up*)
 - What is likely to happen to Emma's net worth as a result? (*Positive—thumbs-up*).

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Assessment

21. Distribute a copy of *Handout 2A.4: Assessment* to each student and allow time for students to work (or assign as homework).

Handout 2A.4: Assessment—Answer Key

Directions: Examine Part C of Handout 2A.3. How would you help this person change his or her inflow (income) and outflow (expenses) to improve his or her financial health? Recommend ways for this person to increase his or her income or decrease expenses. How would your plan change this person's net worth over time? Write a response that includes specific suggestions and calculations.

Answers should include specific recommendations. For example, a student might suggest that the person cancel cable service to reduce the cable/Internet/phone bill from \$160 to \$100 per month. They might also suggest trading the car for a less-expensive model, reducing the payment from \$350 to \$200 per month. These two changes would reduce monthly expenses by \$210, to \$2,490. In this new plan, monthly income (still \$2,530) exceeds monthly expenses (now \$2,490) by \$40. This new plan would increase net worth over time because the excess income could be used to pay down credit card debt or added to savings.

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Handout 2A.1: Classroom Station Signs (page 1 of 2)

Expenses

Income

Handout 2A.1: Classroom Station Signs (page 2 of 2)

Assets

Liabilities

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Handout 2A.2: Activity Prompts

50-inch TV \$700	Emergency cash \$600	■ Mortgage balance \$150,000
Cable/internet \$100/month	Emergency credit card balance \$500	■ Mortgage payment \$1,400/month
■ Car loan balance \$5,000	Gasoline \$75/month	Motor scooter value \$500
■ Car loan payment \$400/month	Gold coins \$2,500	Property taxes \$300/quarter
■ Car value \$9,000	Groceries \$200/week	Savings \$4,000
Cell phone service \$60/month	Health club membership \$40/month	Streaming television service \$20/month
Certificate of deposit \$2,000	■ House value \$200,000	Stock dividends \$75/quarter
Credit card balance \$1,600	Income from side job \$250/month	Stocks owned \$10,000
Doctor visits \$60/month after insurance	Insurance premiums \$100/month	Unpaid IOU \$1,000
Electricity bill \$60/month	Interest on savings \$60/quarter	■ Wages \$36,000/year after income and payroll taxes

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Handout 2A.3: Net Worth and Cash Flow

Name: _____

Part A

Directions: Classify each of the following as an asset (write "A"), liability ("L"), income ("I"), or expense ("E").

- _____ Electricity bill.....\$50/month
- _____ Car loan balance.....\$4,000
- _____ Wages\$30,000/year (after income and payroll taxes)
- _____ House value\$175,000
- _____ Doctor visits\$50/month (after insurance)
- _____ Interest on savings\$30/quarter
- _____ Credit card balance.....\$1,500
- _____ 70-inch TV\$1,300
- _____ Property taxes\$300/quarter
- _____ Mortgage balance.....\$120,000
- _____ Car value\$9,000
- _____ Groceries\$150/week
- _____ Gold coins\$2,500
- _____ Mortgage payment.....\$1,320/month
- _____ Emergency cash.....\$500
- _____ Gasoline\$60/month
- _____ Stocks owned\$10,500
- _____ Car loan payment.....\$350/month
- _____ Unpaid IOU.....\$1,000
- _____ Savings\$4,000
- _____ Cable/Internet/phones.....\$160/month
- _____ Stock dividends.....\$60/quarter
- _____ Other personal property.....\$3,700
- _____ Other expenses.....\$110/month

Part B

Given the information in Part A, what is this person's net worth? Explain your answer.

Part C

Given the information in Part A, explain whether this person's net worth is likely to grow or decrease over time if things remain the same. (Hint: Convert all income and expense flows into monthly figures and compare them.)

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Handout 2A.3: Net Worth and Cash Flow—Answer Key (page 1 of 2)**Part A**

Directions: Classify each of the following as an asset (write “A”), liability (“L”), income (“I”), or expense (“E”).

<u>E</u>	Electricity bill.....	\$50/month
<u>L</u>	Car loan balance.....	\$4,000
<u>I</u>	Wages	\$30,000/year (after income and payroll taxes)
<u>A</u>	House value	\$175,000
<u>E</u>	Doctor visits	\$50/month (after insurance)
<u>I</u>	Interest on savings	\$30/quarter
<u>L</u>	Credit card balance.....	\$1,500
<u>A</u>	70-inch TV	\$1,300
<u>E</u>	Property taxes	\$300/quarter
<u>L</u>	Mortgage balance.....	\$120,000
<u>A</u>	Car value	\$9,000
<u>E</u>	Groceries	\$150/week
<u>A</u>	Gold coins	\$2,500
<u>E</u>	Mortgage payment.....	\$1,320/month
<u>A</u>	Emergency cash	\$500
<u>E</u>	Gasoline	\$60/month
<u>A</u>	Stocks owned	\$10,500
<u>E</u>	Car loan payment	\$350/month
<u>L</u>	Unpaid IOU.....	\$1,000
<u>A</u>	Savings	\$4,000
<u>E</u>	Cable/Internet/phones.....	\$160/month
<u>I</u>	Stock dividends.....	\$60/quarter
<u>A</u>	Other personal property.....	\$3,700
<u>E</u>	Other expenses	\$110/month

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Handout 2A.3: Net Worth and Cash Flow—Answer Key (page 2 of 2)**Part B**

Given the information in Part A, what is this person's net worth? *\$80,000*

Explain your answer.

$$\begin{array}{rcl} \$80,000 & = & \$206,500 - \$126,500 \\ \text{Net Worth} & & \text{Total Assets} \quad \text{Total Liabilities} \end{array}$$

Assets (All items marked with an "A")	Liabilities (All items marked with an "L")
House \$175,000	Car loan balance \$4,000
TV \$1,300	Credit card balance \$1,500
Car \$9,000	Mortgage balance \$120,000
Gold coins \$2,500	Unpaid IOU \$1,000
Cash \$500	
Stocks \$10,500	Total \$126,500
Savings \$4,000	
Other personal property \$3,700	
Total \$206,500	

Part C

Given the information in Part A, explain whether this person's net worth is likely to grow or decrease over time if things remain the same. (Hint: Convert all income and expense flows into monthly figures and compare them.)

The person's net worth is likely to decrease because he or she is spending more than he or she earns.

Monthly income (All items marked with an "I" converted into monthly terms)	Monthly expenses (All items marked with an "E" converted into monthly terms)
Wages \$2,500 (\$30,000/year ÷ 12 months)	Electricity bill \$50
Interest \$10 (\$30/quarter ÷ 3 months)	Doctor visits \$50
Stock dividends \$20 (\$60/quarter ÷ 3 months)	Property taxes \$100 (\$300/quarter ÷ 3 months)
Total \$2,530	Groceries \$600 (\$150/week × 4 weeks)
	Mortgage payment . . . \$1,320
	Gasoline \$60
	Car loan payment \$350
	Cable/internet/phones . . \$160
	Other \$110
	Total \$2,800

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Handout 2A.4: Assessment

Name: _____

Directions: Examine Part C of Handout 2A.3. How would you help this person change his or her inflow (income) and outflow (expenses) to improve his or her financial health? Recommend ways for this person to increase his or her income or decrease expenses. How would your plan change this person's net worth over time? Write a response that includes specific suggestions and calculations.

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Standards and Benchmarks

National Standards for Financial Literacy

Standard 1: Earning Income. Income for most people is determined by the market value of their labor, paid as wages and salaries. People can increase their income and job opportunities by choosing to acquire more education, work experience, and job skills. The decision to undertake an activity that increases income or job opportunities is affected by the expected benefits and costs of such an activity. Income also is obtained from other sources such as interest, rents, capital gains, dividends, and profits.

- **Benchmark: Grade 4**

2. People earn an income when they are hired by an employer to work at a job.

Standard 5: Financial Investing. Financial investment is the purchase of financial assets to increase income or wealth in the future. Investors must choose among investments that have different risks and expected rates of return. Investments with higher expected rates of return tend to have greater risk. Diversification of investment among a number of choices can lower investment risk.

- **Benchmark: Grade 8**

1. Financial assets include a wide variety of financial instruments including bank deposits, stocks, bonds, and mutual funds. Real estate and commodities are also often viewed as financial assets.

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