

The Hundred Penny Box

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Financial Literacy Library

Description:

After reading *The Hundred Penny Box*, students compare how people save money in financial institutions. Students analyze the advantages of regular saving and how savings grow with compounding.

Personal Finance Concepts:

Saving, savings, interest, interest rate, compounding

Related Subject Areas:

Math, language arts, social studies, economics, art

Instructional Objectives:

Students will be able to:

- Define interest, interest rate, and compounding.
- Explain how compounding enhances savings.
- Explain how compounding enhances savings.

Time Required:

1 – 2 Class Periods

Materials Required:

- Copy of *The Hundred Penny Box*, one book per student, or read aloud to class
- Copy of Visual 1 for each student
- Transparencies of Visuals 1 - 5
- Calculators

Procedure:

1. Ask students if they have a drawer or box at home in which they keep old mementos. Ask what kinds of things they save in it. (*baseball cards, awards, jewelry, photos*)
2. Ask if they have grandparents or other older relatives or neighbors who keep their treasures in a special place. Have students give examples of things that would be interesting to find in an older person's special place. (*photos, old coins, letters*)
3. Write the words "pack rat" on the board, and ask students if they know the meaning of the phrase. (*a collector of miscellaneous items*) Ask for some advantages and disadvantages of being a pack rat. (*advantages: memories, something might become valuable, things might be needed for records later;*

disadvantages: take up space, collect dust, require storage space, tend to be disorganized)

4. Tell students that they will read a book about a 100-year-old woman who is a kind of pack rat. She has collected many things, but the story focuses on the 100 pennies she has saved in an old wooden box. To her, the pennies represent experiences and milestones of her life. Ruth Thomas, who is very practical, wants to throw away Aunt Dew's hundred penny box.
5. Read the story to the class or allow students to read the story. Discuss the following.
 - a. Why did Michael's father, John Thomas, feel responsible for Aunt Dew? (*She had cared for him after his parents drowned.*)
 - b. Why was each of the following pennies important to Aunt Dew? 1874? (In 1874, Aunt Dew was born, slavery ended, and it was the period of Reconstruction after the Civil War.) 1901? (*In 1901, Aunt Dew was 21 years old and gave birth to twins.*) 1930? (*In 1930, it was the Great Depression, Aunt Dew's husband died, and she sewed a fancy dress for Rena Coles.*)
 - c. Why did Ruth Thomas, Michael's mother, want to get rid of the hundred penny box? (*It kept Aunt Dew thinking about the past instead of accepting her new life with their family.*)
 - d. Why did Michael's mother tell him the story about his old teddy bear? (*She used the story to make a comparison. Michael was able to get rid of his old things when Aunt Dew came to live with them. He was making room for her in his old room. In the same way, Ruth Thomas wanted Aunt Dew to get rid of her old things to make room in her heart for their family.*)
 - e. Why didn't Michael want his mother to get rid of the old box? (*He knew that it meant a lot to Aunt Dew. Michael believed that if the box were discarded, Aunt Dew would have no reason to go on living.*)
6. Explain that the way Aunt Dew was saving her pennies in a box is just one place to save money. Ask students to name other places. (*piggy banks, secret hiding place at home, in a bank*)
7. Tell students that saving money in a bank or other financial institution has a big advantage over saving it in a wooden box. Write the word "interest" on the board. Define interest as payment made for the use of money. Explain that banks pay interest as an incentive to savers. For example, a bank might pay a saver \$4 in interest for \$100 he or she has saved in the bank for a year.
8. Explain that interest is calculated as a percentage of a saver's deposit. The percentage is called the interest rate. The saver receiving \$4 for a \$100 deposit is earning a 4% interest rate. Point out that the interest earned is \$4; however, the interest rate is 4%. The interest rate is annual; in this case, 4% per year.
9. Ask the following.
 - a. When would saving money in a box at home be better than saving it in a bank? (*If you must have the money on hand for immediate expenses and it's difficult to withdraw money from a savings account, then a box at home*

- might be more convenient.)*
- b. When would saving money in a bank be better than saving in a box at home? (*When saving for the long term, keeping money in a financial institution is better because it is safer and the money earns interest.*)
10. Explain that saving is an important habit, and regular saving, of even small amounts, can lead to long-term financial security. But, it's better to save in a bank or other financial institution instead of in a wooden box. Ask the following.
- a. If you put \$100 in a box under your bed for 10 years, how much money would be in the box at the end of 10 years? (*\$100*)
 - b. If you deposited \$100 in a savings account, would you have \$100 at the end of 10 years? (*No, you would have more because you would earn interest.*)
11. Write "compounding" on the board. Explain that compounding occurs when a saver earns interest on the amount deposited AND earns interest on previous interest earned.
12. Distribute a copy of Activity 1 to each student, and display Visual 1, Watching Money Grow. Explain that column B shows the amount that is "on deposit" at the beginning of the year. This saver has deposited \$10,000 at the beginning of Year 1. This savings account pays 6% interest per year. Point out that 0.06 is the decimal amount for 6% that is 6/100. The saver would earn \$600 (that is, $\$10,000 \times 0.06$), so the amount at the end of the year would be \$10,600.
13. Discuss the following to model the completion process for the table.
- a. How much will the saver have at the beginning of the second year? (*\$10,600*)
 - b. Why is the amount higher than the first year? (*The saver has kept the \$600 of interest earned on deposit in the savings account.*)
 - c. How do we calculate how much interest will be earned in the second year? (*Multiply \$10,600 times 0.06*)
 - d. How much interest is earned in year 2? (*$\$636 = \$10,600 \times 0.06$*)
 - e. Why did the saver earn more interest in the second year than in the first year? (*The saver is earning interest on the amount deposited in the first year PLUS on the interest earned in the first year.*)
 - f. What is the end-of-year amount (balance)? (*$\$11,236 = \$10,600 + \$636$*)
 - g. What is the beginning amount for year 3? (*\$11,236, which is equal to the end-of-year amount for year 2*)
14. Divide the class into small groups, and have the students complete the rest of the table using calculators. When students are finished, display Visual 2 so that students may check their answers. Point out that \$10,000 turns into \$17,908.48 in ten years with a 6% interest rate. This is called the "miracle of compounding" - earning interest on interest as well as deposits.
15. Explain that three things are important in determining the earnings of a savings

account: (1) the amount deposited, (2) the interest rate, and (3) the length of time the money is left on deposit.

16. Display Visual 3.

- a. What happens to the interest rate? (*It stays the same at 4%.*)
- b. What happens to the length of years? (*It stays the same at 10 years.*)
- c. What changes? (*amount of deposit*) What is the interest earned for \$1,000? (*\$480.24*) for \$5,000 (*\$2,401.22*) for \$25,000? (*\$12,00.11*) for \$100,000 (*\$48,024.43*)
- d. Describe the relationship between amount of deposit and interest earned. (*As the amount of deposit increases, the interest earned increases - the more saved, the more earned.*)

17. Display Visual 4.

- a. What happens to the length of years? (*It stays the same at 10 years.*)
- b. What happens to the amount of deposit? (*It stays the same at \$10,000.*)
- c. What changes? (*the interest rate*) What is the interest earned on \$10,000 with a 4% interest rate? (*\$4,802.44*) with a 6% interest rate? (*\$7,908.48*) with an 8% interest rate? (*\$11,589.25*) with a 10% interest rate? (*\$25,937.43*)
- d. Describe the relationship between the interest rate and interest earned. (*As the interest rate increases, the amount of interest earned increases - the higher the interest rate, the more earned.*)

18. Display Visual 5.

- a. What happens to the interest rate? (*It stays the same at 6%.*)
- b. What happens to the amount of deposit? (*It stays the same at \$10,000.*)
- c. What changes? (*the number of years that the money stays in the savings account*) What is the interest earned for 10 years? (*\$7,908.48*) for 20 years? (*\$12,071.36*) for 30 years? (*\$47,434.91*) for 40 years? (*\$92,857.18*)
- d. What is the relationship between the number of years and interest earned? (*When savings stay in the bank account for a longer time, more interest is earned - the longer the time, the more earned.*)

19. Name three factors that affect how money grows in a savings account. (*the amount saved/deposited, the interest rate, the length of time the money is saved*)

20. Remind students that it is wise to save more and save often!

Closure:

Discuss the following:

1. What is interest? (*payment made/received for the use of money*)
2. What is an interest rate? (*a percentage of a deposit amount that is paid to a saver*)
3. If you had \$100 in a savings account and it earned a 5% interest rate during the year, how much would you have at the end of the year? [$\$105 = \$100 + (.05 \times \$100) = \100×1.05]
4. If you deposited \$100 in a savings account and it earned a 10% interest rate for two years, how much would you have at the end of two years? [$\$110 + (\$110 \times 1.10) = \$121$]
5. What are the three factors that affect interest earnings on a savings account? (*amount of deposit, interest rate, length of time*)

Assessment:

Ask students to create a poster for "their" bank, advertising why saving more and saving often is a good idea. Have students present their ideas to the class in a 1-2 minute "infomercial."

Extension:

1. Bring brochures from local depository institutions, showing interest rates for different types of savings accounts, such as regular savings accounts, money market accounts, and certificates of deposit. Invite a banker to explain why some accounts pay higher interest rates.
2. (*Challenge Level Activity*) Ask students to experiment with different compounding times. This activity uses annual compounding. Students could compound on an annual AND a semiannual basis for five years for the same deposit amount and same interest rate. They should discover that there is a fourth way to "watch money grow" through frequency of compounding.

The Hundred Penny Box
Visual 1: Watching Money Grow

Visual 1: Watching Money Grow

A	B	C	D	E
Year	Beginning Amount	Interest rate	Annual Interest (B x C)	End-of-Year Amount (B + D)
1	\$10,000.00	0.06	\$600.00	\$10,600.00
2		0.06		
3		0.06		
4		0.06		
5		0.06		
6		0.06		
7		0.06		
8		0.06		
9		0.06		
10		0.06		

The Hundred Penny Box
Visual 2: Watching Money Grow - Answer Key

Visual 2: Answer Key				
A	B	C	D	E
Year	Beginning Amount	Interest rate	Annual Interest (B x C)	End-of-Year Amount (B + D)
1	\$10,000.00	0.06	\$600.00	\$10,600.00
2	\$10,600.00	0.06	\$636.00	\$11,236.00
3	\$11,236.00	0.06	\$674.16	\$11,910.16
4	\$11,910.16	0.06	\$714.61	\$12,624.77
5	\$12,624.77	0.06	\$757.49	\$13,382.26
6	\$13,382.26	0.06	\$802.94	\$14,185.19
7	\$14,185.19	0.06	\$851.11	\$15,036.30
8	\$15,036.30	0.06	\$902.18	\$15,938.48
9	\$15,938.48	0.06	\$956.31	\$16,894.79
10	\$16,894.79	0.06	\$1,013.69	\$17,908.48

The Hundred Penny Box
Visual 3: Watching Money Grow with Deposits

Visual 3: Watching Money Grow with Deposits

Three factors affect how money grows in a savings account:

1. The amount you save.
2. The interest rate.
3. The length of time you save.

Let's see what happens when a saver SAVES LARGER AMOUNTS with the SAME interest rate for the SAME number of years.

A	B	C	D
AMOUNT OF DEPOSIT	ANNUAL INTEREST RATE	NO. OF YEARS	TOTAL AT THE END OF THE TIME PERIOD
\$1,000	4%	10	\$1,480.24
\$5,000	4%	10	\$7,401.22
\$25,000	4%	10	\$37,006.11
\$100,000	4%	10	\$148,024.43

The Hundred Penny Box
Visual 4: Watching Money Grow with Interest

Visual 4: Watching Money Grow with Interest

Three factors affect how money grows in a savings account:

1. The amount you save.
2. The interest rate.
3. The length of time you save.

Let's see what happens with HIGHER INTEREST RATES and the SAME deposit amount and the SAME time period.

A	B	C	D
AMOUNT OF DEPOSIT	ANNUAL INTEREST RATE	NO. OF YEARS	TOTAL AT THE END OF THE TIME PERIOD
\$10,000	4%	10	\$14,802.44
\$10,000	6%	10	\$17,908.48
\$10,000	8%	10	\$21,589.25
\$10,000	10%	10	\$25,937.43

The Hundred Penny Box
Visual 5: Watching Money Grow with Time

Visual 5: Watching Money Grow with Time

Three factors affect how money grows in a savings account:

1. The amount you save.
2. The interest rate.
3. The length of time you save.

Let's see what happens with HIGHER INTEREST RATES and the SAME deposit amount and the SAME time period.

A	B	C	D
AMOUNT OF DEPOSIT	ANNUAL INTEREST RATE	NO. OF YEARS	TOTAL AT THE END OF THE TIME PERIOD
\$10,000	6%	10	\$17,908.48
\$10,000	6%	20	\$32,071.36
\$10,000	6%	30	\$57,434.91
\$10,000	6%	40	\$102,857.18