2-4 EXPLORE COMPOUND INTEREST

You will need:

- Student Notes
- Textbook
- Calculator
- Formula Chart
- Notebook Paper
- Pen or Pencil

Red Items are needed during the lecture

OBJECTIVES

Explain the concept of getting interest on your interest.

Compute compound interest using a table.

Interest Income

- Simple Interest – Only your principal (starting amount) earns interest

Can you earn more interest income?

- Compounded Interest – Your principal earns interest AND any interest you have already received also earns interest.

Time Periods
(It is on your formula chart!)

	Time period
Annually	1 year
Semiannually	6 months
Quarterly	3 months
Monthly	1 month
Weekly	7 days
Daily	1 day

Example 1

What would be the **new balance** of a $1,000 account in one year that earns a rate of 2%, compounded annually?

Step 1: Determine which formula to use by asking: What do I want to know?   Ending Balance

Which formula will give us that information? **1b**

Example 1

What would be the **new balance** of a $1,000 account in one year that earns a rate of 2%, compounded annually?

Step 2: **Plug in and solve**

B = P + PRT

= 1000 + 1,000 x .02 x 1

= **$1,020**

Example 2

Maria deposits $1,000 in a savings account that pays 2% interest, compounded semiannually. What is her balance after 6 months?

Step 1: Determine which formula to use by asking: What do I want to know?   Ending Balance

Which formula will give us that information? **1b**

Example 2

Maria deposits $1,000 in a savings account that pays 2% interest, compounded semiannually. What is her balance after 6 months?

Step 2: Plug in and solve

$$B = P + PRT$$
$$= 1,000 + 1,000 \times .02 \times \frac{6}{12}$$
$$= \$1,010$$

Example 2 – Now You Try It!

Alex deposits $4,000 in a savings account that pays 5% interest, compounded semiannually. What is his **balance** after one six months?

Example 2 – **Now You Try It!**

Alex deposits $4,000 in a savings account that pays 5% interest, compounded semiannually. What is his **balance** after one six months?

$$B = P + PRT$$
$$= 4{,}000 + 4{,}000 \times .05 \times \frac{6}{12}$$
$$= 4{,}100$$

Example 4

4a) How much interest does $1,000 earn in one day at an interest rate of 2%, compounded daily?
4b) What is the balance after a day?

4a) Step 1: Determine which formula to use by asking: What do I want to know?

Interest

Which formula will give us that information? **1a**

$$I = PRT$$
$$= 1,000 \times .02 \times \frac{1}{365}$$
$$= \$0.05$$

Example 4

4a) How much interest does $1,000 earn in one day at an interest rate of 2%, compounded daily?
4b) What is the balance after a day?

4b) Find the new balance

New Balance = Prior Balance + Increase
= 1,000 + .05
= $1,000.05

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

On July 11:

- ❑The principal is $1,234.98.
- ❑She withdraws $200 for a car repair.
- ❑She receives a $34 check from her health insurance company and deposits it.

On July 12:

- ❑She deposits her $345.77 paycheck.

What is her balance at the end of the day on July 12?

Step 1: Fill in what you know

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.
On July 11:

❑ The principal is $1,234.98.

❑ She withdraws $200 for a car repair.

❑ She receives a $34 check from her health insurance company and deposits it.

On July 12:

❑ She deposits her $345.77 paycheck.

Date	July 11	July 12
Opening balance		
Deposit (+)		
Withdrawal (−)		
Principal used to compute interest		
Day's interest rounded to the nearest cent		
Ending balance		

Step 2: Compute and fill in the rest of the information.

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Principal used to compute interest:

New Balance = Prior Balance + Increases – Decreases

= 1,234.98 +34 – 200

= $1,068.98 now put it in the chart

Date	July 11	July 12
Opening balance	$1,234.98	
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	
Day's interest rounded to the nearest cent		
Ending balance		

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Day's Interest rounded to the nearest cent:

Determine which formula to use by asking: What do I want to know?

Interest

Which formula will give us that information?   1a

Date	July 11	July 12
Opening balance	$1,234.98	
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	
Day's interest rounded to the nearest cent		
Ending balance		

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Day's Interest rounded to the nearest cent:

$$I = PRT$$

$$= 1,068.98 \times .012 \times \frac{1}{365}$$

$$= \$0.04 \text{ now put it in the chart}$$

Date	July 11	July 12
Opening balance	$1,234.98	
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	
Day's interest rounded to the nearest cent	$0.04	
Ending balance		

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Ending Balance:

New Balance = Prior Balance + Increases

= 1,068.98 +.04

= $ 1,069.02 now put it in the chart

Date	July 11	July 12
Opening balance	$1,234.98	$1,069.02
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	
Day's interest rounded to the nearest cent	$0.04	
Ending balance	$1,069.02	

What is the starting balance for July 12th? put it in the chart

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Principal used to compute interest:

New Balance = Prior Balance + Increases – Decreases

= 1,069.02 + 345.77 - 0

= $1,414.79 now put it in the chart

Date	July 11	July 12
Opening balance	$1,234.98	$1,069.02
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	$1,414.79
Day's interest rounded to the nearest cent	$0.04	
Ending balance	$1,069.02	

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Day's Interest rounded to the nearest cent:

$$I = PRT$$
$$= 1,414.79 \times .012 \times \frac{1}{365}$$
$$= \$0.05 \text{ now put it in the chart}$$

Date	July 11	July 12
Opening balance	$1,234.98	$1,069.02
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	$1,414.79
Day's interest rounded to the nearest cent	$0.04	$0.05
Ending balance	$1,069.02	

Example 5

Jennifer has a bank account that compounds interest daily at a rate of 1.2%.

Ending Balance:

New Balance = Prior Balance + Increases

= 1,414.79 +.05

= $ 1,414.84 now put it in the chart

Date	July 11	July 12
Opening balance	$1,234.98	$1,069.02
Deposit (+)	$34.00	$345.77
Withdrawal (−)	$200.00	
Principal used to compute interest	$1,068.98	$1,414.79
Day's interest rounded to the nearest cent	$0.04	$0.05
Ending balance	$1,069.02	**$1,414.84**

Example 5 – Now You Try It!

On January 7, Joelle opened a savings account with $900. It earned 2.1% interest, compounded daily. On January 8, she deposited her first paycheck of $76.22. What was her balance at the end of the day on January 8?

Date	Jan 7	Jan 8
Opening Balance		
Deposit (+)		
Withdrawal (-)		
Principal used to compute interest		
Day's Interest rounded to the nearest cent		
Ending Balance		

Example 5 – Now You Try It!

On January 7, Joelle opened a savings account with $900. It earned 2.1% interest, compounded daily. On January 8, she deposited her first paycheck of $76.22. What was her balance at the end of the day on January 8?

Date	Jan 7	Jan 8
Opening Balance	$900.00	$900.05
Deposit (+)		$76.22
Withdrawal (-)		
Principal used to compute interest	$900.00	$976.27
Day's Interest rounded to the nearest cent	$.05	$.06
Ending Balance	$900.05	$976.33

Please work on you assignment. It is due at the end of next class.

Grade goes here	Read Pg: 89 to 92 Do Pg 93: #2-4, 6-7 a & b only, 8-11	Last First P__ A:**2-4**