

CHAPTER 1  
**1.2 Exploring Compound Interest**

### Compound Interest Explained

Unlike simple interest, compound interest is when the **interest is based on the new value of your investment** at the end of each compounding period.

In other words, you are **earning interest on your interest** as well as your principal

For example – If you invest \$1000 in an account that earns 10%/a compounded annually, then...

...after 1 year you've earned  
**\$100 interest** That's 10% of \$1000

Since your interest is based on the new value, in the 2<sup>nd</sup> year you earn...

The new value of your investment after 1 year is..  
**\$1100** That's \$100 interest plus the \$1000 principal

$\$1100 \times 0.10 = \$110$   
**interest**

### Explore the Math

➤ Read the situation described on page 18 of your textbook about Ewan and Rena to complete the following

1. How do the future values of Ewan's and Rena's investments compare at maturity?
2. Graph both investments on the same coordinate grid. How are the shapes of the graphs different? Explain why.
3. How much would Ewan need to invest at 3.6% simple interest to earn the same as Rena in 5 years?

### Explore the Math (solutions)

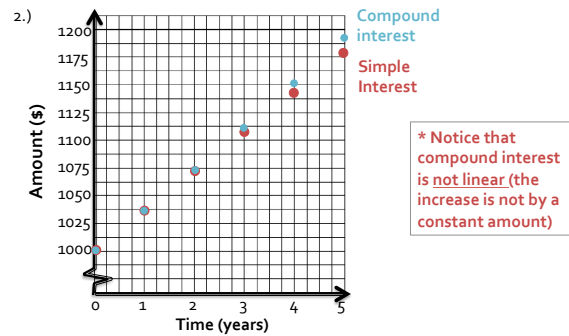
1.) For Ewan we can use our formula:  $A = P(1 + rt)$   
 $A = 1000(1 + (0.036)(5))$   
 $= \$1180$

For Rena, we could use a table

Year	Value of Investment at Start of Year (\$)	Simple Interest Earned (\$)	Value of Investment at End of the Year (\$)
1	\$1000	\$36	\$1036
2	\$1036	\$37.296	\$1073.296
3	\$1073.296	\$38.638656	\$1111.934656
4	\$1111.934656	\$40.02964762	\$1151.964304
5	\$1151.964304	\$41.47071493	\$1193.435019

So Ewan's investment is worth \$1180 at maturity and Rena's investment is worth \$1193.44 at maturity

## Explore the math (solutions cont.)



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3. We could set up a formula and solve for the unknown value, P

$$A = P(1 + rt)$$

$$1193.44 = P(1 + (0.036)(5))$$

$$\frac{1193.44}{1.18} = \frac{P(1.18)}{1.18}$$

$$1011.39 = P$$

Ewan would have to invest \$1011.39

## Homework

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