8.1 Simple and Compound Interest

LEARNING GOALS

By the end of today's lesson I will be able to:
1. Understand the difference between Simple and Compound Interest
2. Know the formulas for Interest accumulated, and the Final Value for both Simple and Compound Interest situations
3. Substitute into the formulas and solve for the unknowns correctly

There are two types on Interest we may encounter:

Simple Interest – where the same amount, based on the original investment is added each month. This would be an application of _____ sequence.

Compound Interest – Where a new amount based on what was invested and what has already been earned (a certain percentage of whatever is in the account) is deposited each month. This is an application of _____ sequence.

To work with Interest there are a few terms that we need to be familiar with.

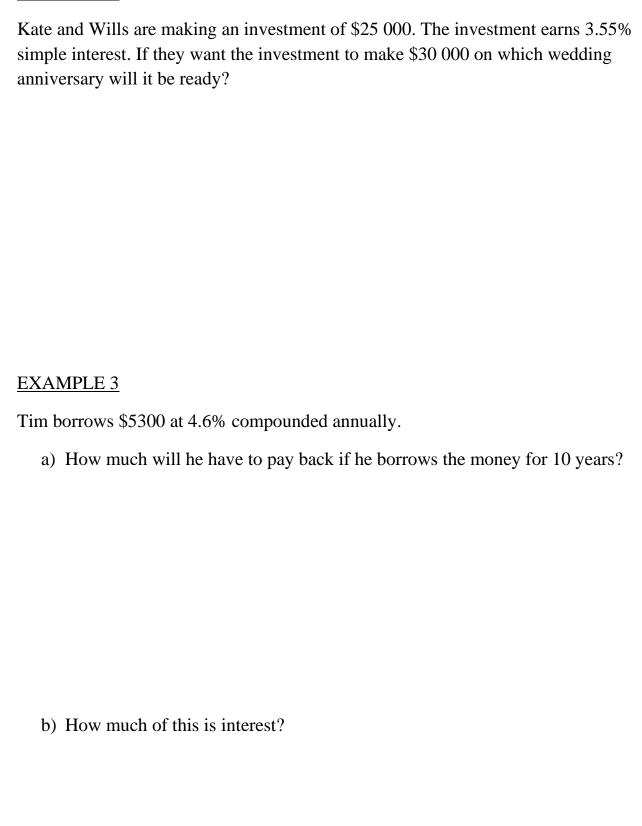PRINCIPAL –

INTEREST –

COMPOUNDING PERIOD –

FUTURE VALUE -

SIMPLE INTEREST

Interest Earned

COMPOUND INTEREST

Interest Earned

EXAMPLE 1

Tina borrows $20 000 at 7.4% simple interest. She plans to pay back the loan in 15 years. Calculate how much she will owe at the end of the 15 years. How much of that is interest?

EXAMPLE 2

Kate and Wills are making an investment of $25 000. The investment earns 3.55% simple interest. If they want the investment to make $30 000 on which wedding anniversary will it be ready?

EXAMPLE 3

Tim borrows $5300 at 4.6% compounded annually.

   a) How much will he have to pay back if he borrows the money for 10 years?

   b) How much of this is interest?

EXAMPLE 4

Lara's grandparents invested $5000 at 4.8% compounded quarterly when she was born. How much will the investment be worth on her 21st birthday.

EXAMPLE 5

On her 15th birthday Trudy invests $10 000 at 8% compounded monthly. When Lina turns 45 she invests $10 000 at 8% compounded monthly. If both women leave their investments until they are 65, how much more will Trudy's investment be worth?

EXAMPLE 6

Nicolas invest $1000. How long would it take for his investment to double if

a) He had 5% compounded annually   b) 5% compounded weekly

EXAMPLE 7

Anton's parents want to make an investment so that he will have $15 000 to study in 10 years. They can earn 6% compounded annually. How much should they invest now?

<u>EXAMPLE 8</u>

Tony is investing $5000 that he would like to grow to at least $50 000 by the time he retires in 40 years. What annual interest rate, compounded semi-annually, will provide this? Round to two decimal places.