**QUESTIONS ABOUT INTEREST**

1. Abby is a university student who needs a little help affording her tuition. She goes to the bank and asks for a loan of $32,000. The bank agrees to give her the loan, and give her two options for repaying the loan.

**Option A:** Repay the loan over 9 years, with an 8% interest rate.

**Option B:** Repay the loan over 6 years, with an 11% interest rate.

Using the **simple interest** formula, determine which option Abby should take if she wants to pay the least amount of interest. Show your work.

1. Zachary needs to borrow $30,000 to pay for his wedding. He goes to the bank, and they agree to loan him the money if he agrees to pay it back in 6 years with a 7% interest rate. The interest is compounded annually.

How much will Zachary need to pay back in total? Show your work.

1. Quentin wants to buy a new motorcycle, but doesn’t have enough money for it. He goes to the bank for a loan of $50,000. The bank gives him two options for repaying the loan with **compounded interest**.

Option A: Repay the loan over 10 years, with an 8% interest rate.

Option B: Repay the loan over 5 years, with a 15% interest rate.

Using the **compound interest** formula, determine which option Quentin should take if he wants to pay back the least amount of interest. Show your work.

**Answers**

1. Abby is a university student who needs a little help affording her tuition. She goes to the bank and asks for a loan of $32,000. The bank agrees to give her the loan, and give her two options for repaying the loan.

Option A: Repay the loan over 9 years, with an 8% interest rate.

Option B: Repay the loan over 6 years, with an 11% interest rate.

Using the **simple interest** formula, determine which option Abby should take if she wants to pay the least amount of interest. Show your work.

Option A: Option B:  
I = P x R x T I = P x R x T  
I = $32,000 x 0.08 x 9 I = $32,000 x 0.11 x 6  
I = $2560 x 9 I = $3520 x 6  
I = $23 040 I = $21 120

**∴** Abby should choose Option B if she wants to pay back the least amount of interest.

1. Zachary needs to borrow $30,000 to pay for his wedding. He goes to the bank, and they agree to loan him the money if he agrees to pay it back in 6 years with a 7% interest rate. The interest is **compounded** annually.

How much will Zachary need to pay back in total? Show your work.

B = P x (1+R)T

B = $30 000 x (1+0.07)6

B = $30 000 x (1.07)6

B = $30 000 x 1.50  
B = $45 000

**∴** Zachary will need to pay back $45 000.

1. Quentin wants to buy a new motorcycle, but doesn’t have enough money for it. He goes to the bank for a loan of $50,000. The bank gives him two options for repaying the loan with **compounded interest**.

**Option A:** Repay the loan over 10 years, with an 8% interest rate.

**Option B:** Repay the loan over 5 years, with a 15% interest rate.

Using the **compound interest** formula, determine which option Quentin should take if he wants to pay back the least amount of interest. Show your work.

B = P x (1+R)T B = P x (1+R)T

B = $50,000 x (1+0.08)10 B = $50,000 x (1+0.15)5

B = $50,000 x (1.08)10 B = $50,000 x (1.15)5B = $50,000 x 2.16B = $50,000 x 2.01

B = $108 000 B = $100 500

**∴** Quentin should choose Option B if he wants to pay back the least amount of interest.