

## Simple and Compound Interest Review

1. You deposit \$500 in a savings account that earns 3% interest per year. Complete the tables below, which type of interest gives the greater balance?

Simple Interest			
t	Principal	Annual Interest	Balance at End of the Year
1	\$500	\$15	\$515
2	\$500	\$15	\$530
3	\$500	\$15	\$545
4	\$500	\$15	\$560
5	\$500	\$15	\$575

Compound Interest			
t	Principal and Interest	Annual Interest	Balance at End of the Year
1	\$500	\$15	\$515
2	\$515	\$15.45	\$530.45
3	\$530.45	\$15.91	\$546.36
4	\$546.36	\$16.39	\$562.75
5	\$562.75	\$16.88	\$579.63

$$A = 530.45 \left(1 + \frac{0.03}{1}\right)^{1 \times 1} = 546.36$$

2. You deposit \$600 in a savings account that earns 4% simple interest per year. Your friend deposits \$400 in a savings account that earn 5% simple interest per year. Are the account balances ever equal? If so, after how many years?

$$I = 600 \times 0.04 \times 1 = \$24/\text{year} \quad \text{\$600 has a higher interest earned per year, so \$400 will never catch up to \$600.}$$

$$I = 400 \times 0.05 \times 1 = \$20/\text{year}$$

3. You deposit \$1200 in a savings account that earns 5.4% interest compounded annually. What is the account balance after 3 years?

$$A = 1200 \left(1 + \frac{0.054}{1}\right)^3$$

$$= \$1405.09$$

4. After 7 years at 3% simple interest per year, your savings account earns \$62. What is the principal?

$$I = PRT$$

$$62 = P(0.03)(7) \quad \rightarrow \quad P = \$295.24$$

$$62 = 0.21P$$

$$\div 0.21 \quad \div 0.21$$

5. Your friend borrows \$1050 from you to buy a new bike. Your friend pays you back the principal plus 7.25% <sup>simple</sup> interest per year in 3 years. How much money do you earn?

$$I = 1050(0.0725)(3)$$

$$= \$228.38$$

6. How long will it take to earn \$500 simple interest, investing \$8500 at 4.25% per annum?

$$I = PRT$$

$$500 = 8500(0.0425)T$$

$$500 = 361.25T$$

$$\div 361.25 \quad \div 361.25$$

$$T = 1.384 \text{ years.}$$

7. Liam invests \$5000 for 5 years at 5.25% per annum. How much more would he collect at the end of the 5-year period if the money invested is compounded monthly rather than compounded annually?

Monthly:	Annually:	
$A = 5000\left(1 + \frac{0.0525}{12}\right)^{5 \times 12}$	$A = 5000\left(1 + \frac{0.0525}{12}\right)^{5 \times 12}$	$6497.16 - 6457.74$
$= \$6457.74$	$= \$6497.16$	$= \$39.42$

8. How long, approximately, will Mr. H double his investment if the interest rate was 2.5% compounded annually.

Rule of 72

$$T = \frac{72}{2.5} = 28.8 \text{ years.}$$

9. Calculate the final investment value for the investing \$3560 at 1.2% per annum compounded monthly for 9 months.

$$A = 3560\left(1 + \frac{0.012}{12}\right)^{12 \times \frac{9}{12}}$$

$$= \$3592.17$$