

Objective: TSWBAT- find compound interest
and simple interest

Vocabulary

- ① interest - money paid for the use of your money
- ② interest rate - interest calculated at a certain percentage
- ③ principal - the original amount deposited or borrowed

Formula

- ④ balance - is the principal + interest earned
- ⑤ Compound interest - interest paid on the original principal and on any interest that has been left in the account
- ⑥ Simple Interest - is interest calculated only on the principal

Compound Interest

Formula

$$B = P(1 + r)^n$$

B is the final balance

P is the principal

r is the interest rate per period

n is the number of interest periods

Simple Interest

$$I = PrT$$

Savings You deposit \$120 in an account that earns 5% simple interest. Find the final balance in the account after 3 years. $B = P + I$

$$I = Prt$$

$$I = (120 \times .05)(3)$$

$$I = \$18$$

$$B = 120 + 18$$

$$B = \$138$$

2 A teacher invests \$205 in an account that earns 8% simple interest. Find the final balance in the account after 10 years. $B = I + P$

$$I = Prt$$

$$I = (205 \times .08)(10)$$

$$I = \$164$$

$$B = 205 + 164$$

$$B = \$369$$

More Compound Interest Problems

- ① \$10,000 compounded semiannually for 3 yrs at 8%

$$B = P(1+r)^N$$

$$B = 10,000(1+.04)^6$$

$$B = 12,653.19$$

- ② \$4,500 compounded quarterly for 4 yrs at 6%

$$B = 4,500(1+.015)^{16} = 5,710.43$$

- ③ \$8,000 compounded monthly for 2 yrs at $6\frac{1}{4}\%$

$$B = 8,000(1+.00521)^{24} = 9,062.60$$

Kelly plans to put her graduation money into an account and leave it there for 4 years while she goes to college. She receives \$750 in graduation money that she puts it into an account that earns 4.25% interest compounded semi-annually. How much will be in Kelly's account at the end of four years?

$$B = 750 (1 + .02125)^8 = \$887.40$$

Suppose Karen has \$1000 that she invests in an account that pays 3.5% interest compounded quarterly. How much money does Karen have at the end of 5 years?

$$B = 1,000 (1 + .00875)^{20} = 1,190.34$$