

- 1) Jenna bought a \$1000, 10.75% bond bearing coupons payable semi-annually on Jan 15<sup>th</sup> and July 15 at 102.85%. What would the cost be if he bought the bond on May 1<sup>st</sup>.

1) MKT cost

$$(1000)(1.0285) = \text{\$}1028.50$$

2) # of days:

Jan 15 - May 1

$$17 + 28 + 31 + 30$$

= 106       $106/365$

3) Interest:  
 $FV \times C \times \# \text{ of days}$   
 $(1000)(0.1075)\left(\frac{106}{365}\right)$   
 $= \$31.22$

4) Total Cost:  
 $MC + \text{Int}$   
 $\$1028.50 + \$31.22 = \$1059.72$

$$A = P(1 + rt) \rightarrow \text{Simple interest}$$

$$A = P + \underbrace{Prt}_{I}$$

$$A = P + I$$

- 1) If you deposit \$1800, and after 6 months you have \$1823, what is the interest rate?

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

- 2) You invest \$30,000 for 10 years compounded semi-annually. ~~The future value of your investment is~~  
~~\$41,985.32~~. What was the annual interest rate that was  
~~applied?~~

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$

If you deposit \$1800, and after 6 months you have \$1823, what is the interest rate?

$$A = P(1 + rt) \quad / \quad I$$

$$A = P + Prt$$

$$1823 = 1800 + 1800(r)\left(\frac{6}{12}\right)$$

$$1823 = 1800 + 900r$$

$$\begin{array}{r} -1800 \\ 23 = 900r \end{array}$$

$$\frac{23}{400} = \frac{900r}{400}$$
$$r = 0.02555\overline{5} \times 100$$
$$= 2.56\%$$

2) You invest \$30,000 for 10 years compounded semi-annually. The future value of your investment is \$41,985.32. What was the annual interest rate that was applied?

$$A = P \left( 1 + \frac{r}{n} \right)^{nt}$$

$$\frac{41985.32}{30000} = \frac{30000 \left( 1 + \frac{r}{2} \right)^{2 \times 10}}{30000}$$

$$\sqrt[10]{1.3995} = \left( 1 + \frac{r}{2} \right)^{20 \cdot \frac{1}{20}}$$

$$1.0169 = 1 + \frac{r}{2}$$

$$\begin{aligned} 1.0169 &= 1 + \frac{r}{100} \\ - 1 & \quad \quad \quad - 1 \\ \hline 0.0169 &= \frac{r}{100} \quad \cdot 100 \end{aligned}$$

$$0.0169 \times 100 = r$$

$$r = 3.38\%$$



Rule of 72: 72 / interest

~~months~~

~~12%~~ 12% quarterly

$$i = \left(1 + \frac{r}{n}\right)^m - 1$$