11.13 – Bond Portfolio Values   Name ____

Big Question: How do changes in interest rates impact the value of a bond portfolio?

The Concept: When you invest in a bond, you have an asset whose value will change as time passes. Depending on how many you own, you will gain or lose value.

Think about a stock. You have 50 shares of stock with a value of $100 each. Your entire position is worth $5000. (See chart.) Then some news is announced.

	Pre-News	Post-News
Single Security	$ 100	
Entire Position	$ 5000	

News: "Company is found guilty of accounting fraud, Wall Street punishes share price as investors flee."

The value of each share is going to diminish. Now the share price is $72 per share. Because you have 50 shares, you have lost $1400. Bummer.

	Pre-News	Post-News
Single Security	$ 100	$72
Entire Position	$ 5000	$3600

Bonds work the same way. Given that a bond's market price changes with the market interest rate, bondholders gain and lose value in their portfolios based on bond interest rates changing.

Bonds – Example A:

Paul owns 12,000 zero-coupon bonds trading at 4.2% with 8 years left to maturity.

Today, Paul's bonds are worth their PV: $\frac{1000}{1.042^8} = 719.55$

His position is worth $\$\,719.55 \times 12{,}000 = \$\,8{,}634{,}600.$

Paul	Before Rate Change	After Rate Change
Single Security	$ 719.55	
Entire Position	$ 8,634,600	

Assume that as of noon on this day, the interest rate on these bonds decreases 0.5% to 3.7%.

Paul's bonds are worth their *new* PV: $\frac{1000}{1.037^8} = 747.77$

His position is worth $\$\,747.77 \times 12{,}000 = \$\,8{,}973{,}240.$

Paul	Before Rate Change	After Rate Change
Single Security	$ 719.55	$ 747.77
Entire Position	$ 8,634,600	$ 8,973,240

He has made a profit of $338,640 based on the change in the market interest rate. ☺

Rates may change because a ratings agency (Standard&Poor's, Moody's, Fitch) has changed the risk assessment of the company or because of a change in prevailing rates by the Fed or a few other reasons.

That's how the value of a fixed-income (bond) portfolio changes.

True or False

Bondholders make profits when market interest rates increase. ________________

If you are looking to make a profit on bonds due to interest rate changes, you are expecting rates to go down. ________________

A bondholder who sees the interest rate on her bonds decrease has just lost value. ________________

Determine the change in value of an investor's portfolio based on the change in interest rates. You will need to calculate the FMV before and after the rate change.

<u>Steve:</u>

Steve owns 1,000 $1000 par zero-coupon bonds trading at 5% with 10 years left to maturity.

Assume that as of noon on this day, the interest rate on these bonds decreases 0.75% to 4.25%.

$1000, 5%, 10-yr.	Before Rate Change	After Rate Change
Single Security		
Entire Position		

In total, Steve has gained / lost ________________________________ on the rate change.

<u>Lisa:</u>

Lisa has a position of 10,000 $1000 par *Yahoo!* Zero-coupon bonds trading at 4.5% with 7.5 years left to maturity.

$1000, 4.5%, 7.5-yr.	Before Rate Change	After Rate Change
Single Security		
Entire Position		

As of the end of the trading day, *Yahoo!*'s 7.5-year class has been upgraded to 4.25% interest.

In total, Lisa has gained / lost ________________________________ on the rate change.

<u>Barclay's:</u>

The trading desk at Barclay's has a position of 5 million $1000 par Chilean government bonds trading at 6.8% with 15 years left to maturity.

$1000, 6.8%, 15-yr.	Before Rate Change	After Rate Change
Single Security		
Entire Position		

As of the next morning, Chilean 15-year debt has been downgraded to 7.2% interest.

In total, Barclay's has gained / lost ________________________________ on the rate change.

<u>Circle one:</u> When bond interest rates go up, bondholders *gain / lose* value.