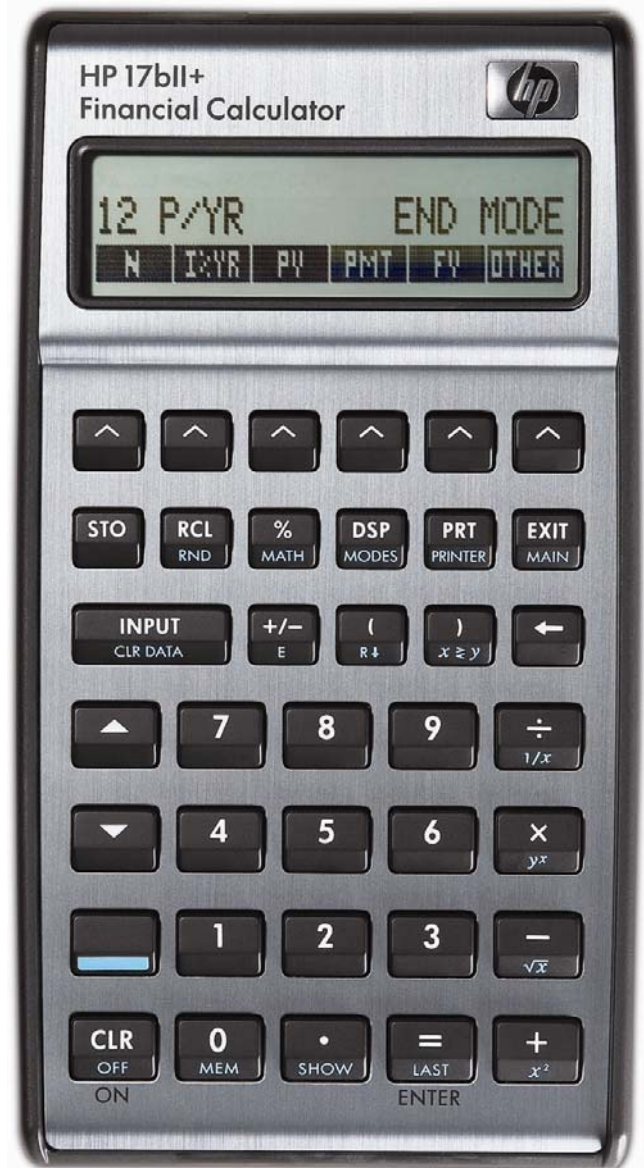**hp calculators**

HP 17bII+ Bonds

Bonds

Bonds on the HP 17bII+

Practice solving bond problems

Bonds

It is not unusual that either companies or governments themselves need extra funds to expand into new markets or raise funds to pay for programs. In these cases, they typically need large quantities of money that the average bank cannot provide. Raising money by issuing bonds to a public market is one solution.

By purchasing bonds, an investor becomes a creditor to the corporation or government. Many investors have at least part of their portfolio invested in bonds. The issuer of a bond must pay the investor a "fee" (interest payments) for the privilege of using his or her money. The interest rate is often referred to as the coupon, and the date on which the issuer has to repay the amount borrowed (face value) is called the maturity date. The total return an investor receives if the bond is held to maturity is equal to all the interest payments received plus any gain or loss. This is called the yield to maturity, or YTM.

Bonds on the HP 17bII+

The HP 17bII+ contains an application in the main **FIN** menu for doing bond calculations. Press **FIN** which will display the screen as shown in figure 1 below.

```
SELECT A MENU
TVM ICNV CFLO BOND DEPRC
```
Figure 1

Press **BOND** which will start the bond application as shown in figure 2. This screen displays the default settings and allows them to be changed. **SETT** is used to enter the settlement date and **MAT** is used to enter the maturity date of the bond. **CPN%** is used to enter the coupon interest rate of the bond, where 5% is entered as 5. If the bond has a call provision, it is entered by pressing **CALL**.

```
30/360 SEMIANNUAL
TYPE SETT MAT CPN% CALL MORE
```
Figure 2

Pressing **TYPE** will display the screen shown in figure 3 below. Here you can choose between a 30 day month / 360 day year or an actual calendar month / actual calendar year. You can also choose between settings of semiannual or annual coupon payments. To return to the previous screen, make a selection or press **EXIT MAIN**.

```
30/360 SEMIANNUAL
360 A/A SEMI ANN
```
Figure 3

When back at the main bond menu, pressing **MORE** will display the second page of the bond menu, as shown in figure 4 below. This menu is used to compute the yield, price and accrued interest of a bond. **MORE** will take you back to the previous page of the bond menu.
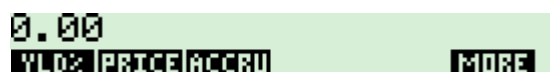
```
0.00
YLD% PRICE ACCRU          MORE
```
Figure 4

Remember that values in the BOND menu are expressed per $100 face value or as a percentage. A CALL value of 102 means that the bond will be worth $102 for every $100 of face value when called. Some corporate bonds in the United States use the convention that the price of the bond is set to 100 if the coupon rate equals the yield, whether or not the settlement date is a coupon date. The BOND menu does not use this convention.

Practice solving bond problems

Example 1: What price should be paid on August 10, 2003 for a 6.75% US Treasury bond that matures on May 1, 2018, if the yield is 8.375%? The bond coupon payments are semiannual and under a 30/360 convention. This example assumes dates are entered in the MM.DDYYYY format.

Solution: ▭ EXIT/MAIN FIN BOND
8 . 1 0 2 0 0 3 SETT
5 . 0 1 2 0 1 8 MAT
6 . 7 5 CPN%
MORE
8 . 3 7 5 YLD%
PRICE
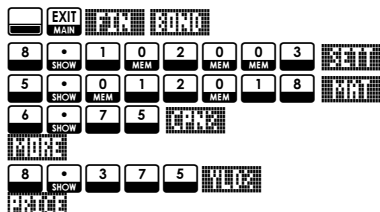
```
PRICE=86.38
YLD% PRICE ACCRU          MORE
```
Figure 5

Answer: The price is $86.38 per $100 of face value plus accrued interest.

Example 2: For the previous problem, what is the accrued interest?

Solution: Assuming no other changes since the computing of the price, press: ACCRU

```
ACCRU=1.86
YLD% PRICE ACCRU          MORE
```
Figure 6

Answer: The accrued interest is $1.86 per $100 of face value. The total amount owed to the seller is the price plus accrued interest.

Example 3: For the bond as presented in problem 1, if the price is actually $88.25 per $100 of face value, what is the yield to maturity?

Solution: 8 8 . 2 5 PRICE
YLD%
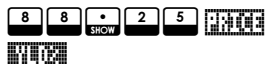
Answer: The yield is now 8.13%.

Example 4: What price should be paid on December 1, 2009 for a 5.95% US Treasury bond that matures on July 20, 2010, if the yield is 5.5%? The bond coupon payments are semiannual and under a 30/360 convention. This example assumes dates are entered in the MM.DDYYYY format.

Solution: ▭ EXIT/MAIN FIN BOND
1 2 . 0 1 2 0 0 9 SETT
7 . 2 0 2 0 1 0 MAT
5 . 9 5 CPN%
MORE
5 . 5 YLD%
PRICE
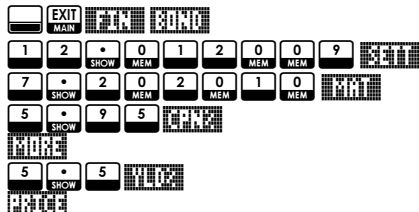
PRICE=100.27

Figure 7

<u>Answer:</u>   The price is $100.27 per $100 of face value plus accrued interest.

<u>Example 5:</u>   For the previous problem, what is the accrued interest?

<u>Solution:</u>   Assuming no other changes since the computing of the price, press: ACCRU

ACCRU=2.17

Figure 8

<u>Answer:</u>   The accrued interest is $2.17 per $100 of face value. The total amount owed to the seller is the price plus accrued interest.