

## Factoring Trinomials Teacher

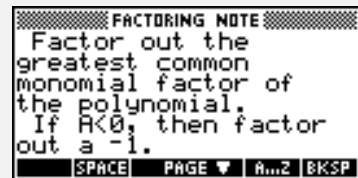
For the

### Objectives:

Using the **FACTORING** applet, the student will symbolically factor second degree trinomials in the form  $Ax^2+Bx+C$ .

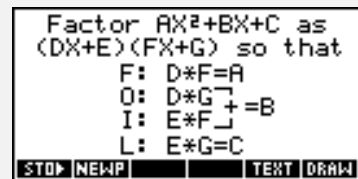
### Functionality:

When the student presses **START** , the **FACTORING NOTE** will be displayed.



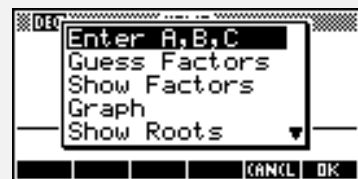
FACTORING NOTE  
Factor out the  
greatest common  
monomial factor of  
the polynomial.  
If  $A < 0$ , then factor  
out a -1.  
SPACE PAGE A...2 BKSP

After reading the note, the student should view the **SKETCH** .



Factor  $AX^2+BX+C$  as  
 $(DX+E)(FX+G)$  so that  
F:  $D \cdot F = A$   
O:  $D \cdot G = B$   
I:  $E \cdot F = B$   
L:  $E \cdot G = C$   
STD NEWP TEXT DRAW

Pressing **VIEWS** will allow the student to enter the values of A, B, and C in the expression  $Ax^2+Bx+C$ , to guess the factors of the corresponding trinomial, to see the factors of the trinomial, to graph  $y = Ax^2+Bx+C$ , and to show the roots of  $y = Ax^2+Bx+C$ .



DEC  
Enter A,B,C  
Guess Factors  
Show Factors  
Graph  
Show Roots  
CANCEL OK

**Enter A, B, C** will prompt the student, through a series of input boxes, to enter the values of A, B, and C in the expression  $Ax^2+Bx+C$ .



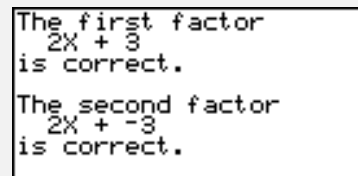
$AX^2+BX+C$   
A = 4  
ENTER THE COEFFICIENT A  
EDIT CANCEL OK

**Guess Factors** will prompt the student, through a series of input boxes, for the values of D, E, F, and G to factor the trinomial into  $(Dx+E)(Fx+G)$ .



$(DX+E)(FX+G)$   
 $2X + -3$   
ENTER THE VALUE OF E  
EDIT CANCEL OK

When the factors are entered, the calculator returns a message detailing the correctness of the students answer.

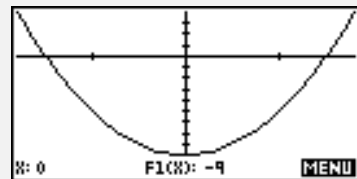


The first factor  
 $2X + 3$   
is correct.  
The second factor  
 $2X + -3$   
is correct.

**Show Factors** displays the trinomial and its factors.

The trinomial  
 $4x^2-9$   
factors as  
 $(2x+3)(2x-3)$

**Graph** displays the graph of  $y = Ax^2+Bx+C$ .



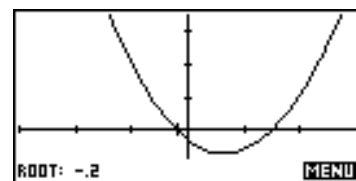
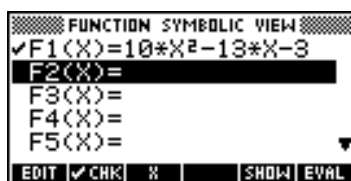
**Show Roots** displays the roots of the graph.

The roots of  
 $4x^2-9$   
are  
 $-3/2$  or  $3/2$

**Additional Exploration:**

Using the **Function** applet, plot any quadratic function. In the **PLOT SETUP**, choose an appropriate window that will show the any roots and the vertex. Use the **FNC** folder in the plot menu to find the roots. An example would be:

Find the roots of  $f(x)=10x^2-13x-3$ .



Ideas can be applied to:  
Prealgebra, Algebra I, Algebra II

Programs associated with this applet:  
.FA.CO, .FA.FA, .FA.SA, .FA.GR, .FA.SR, .FA.ST, .FA.SV

