BE-Algebra 1 Tuesday 1-27-09

① HSA ⇒ 6 vans, 11 buses, 632 students

HSB ⇒ 12 vans, 7 buses, 484 students.

Each van or bus has same number of students.

Find: number of students in each van or bus

Let: v = students per van

b = students per bus

Solve

$$\begin{cases} 6v + 11b = 632 \\ 12v + 7b = 484 \end{cases}$$

- Homework review: Pg 499 10-12 35-38

A factoring SHORTCUT:

factor: $x^2 + 5x - 6 = 0$

b = sum = 5

ac = prod = -6

$-1 \quad +6$ — why NOT? $2 \quad 3$

$x^2 - 1x + 6x - 6 = 0$

$(x^2 - 1x) + (6x - 6) = 0$

$x(x-1) + 6(x-1) = 0$

$(x-1)(x+6) = 0$

LOOK AT THE magic numbers!

$x = \{1, -6\}$

If $a = 1$, (and only if $a = 1$)!
there is NO need to FBG,
AS SOON AS you get the 2
magic numbers (say -1, 6) you can
write $(x-1)(x+6)$

. If you forget, FBG still works fine!!

How to tell if a quadratic is prime:

b^2-4ac is called the discriminant because it tells you what type of solution you have.

If b^2-4a is a perfect square, (ex) 0, 4, 9, 16, 25, 36, ... then the quadratic can be factored.

Ex) Is x^2+x-12 prime?

$a=1$ $\quad b^2-4ac$

$b=1$ $\quad (\ )^2-4(\ )(\ )$

$c=-12$ $\quad (1)^2-4(1)(-12)$

$1+48=\underline{\underline{49}}$

Perfect square, OK to factor

b = sum = 1

ac = prod = -12

-3 $+4$

* USE SHORTCUT since $a=1$

$\boxed{(x-3)(x+4)}$

CK $(x-3)(x+4)$

$x^2+4x-3x-12$

x^2+x-12 ✓

Practice: Prime or NOT, if NOT, factor.

① $3a^2 + 8a + 4$

② $2a^2 - 11a + 7$

① $3a^2+8a+4$

$a=3$ $b=8$ $c=4$

b^2-4ac

$(8)^2-4(3)(4)$

$64-48$

16 ✓

Sum ⇒ 8

Prod ⇒ 12

$+2 \quad +6$

$(3a^2+2a)+(6a+4)$

$a(3a+2)+2(3a+2)$

$\boxed{(3a+2)(a+2)}$

② $2a^2-11a+7$

$a=2$ $b=-11$ $c=7$

b^2-4ac

$(-11)^2-4(2)(7)$

$121-56$

65 NOT Perfect Square ⇒ Prime

Classwork/Homework: *Pg 499 #14-25

Check b^2-4ac first!