

BE-Algebra I TUESDAY 1-26-10

- ① HSA $\Rightarrow$ 6 vans, 11 buses, 632 students
HSB $\Rightarrow$ 12 vans, 7 buses, 484 students.
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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: $x^2 + 5x - 6 = 0$

$b = \text{sum} = 5$

$ac = \text{prod} = -6$ why NOT?

$-1 \quad +6$ $\begin{matrix} 2 & 3 \end{matrix}$

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

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

$$\underline{x(x-1)} + 6(\underline{x-1}) = 0$$

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

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.

3.
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

$$b = \text{sum} = 1$$

$$ac = \text{prod} = -12$$

$$\begin{array}{c} / \quad \backslash \\ -3 \quad +4 \end{array}$$

*USE SHORTEST
SINCE $a = 1$

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

$$\underline{\underline{CK}} \quad (x-3)(x+4)$$

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

$$x^2 + x - 12 \quad \checkmark$$

Practice: Prime or NOT, if NOT, factor.

① $3a^2 + 8a + 4$

② $2a^2 - 11a + 7$

① $3a^2 + 8a + 4$

$a=3$ $b^2 - 4ac$

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

$c=4$ $64 - 48$

$16 \checkmark$

Sum $\Rightarrow 8$

Prod $\Rightarrow 12$

$+2 + 6$

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

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

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

② $2a^2 - 11a + 7$

$a=2$ $b^2 - 4ac$

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

$c=7$ $121 - 56$

65 NOT Perfect Square $\Rightarrow$ Prime

Classwork/Homework: *Pg 499 # 14-25
Check $b^2 - 4ac$ first!