



Bell Ringer:



Express the product of the following binomials as trinomials:

$$(x+4)(3x-7)$$

$$3x^2 - 7x + 12x - 28$$

$$3x^2 + 5x - 28$$

$$(2x-5)(9x+11)$$

$$18x^2 - 23x - 55$$

$$(7x+2xy)(2x+4xy)$$

$$14x^2 + 4x^2y + 28x^2y + 8x^2y^2$$

$$14x^2 + 32x^2y + 8x^2y^2$$

$$y + y^2$$

$$3) (x+7)^2$$

$$(x+7)(x+7)$$

$$x(x+7) + 7(x+7)$$

$$x \cdot x + 7 \cdot x + 7 \cdot x + 7 \cdot 7$$

$$x^2 + 7x + 7x + 49$$

$$x^2 + 14x + 49$$

~~$$x^2 + 7^2$$~~

$$(3+7)^2 = 10^2 =$$

$$\textcircled{100}$$

$$3^2 + 4(3) + 49$$

$$9 + 42 + 49$$

$$51 + 49 =$$

$$\textcircled{100}$$

$$4) A=LW$$

$$A = (x+8)(x-1)$$

$$x^2 - x + 8x - 8$$

$$x^2 + 7x - 8$$

3, 10

$$22$$

$$162$$

$$9 + 21 - 8$$

$$30 - 8$$

$$22$$

$$100 + 70 - 8$$

$$170 - 8$$

$$162$$

$$5) (a+b)^2 = a^2 + b^2$$

$$a=0$$

$$b=2$$

$$(0+2)^2 = 0^2 + 2^2$$

$$2^2$$

$$0+4$$

$$4$$

$$4$$

$$a=3$$

$$b=7$$

$$(3+7)^2 = 3^2 + 7^2$$

$$10^2 =$$

$$10 \cdot 10$$

$$100$$

~~$$=$$~~

$$9+49$$

$$58$$

$$(a+b)^2 =$$

$$(a+b)(a+b)$$

$$a^2 + ab + ab + b^2$$

$$a^2 + 2ab + b^2$$

Exercise #1: Consider the somewhat complex expression $x(x+4)+2(x+4)$

(a) Write an equivalent **trinomial** expression. Test the equivalency with a value of $x=1$. Show the test.

(b) Write an equivalent expression that is in the form of a product of two binomials. Also test the equivalency with $x=1$.

$$x^2 + \underline{4x + 2x} + 8$$

$$x^2 + 6x + 8$$

$$(1)^2 + 6(1) + 8$$

$$1 + 6 + 8 = 15$$

$$1(1+4) + 2(1+4)$$

$$1 \cdot 5 + 2 \cdot 5$$

$$5 + 10 = 15$$

$$(x+4)(x+2)$$

$$15$$

Exercise #2: Consider the expression $(x+4)(x-5) + (x+4)(x-2)$. Write an equivalent expression that is in the form of the product of two binomials. Test the equivalency with a value of x . Show your test.

$$\left(\begin{array}{c} + \\ - \end{array} \right) \left(\begin{array}{c} + \\ - \end{array} \right)$$

$$x=2$$

$$(x+4)(x-5+x-2)$$

$$(x+4)(2x-7)$$

$$5x+2x$$

$$x(5+2)$$

$$6 \div 3$$

$$\boxed{-18}$$

Exercise #3: Which of the following is equivalent to the expression $(x-3)(2x+7) - (x-3)(x-4)$? Show the manipulations that lead to your choice.

(1) $(x-3)(x+3)$

(3) ~~$(x-6)(x+10)$~~

(2) $(x-3)(x+11)$

(4) ~~$(x-6)(x-4)$~~

$$\begin{aligned} & (2x+7-x+4) \\ & (x+11) \end{aligned}$$

Represent the product of the following polynomials as a polynomial expression:

$(x + 1)(x^2 + 2x + 1)$

| | | | |
|-----|-------|--------|-------|
| x | x^2 | $+ 2x$ | $+ 1$ |
| x | x^3 | $2x^2$ | x |
| 1 | x^2 | $2x$ | 1 |

$(2m + 6)(2m - 6)$

$x^3 + 3x^2 + 3x + 1$

~~$4m^2 - 12m + 12m - 36$~~

$4m^2 - 36$

Exercise #4: Rewrite each of the following expressions as an equivalent product of two binomials.

(a) $x(x+5)+7(x+5)$

(b) $3x(x-2)-4(x-2)$

(c) $-2x(x+4)+(x+4)$

$$(x+5)(x+7)$$

$$(x-2)(3x-4)$$

$$(-2x+1)(x+4)$$

(d) $(x-6)(x+3) + (x+9)(x+3)$

$$\begin{array}{l} \text{GCF} \downarrow \\ (x+3)(x-6+x+9) \end{array}$$

$$(x+3)(2x+3)$$

(e) $(2x+1)(x-4) - (x+6)(x-4) \rightarrow \text{GCF}$

$$(x-4)(2x+1-x-6)$$

$$(x-4)(x-5)$$

Exercise #5: The binomial $4n+1$ is equal to 7 for some value of n . What is the value of the expression shown below for the same value of n . Do not solve for n in this problem. Use mindful manipulations and look for structure to help solve this problem.

$$(3n+1)(4n+1) + (n+2)(4n+1)$$

$$4n+1=7 \quad (3n+1)7 + (n+2)7$$

$$21n+7+7n+14$$

$$28n+21$$

$$7(4n+3)$$