C2 Multiplying Polynomials

Warm Up Problem (Board Work)

On the board, show how you would calculate 18 x 13 without a calculator.

Distributive Property

Multiplication may be done by various strategies.

Classic

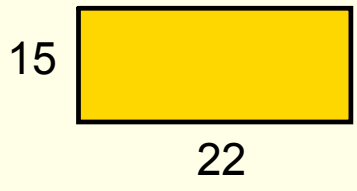
The Claw

Grid

These strategies all use the distributive property although some show it better than others.

Practice (Board Work)

Use all three strategies to determine the area of the rectangle shown.

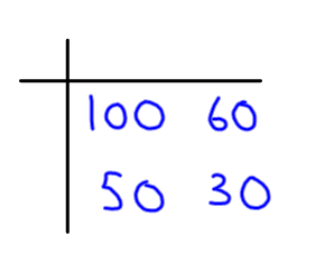


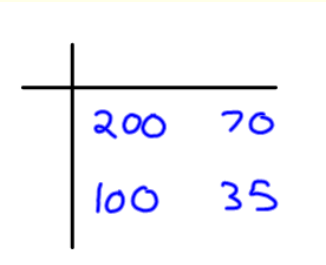
Practice

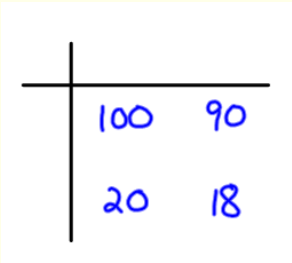
1) Use the grid method and the claw method to multiply the following:

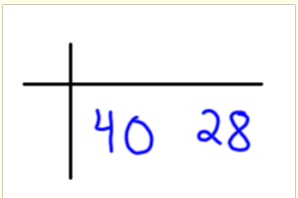
$7 \times 35 =$ $14 \times 26 =$ $123 \times 12 =$

2) What multiplication sentence do the following grids represent?









C2 Distributive Property Practice Handout

Problem (Board Work)

A square garden plot is extended by 6 meters on one side and 3 meters on the other. What is an expression for the area of the new garden plot.

Multiplying Polynomials

We can use the grid and claw strategies to multiply polynomials.

The grid method with algebra tiles may also be used to help visualize the multiplication.

Example: $(x-2)(2x+3)$

Symbolically (Grid) Pictorially Symbolically (Rainbow)

Binomial Multiplication

A common type of polynomial multiplication is a binomial times a binomial.

We have already seen how to do this pictorially and symbolically using the distributive property.

eg. $(2x+3)(x-5)$

Symbolically (Grid) Pictorially Symbolically (Rainbow)

With practice, binomial x binomial multiplication may be done in your head in one step!

Practice: CP pg. 69: 1-12
CP pg. 83

Binomial Multiplication

Solve the following:

a) (x+4)(x+4)

b) $(x+4)^2$

Binomial x Trinomial Multiplication

Another common type of polynomial multiplication is a binomial times a trinomial.

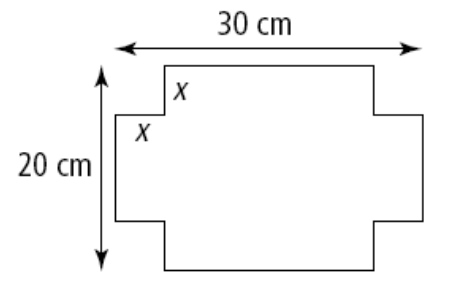
Again, use the distributive property and I prefer the Rainbow method.

eg. $(2a+4)(a^2-5a+7)$

Practice: CP pg. 69: 13-18

Challenge Problem (Board Work)

An open-top box is made from a rectangular sheet of thin cardboard. The corner pieces are cut out as shown in the diagram. A metal corner piece reinforces the corner.



The size of square that is cut from the corners will affect:

- dimensions of box
- volume of box
- surface area of box
- amount of wasted material
- etc.

Determine a simplified expression for the volume of the box.

Determine a simplified expression for the surface area of the box.

Polynomial Multiplication

Some multiplication questions can get complicated quickly.

Remember: distributive property, order of operations and be careful of your signs.

eg. $(3y+2z)(y+4z)-(5y-3z)(2y-8z)$

Practice: pg. 87: 7, 8, 10, 13, 14