MTH1W – Unit 5: Algebra II

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Lesson #5.3: Factor Pairs

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Learning Goal: We are learning to find factor pairs, and to expand more complicated polynomials.

Today, we are going to play a game. Before we play this game, we need to first figure out how to make lists of factor pairs. A **factor pair** is two numbers which *multiply* to a given number.

Create the complete list of factor pairs for each number.

a) 24

1 x 24
2 x 12
3 x 8
4 x 6

b) 32

1 x 32
2 x 16
4 x 8

c) 45

1 x 45
3 x 15
5 x 9

d) 144

1 x 144
2 x 72
3 x 48
4 x 36
6 x 24
8 x 18
9 x 16
12 x 12

e) 73

1 x 73

f) 1890

1 x 1890
2 x 945
3 x 630
5 x 378
6 x 315
7 x 270
9 x 210
10 x 189
14 x 135
15 x 126
18 x 105
21 x 90
27 x 70
30 x 63
35 x 54
42 x 45

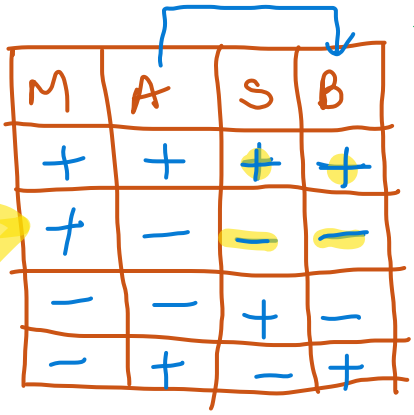
Now that we see how to create a list of factor pairs, we will now add an element which will have us search for a **specific** factor pair. In the following examples, you will be given a number to multiply to and a number to add to. This means that you will need to find a factor pair which both multiplies to and adds to the given numbers. Without further adieu, let's play "Find the Pair!"

Find the SINGLE factor pair that satisfies the given conditions. (Note: M = multiply to, A = adds to)

a) M: 45
A: 18

MULTIPLY
ADD.
45
1 x 45
3 x 15
5 x 9

b) M: −132
A: 1
−132
−1 x 132
−2 x 66
−3 x 44
−4 x 33
−6 x 22
−11 x 12



c) M: 60
A: -23
60
−1 x 60
−2 x 30
−3 x 20
−4 x 15
−5 x 12
−6 x 10

e) M: -216
A: -19
−216
1 x −216
2 x −108
3 x −72
4 x −54
6 x −36
8 x −27
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Success Criteria:

- I can use the distributive property to expand larger polynomials
- I can find all of the factor pairs for a given number
- I can find a specific factor pair that meets a set of conditions