Answers Are

CONVERGENT NON-CURRICULAR

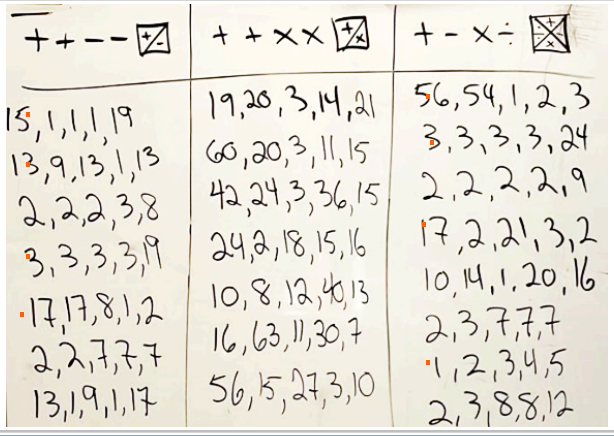
Launch

Use 1 2 3 4 5 6 7 8 9 10 and four operations with bonus, make number sentences with these to create five answers. Erase all but answers and ask to recreate.

Explain BANNER RULES:

- Must be what you are working on
- You may steal other banners when done
- Don't make your own banner

Task Sequence



Consolidation

Only +/-

Use 13, 1, 13, 3, 19

All Operations

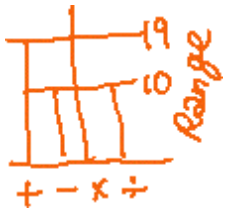
Use 19, 2, 11, 2, 30 and 4, 4, 4, 4, >19

Turn and talk about where operations go

Where can we put an operation?

As numbers get bigger, we lose operations

Can make range graph:



Meaningful Notes

CYU

Only +/-

Mild
19, 15, 11, 1, 1
Medium
19, 3, 1, 1, 1
Spicy
11, 11, 1, 1, 1

All Operations

Mild
15, 2, 90, 2, 30
10, 14, 1, 20, 16 (if not used)
Medium
5, 5, 5, 42, 45
2, 2, 2, 2, 9 (if not used)
Spicy
4, 4, 5, 24, 15
2, 3, 8, 8, 12 (if not used)

Answers Are

Using each of the numbers from 1 to 10 exactly once and each of the operations + and – at least twice (one will be used three times), make 5 expressions whose answers are 15, 1, 1, 1, 19. An expression, in this case, is defined as two numbers and an operation. A possible script for introducing this task is:

Teacher	*Today we are going to build some expressions. Each expression is made up of two numbers from this list [teacher points at list of numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10] and one of these operations [teacher points at list of operations + + - -]. And the answer has to be a positive whole number. Can someone please tell me an expression?*
Student	*8 + 1.*
Teacher	*Ok. The answer for this is 9 [teacher writes 8 + 1 = 9]. I forgot to mention that the 8 and the 1 and one of the + is now gone [teacher crossing these out on the board]. Can someone give me another expression?*
Student	*10 – 1.*
[... and so on]	
Teacher	*Ok. So now we have run out of operations, but we still have two more numbers [teacher points at the 3 and the 2]. So, let's make one more expression and you can use one of the operations + or - a third time.*
Student	*3 – 2.*
Teacher	*Ok [teacher writes 3 – 2 = 1]. We now have five expressions [teacher points at the five expressions] and five answers [teacher points at the five answers]. And these answers came from following two rules. We had to use every number from 1 to 10 exactly once and we had to use addition and subtraction each at least twice. And if we follow these rules, we will get five answers. So, if you know I followed these rules and all we had were these answers [teacher erases the expressions leaving just the answers], could we figure out what the expressions were. And, of course, these are not the answers I care about [teacher erases the answers]. These are the answers I care about [teacher writes 15, 1, 1, 1, 19 on the board].*
	[Teacher makes random groups]

+ + − − □	+ + × × □	+ − × ÷ □
15, 1, 1, 1, 19	19, 20, 3, 14, 21	56, 54, 1, 2, 3
13, 9, 13, 1, 13	60, 20, 3, 11, 16	3, 3, 3, 3, 24
2, 2, 2, 3, 8	42, 24, 3, 36, 15	2, 2, 2, 2, 9
3, 3, 3, 3, 19	24, 2, 18, 15, 16	17, 2, 21, 3, 2
17, 17, 8, 1, 2	10, 8, 12, 40, 13	10, 14, 1, 20, 16
2, 2, 7, 7, 7	16, 63, 11, 30, 7	2, 3, 7, 7, 7
13, 1, 9, 1, 17	56, 15, 27, 3, 10	1, 2, 3, 4, 5