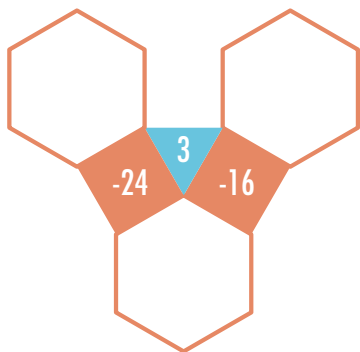


INTEGER TILES

STRATEGIES

1. Consider possible factor pairs for each product.

What are the possible factor pairs for 24 and 16?



Ignoring signs, there are four factor pairs for 24 and three for 16:

24: 1×24 , 2×12 , 3×8 , 4×6

16: 1×16 , 2×8 , 4×4

We can eliminate pairs in which one factor is a 2-digit number, and we can eliminate pairs in which both numbers are the same.

24: 1×24 , 2×12 , 3×8 , 4×6

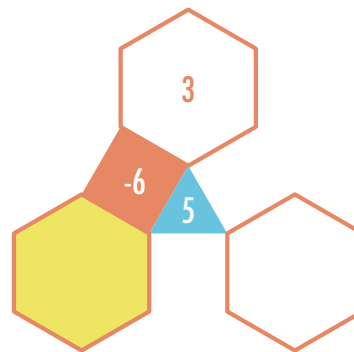
16: 1×16 , 2×8 , 4×4

What possibilities remain for the bottom hexagon?

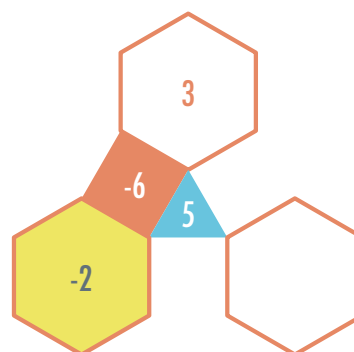
2. Look for products or sums that are only missing one number.

In some of the earlier puzzles, we find products or sums missing only one number.

How can we fill the yellow hexagon?



Since $3 \times (-2) = -6$, we write -2 in the yellow hexagon.

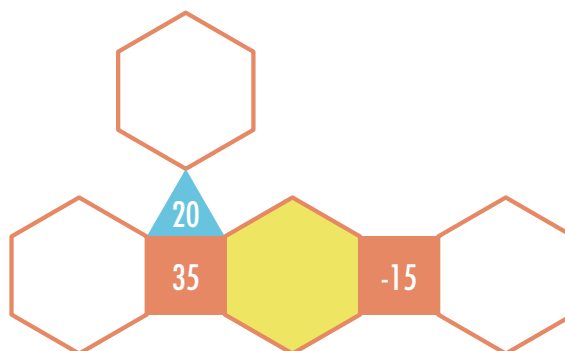


Then, how can we complete the puzzle?

3. Look for products that have only one digit they can share.

If two products share a hexagon, sometimes there is only one possible digit that can fill it.

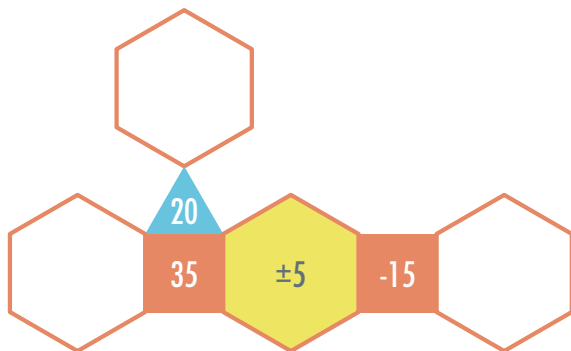
What digit fills the yellow hexagon?



The only factor pair we can use for 35 is 5×7 (either both positive or both negative).

The only factor pair we can use for -15 is 3×5 (one of those two factors must be negative).

So, the only digit we can use to fill the yellow hexagon is 5.

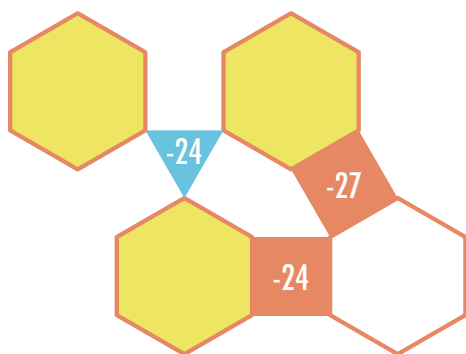


Then, is the 5 positive or negative?

4. Look for sums that can only be made one way.

Sometimes there is only one way to create a sum using the digits 1-9 once each.

What three numbers fill the yellow hexagons?



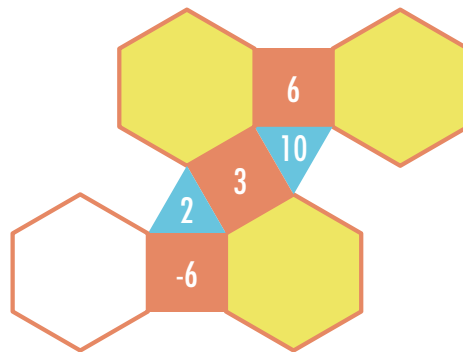
The only three numbers we can place in the yellow hexagons to make a sum of -24 are -7, -8, and -9.

Which of these goes in which hexagon?

5. Use sum and product clues together.

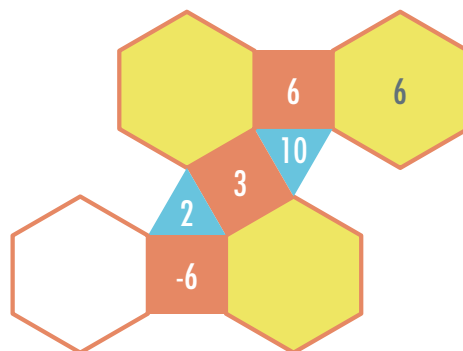
Sum clues can let you know how to place product pairs.

What factors of 6 and 3 fill the yellow hexagons to make a sum of 10?



The only way to make a product of 3 is with the digits 1 and 3 (both positive or both negative).

For the sum of the digits in the three yellow hexagons to equal 10, both the 1 and 3 must be positive and the remaining hexagon must contain a 6 (since $1+3+6=10$).

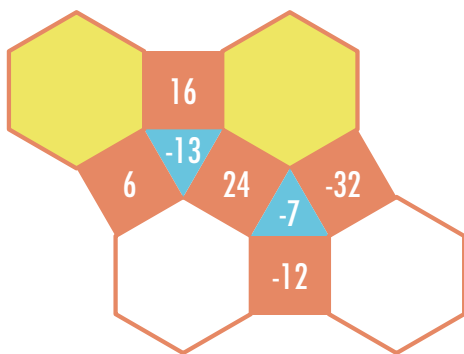


How can we place the 1 and the 3?

6. Use sum clues to figure out whether numbers are positive or negative.

Sum clues can let you know the signs of the numbers in a factor pair.

The only way to make a product of 16 with two different digits is with 2 and 8. Are both digits positive or negative?



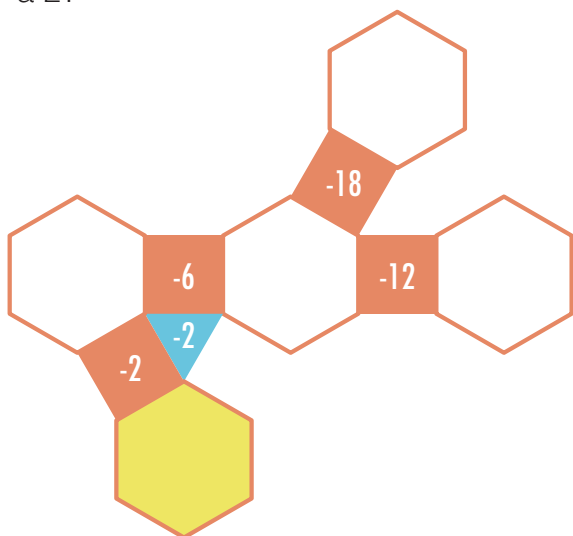
If we use 2×8 (both positive), then the sum of these digits is $2 + 8 = 10$ and there is no way to satisfy the sum clue of -13.

So, we must use $(-2) \times (-8)$. Which number goes in each hexagon?

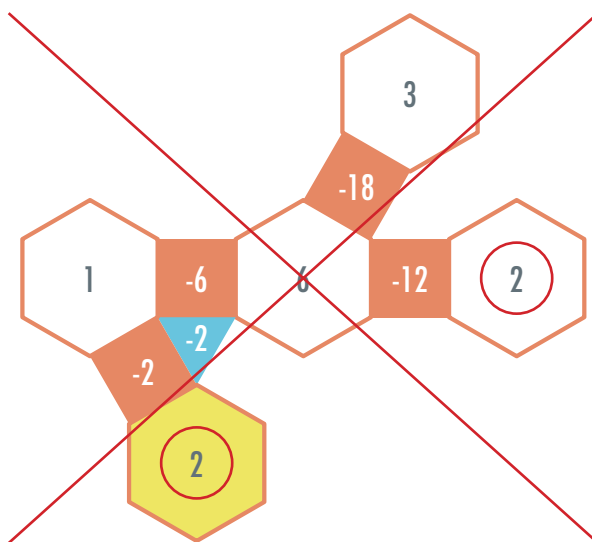
7. Guess-and-check.

If we can narrow down the possibilities for a hexagon, we can check them to find one that works.

Is the digit in the yellow hexagon a 1 or a 2?

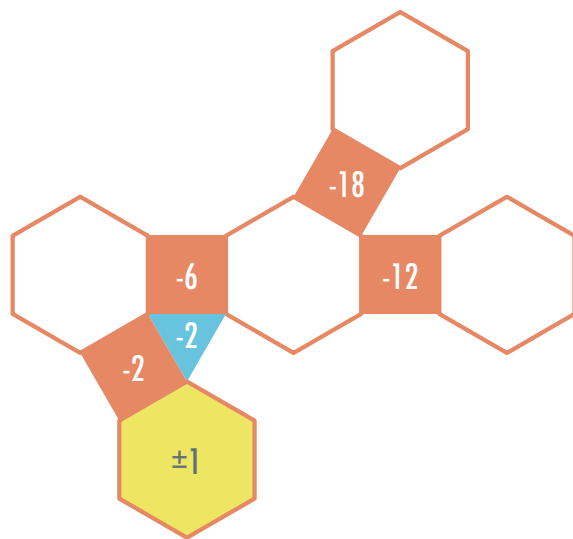


Ignoring signs, if we write a 2 in the yellow hexagon, we can use the product clues to fill the remaining digits as shown.



Since we can't write a 2 in more than one hexagon, we can't place a 2 in the yellow hexagon.

So, the yellow hexagon must contain a 1.



Then, can the same strategy help us determine whether the 1 is positive or negative?