Determine all values a, b, c, d such that

$$a \cdot b \cdot c \cdot d = 17280$$

$$a > b > c > d$$

$$a + b + c = 40$$

$$b + c + d = 32$$

$$a, b, c, d \subset \mathbb{Z}^{+}$$

The solution can be computed using an exhaustive search algorithm. This approach utilizes the assumption that a, b, c and d are small positive integers. All values for a, b, c, d such that a, b, c, d can be iteratively examined and pruned so that they satisfy the given bounds.

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solutions = 0 (The initial number of solutions)
product = 17280
sum a = 40
sum b = 32

for w in sum a (Iterates through values 0 <= w < 40)
    for x in sum a (Iterates through values 0 <= x < 40)
        for y in sum a (Iterates through values 0 <= y < 40)
            for z in sum b (Iterates through values 0 <= z < 32)
                a = w + 1
                b = x + 1
                c = y + 1
                d = z + 1

                if a < b < c < d (Makes sure that the values are in descending order)
                    if a + b + c = sum b and b + c + d = sum a (Checks for correct sums)
                        if a · b · c · d = 17280 (Checks for the correct product)
                            solutions = solutions + 1 (Increments the solutions variable)
```

There is one solution that satisfies the given specifications.

$$a = 16, b = 15, c = 9, d = 8$$

$$16 \cdot 15 \cdot 9 \cdot 8 = 17280$$

$$16 + 15 + 9 = 40, 15 + 9 + 8 = 32$$