The Main Document of Tree Science (TMDTS)

1. Base

1.1. The base tree

Every tree has a root. We will write it like `...` And there are also branches. The main branch is our root:

example: `..[5]`, where 5 is the main branch.

There are a lot of branches of the main branch. We will write it like `..[a]-[b]`, and if there are more than 1 sub-branch, it will be `..[a] :-[b], :-[c]`.

This, for example, example tree:

```
..[a]-[b]-[c]-
    :-[d]-[e]-
        :-[f]-[g]
    :-[h]
```

! ..[1]-[2]-[3] + ..[]-[]-[2] You can also write this in the format of ..[1]-[2]-[3] + ..|3|[2] ! ..|3|[2] = ..[0]-[0]-[2], 3 - pos of element

1.2. Ums and txs

An Um is a value inside a persum (a persum is written as `[]`). For example, in `[a]`, `[]` is the persum, and `a` is the um.

There is a capacity parameter “tx” — it is the maximum capacity of an um, written as `[um]*tx`. Tx cannot be greater than 15, else, it’s anomaly - just set 15 and delete a;; after. *example*: `..[5]-[6]-[9]*18-[5] -> ..[5]-[6]-[9]*15 (clean -[5])`

example: `[5]*7` means that the um value (5) must be strictly less than the capacity limit (7).

If an um is greater than or equal to tx, we need to split the um into branches:

```
..[5]*2 ->
..[5]-
    :-[1]
    :-[1]
    :-[1]
    :-[1]
    :-[1]
```

And if it cannot be split directly — for example, `[3]*1`, where $\frac{3}{3} = 1$, but 1 is equal to or exceeds the limit — you need to split it like this:

```
    [1]-[3]*1 ->
    [1]-
        :-[0.5]
        :-[0.5]
        :-[0.5]
        :-[0.5]
        :-[0.5]
        :-[0.5]
```

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Practice

1. `[3]*1`
2. `[8]*5`
3. `[15]*6`

==========

2. Directed and Undirected Verbums

A verbum connects 2 persums. There are directed verbums in format >> and undirected in format <>.

2.1. Directed Verbums

Directed verbums with format >> are verbums which have a SUBJECT-persum and an OBJECT-persum.

Sub >> Obj -> Updated Sub, but not Sub+Obj

For example, directed sum verbum >+>:

```
..[a] + ..[b] -> ..[a+b] { :-[some]*(a-b) }, and if it is a sub-branch, its tx will be *(a-b)
```

example:

```
..[5] >+> ..[4] -> ..[5+4=9] { :-[some]*(5-4=1) }, and if after, we do:
..[9] + ..[0]-[3] -> ..[9]-[3], BUT ..-[3]*1, ->

[9]-
    :-[0.5]
    :-[0.5]
    ...
```

And one more directed verbum is >-> (Directed difference verbum).

The formula: `..[a] >-> ..[b] -> ..[a-b] { :-[some]*(a+b) }`

2.2. Undirected Verbums

Verbum <+> is undirected.

What is undirected?

Undirected verbum is a verbum which has 2 Subjects, i.e.:

Sub <> Sub -> Updated Sub, Updated Sub

2.3. Classic Verbums of Math

```
+:
    a + b = a + b
-:
    a - b = a - b
::
    a : b = a : b
*:
    a * b = a * b
```

Practic base.

```
Task 1 :  ( ..[5]-[6]-[7] >+> ..[3]-[4]-[4] ) >-> ..[1]-[6]-[1] -> ...

Solve:

1) var of1 : ..[5]-[6]-[7] >+> ..[3]-[4]-[4] -> ..[5+3]-[6+4]-[7+4] { :-[some]*(5-3)-
[some]*(6-4)-[some]*(7-4)
-> ..[8]-[10]-[11] { :-[some]*2-[some]*2-[some]*3

2) var:of1 >-> ..[1]-[6]-[1] -> ..[8-1]-[10-6][11-1] { :-[some]*(8+1)-[some]*(10+6)-
[some]*(11+1) ->
..[7]-[4]-[10] { :-[some]*9-[some]*16-[some]*12 -> ..[7]-[4]-[10] { :-[some]*9-
[some]*15

Answer: ..[7]-[4]-[10] { :-[some]*9-[some]*15

Task 2:

var A : ..[3]-[4] >+> ..[2]-[3] -> ..[5]-[7] { :-[some]*(3-2=1)-[some]*(3-3=1).

Solve:
var:A >+> ..|3|[3], ->
    ..[5]-[7]-[3]*1 ->


Answer: ..[5]-[7]-
        :-[0]-[5]*1
        :-[0]-[5]*1
        :-[0]-[5]*1
        :-[0]-[5]*1
        :-[0]-[5]*1
        :-[0]-[5]*1->
            ..[5]-[7]-
                :-[0]-
                    :[0]-[5]
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