Circular reasoning

You are conducting a study into the painting habits of a rare kind of urban graffiti artist. The *Ensō* (as they call themselves) paint only a few circles in a rectangular empty space, with a tendency to allow the circles to overlap. To appreciate the state of mind of the artist, you are reconstructing the ways in which a particular painting could have been painted. Specifically, given a painting, you are counting the possible orderings in which the set of overlapping circles could have been drawn.

A graffiti artwork is represented as a rectangular grid of symbols. In this representation, you have identified only three sizes of circles (radius of 3, 4 or 5), as shown below:

```
-------------       ------------
-------------       ------CCC------
-------------       ------C----C------
-----BBB-----       ----C---C----
-----B----B-----   ----C------C-----
-----B----B-----   ----C---C----
-----B----B-----   ----C------C-----
-----C----C------   ----C---C----
-----C----C------   ----C---C----
-----C----C------   ----C---C----
-----C----C------   ----C---C----
-----C----C------   ----C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----
-------------       ------C---C----

```

Note that empty space (no paint) is indicated with a minus (−) symbol, and that the colour used to paint the circle is encoded with an uppercase letter in the range A to I (inclusive).

A sample artwork, composed of two circles, might look like this:

```
--BBB--
-B-AAB-
B-A---B
BA----B
BA----B
-B---B-
--BBB--

```

The circle in colour ‘B’ clearly overdraws the circle painted in colour ‘A’; thus there is only one possible drawing order that produces this particular artwork. Note that circles may be truncated by the edges of the drawing area.

**Input**

Your input consists of an arbitrary number of records, but no more than 20. Each record starts with a pair of space-separated integers r c, denoting the number of rows (r) and columns (c) in the artwork, with 7 ≤ r, c ≤ 25. The next r rows each consist of c characters from the set {A−I,−}.

Each input record is guaranteed to have a minimum of three visible symbols for each circle found in that drawing. A given colour (if present) is used in only one circle per drawing.

The end of input is indicated by a line containing only the value ‘−1’.

```
--BBB--
-B-AAB-
B-A---B
BA----B
BA----B
-B---B-
--BBB--

```
Output

For each input record, output

\(k\)

where \(k\) denotes the number of possible orderings in which the circles in the given painting could have been drawn.

**Sample Input**

```
15 15
---CCC----EEE--
--CBB-C---E--E-
-C---B-CE-----E
BC-----BCE------E
BC-----BCE------E
B-C-----C-AEF------E-
-B--CCC-A---EEE--
-BBB-A-----F--
---DDD-------F--
-D-----FD------F--
-D------F-D------F--
-D------FD------F--
-D-------D------F--
-D-------D------F--
-DD--D------F--
---DDD---------
```

```
11 11
---C---------
-CCAAAA----
--CABBBA---
CCAB----BA--
-AB-------BA-
-AB-------DDD
-AB-------DBA-
-DB---DBA--
---ABDBA---E
-----ADA------E-
-------D------E-
-1
```

**Sample Output**

```
12
40
```