Geometric Representations of Arithmetical Operations

Making distributive property explicit in multiplication of two-digit numbers

Discuss an explicit procedure for multiplying 14 x 16; relate it to the algorithm you know, and to a geometric representation.

16	14
x 14	x 16
64	84
160	140
224	224

For the first procedure, in the figure below, where is 64 represented? What part does represent 160?
Break the process into all the steps.

16
x 14
24
40
60
100
224

4 x 10	4 x 6
10 x 10	10 x 6

How is this process related to the use of the distributive property of multiplication over addition?
(10 + 6) x (10 + 4)

Another example, 12 × 23

Explain what partial products do each of the following numbers represent 6, 40, 30, 200. Identify the corresponding areas in the rectangle below.

23	20 + 3
× 12	× 10 + 2
46	40 + 6
230	200 + 30
276	200 + 70 + 6