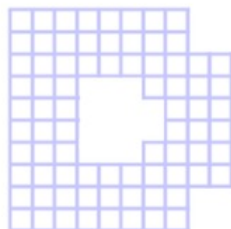
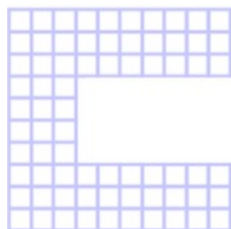
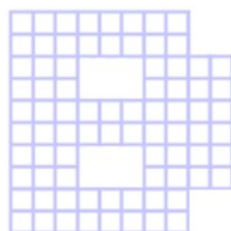
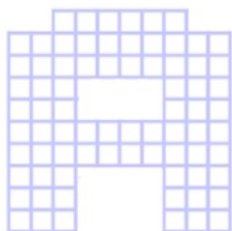


[Illustrative Mathematics](#)

3.MD The Square Counting Shortcut

[Alignment 1: 3.MD.C](#)

Imagine that each square in the picture measures one centimeter on each side. What is the area of each letter? Try to work it out without counting each square individually.



Commentary:

This is a rectangle subdivision task; ideally instead of counting each square, students should break the letters into rectangles, figure out the areas, and add up the areas. However, students should not be discouraged from using individual counting to start if they are stuck. Often students will get tired of counting and devise the shortcut method themselves.

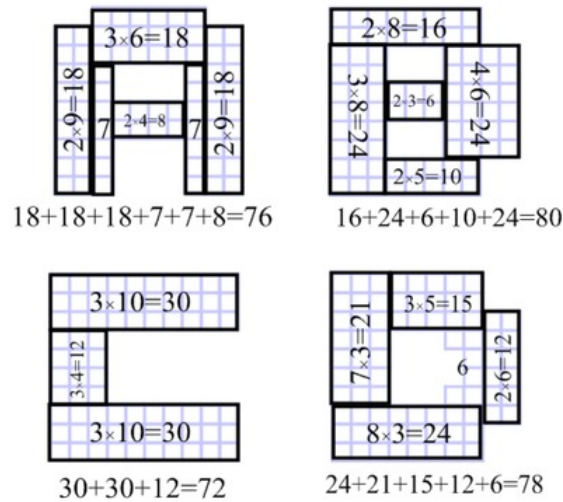
It is acceptable to mix rectangle-area counting and traditional counting, like D in the example solution demonstrates.

Students may also intuitively exploit symmetry to help with the problem, although symmetry is not introduced in the standards until Grade 4.

Submitted to Jason Dyer to the fourth Illustrative Mathematics task writing contest.

Solution: Solution

(There are many ways to subdivide the letters into rectangles, this is one solution of many.)



The letter "A" has an area of 76 square cm.

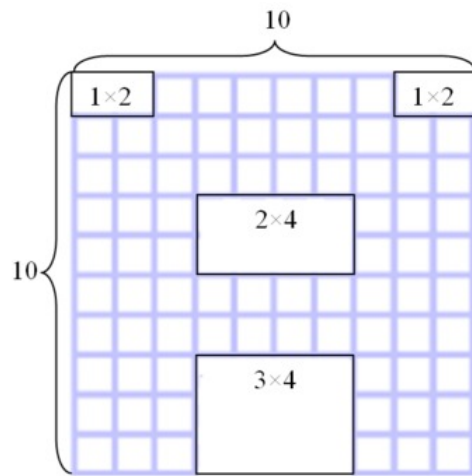
The letter "B" has an area of 80 square cm.

The letter "C" has an area of 72 square cm.

The letter "D" has an area of 78 square cm.

Solution: Using subtraction

Another way students might do this is to figure out the number of squares that have been "removed" from a square that is 10 cm on each side.



A square that is 10 cm on each side has an area of 100 square cm.

$$\begin{aligned}
 100 - (1 \times 2 + 1 \times 2 + 2 \times 4 + 3 \times 4) &= 100 - (2 + 2 + 8 + 12) \\
 &= 100 - 24 \\
 &= 76
 \end{aligned}$$

So the area of the letter A is 76 square centimeters. These others can be done in a similar manner.



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