Unit 9 Math SOS

Standards Addressed:

3OAB5 Apply properties of operations as strategies to multiply and divide.2 Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3× 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.) (Students need not use formal terms for these properties.)

3MD7c&d Relate area to the operations of multiplication and addition.

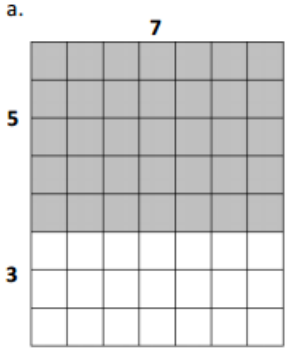
Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Properties of Multiplication and Division

Property	Example
Distributive	$5 \times (1 + 4) = (5 \times 1) + (5 \times 4)$
Commutative	$5 \times 1 = 1 \times 5$
Associative	$(8 \times 3) \times 6 = 8 \times (3 \times 6)$
Identity	$11 / 11 = 1$ $11 \times 1 = 11$
Zero	$9 \times 0 = 0$

1. Label the side lengths of the shaded and unshaded rectangles when needed. Then, find the total area of the large rectangle by adding the areas of the two smaller rectangles.

a.



8 × 7 = (5 + 3) × 7

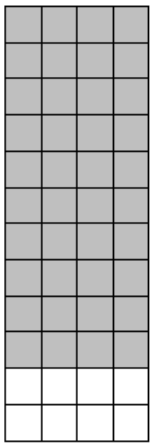
= (5 × 7) + (3 × 7)

= _____ + _____

= _____

Area: _____ square units

b.



12 × 4 = (_____ + 2) × 4

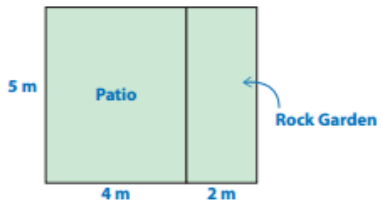
= (_____ × 4) + (2 × 4)

= _____ + 8

= _____

Area: _____ square units

1 Mrs. Ambrose drew the model below of her new patio and rock garden.



What is the total area of Mrs. Ambrose's new patio and rock garden?

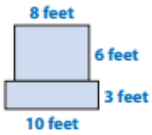
A 22 meters

B 22 square meters

C 30 meters

D 30 square meters

2 At the right are two rectangles that are joined together.



Choose *Yes* or *No* to tell whether joining the rectangle shown to the two rectangles above would make a shape that has an area of 98 square feet.

a.

☐ Yes ☐ No

b.

☐ Yes ☐ No

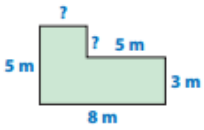
c.

☐ Yes ☐ No

d.

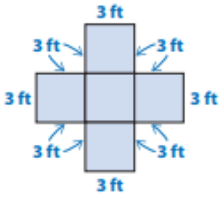
☐ Yes ☐ No

3 Find the missing measurements in the shape below. Then break apart the shape into two rectangles to find its area.



Answer The area is _____ square meters.

4 Opal drew this model of a picnic table.



What is the total area of the picnic table?

Show your work.

Answer The total area of the picnic table is _____ square feet.