

Unit 9 Math SOS

Standards Addressed:

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

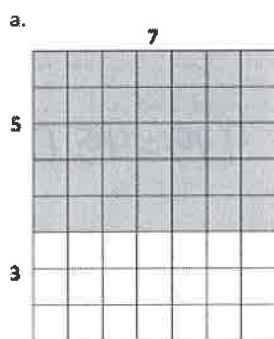
3MD7c&d Relate area to the operations of multiplication and addition.

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 $a \times b$ and $a \times c$. 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.



$$8 \times 7 = (5 + 3) \times 7$$

$$= (5 \times 7) + (3 \times 7)$$

$$= \underline{35} + \underline{21}$$

$$= \underline{56}$$

Area: 56 square units



$$12 \times 4 = (\underline{10} + 2) \times 4$$

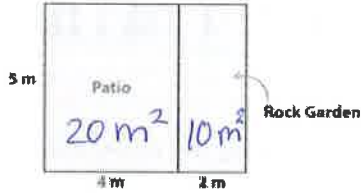
$$= (\underline{10} \times 4) + (2 \times 4)$$

$$= \underline{40} + 8$$

$$= \underline{48}$$

Area: 48 square units

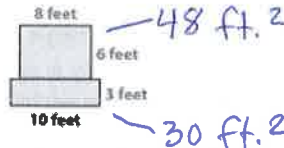
- 1 Mrs. Ambrose drew the model below of her new patio and rock garden.



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

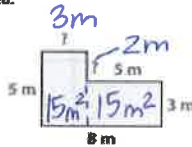
- 2 At the right are two rectangles that are joined together.



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.

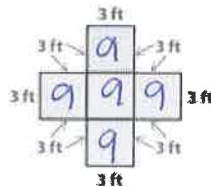
- a. Yes No
 b. Yes No
 c. Yes No
 d. Yes No

- 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 $30 m^2$ square meters.

- 4 Opal drew this model of a picnic table.



$9 \times 5 = 45 \text{ ft.}^2$

What is the total area of the picnic table?

Show your work.

Answer The total area of the picnic table is 45 square feet.