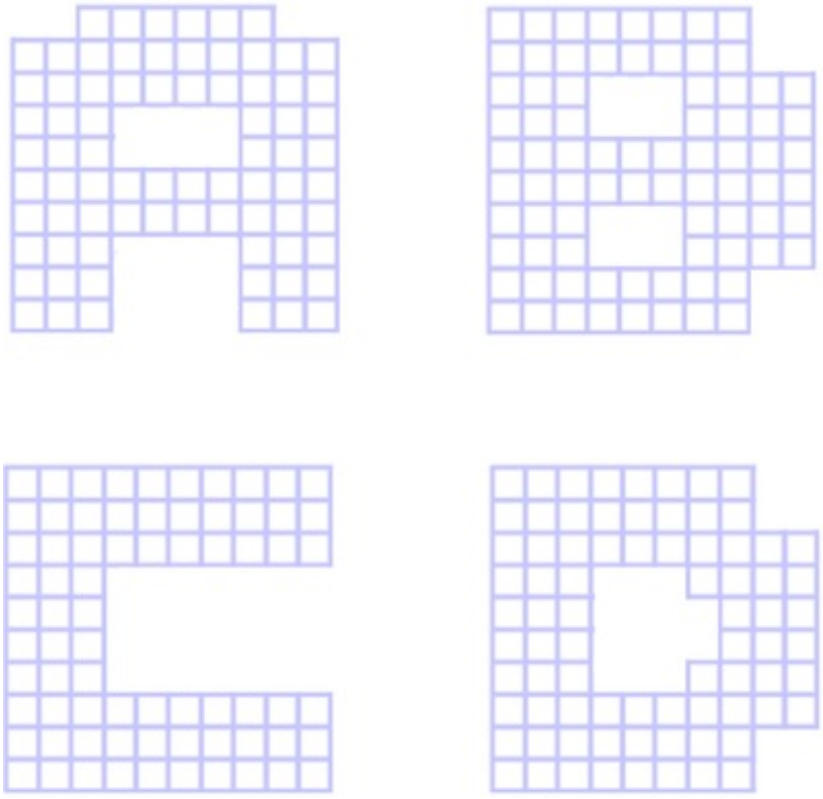
Illustrative Mathematics

The Square Counting Shortcut

Task

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.



Task is from https://tasks.illustrativemathematics.org/content-standards. Document has been modified through omission of solution.

3.MD The Square Counting Shortcut
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Cut a Rug

Building Fluency: understand area and perimeter

Materials: pair of dice, recording sheet, centimeter grid paper

Number of Players: 2

Directions:

1. Player tosses the dice, finds the sum and puts the total in the length box. The player tosses the dice again to find the width.
2. Using the length and width, the player creates a rectangle on the grid paper and records the perimeter and area on the recording sheet. Then Player 2 does the same.
3. After each round the players look at their numbers together. Which player has the greater area? Which player has the greater perimeter? Is the perimeter always bigger? Always smaller? Can they be the same?
4. After 4 rounds, players total their perimeters and their areas. The winner has the highest total area.

Variation/Extension: Once students understand how to play this game they can create their own table in their math notebook. "I Get Around" is a variation of this game.

PLAYER 1

Round	Length	Width	Perimeter	Area
1				
2				
3				
4				
			Total Score	

PLAYER 2

Round	Length	Width	Perimeter	Area
1				
2				
3				
4				
			Total Score	

Raging Rectangles

Building Fluency: products of whole numbers and their relationship to rectangular arrays; relate area to operations of multiplication

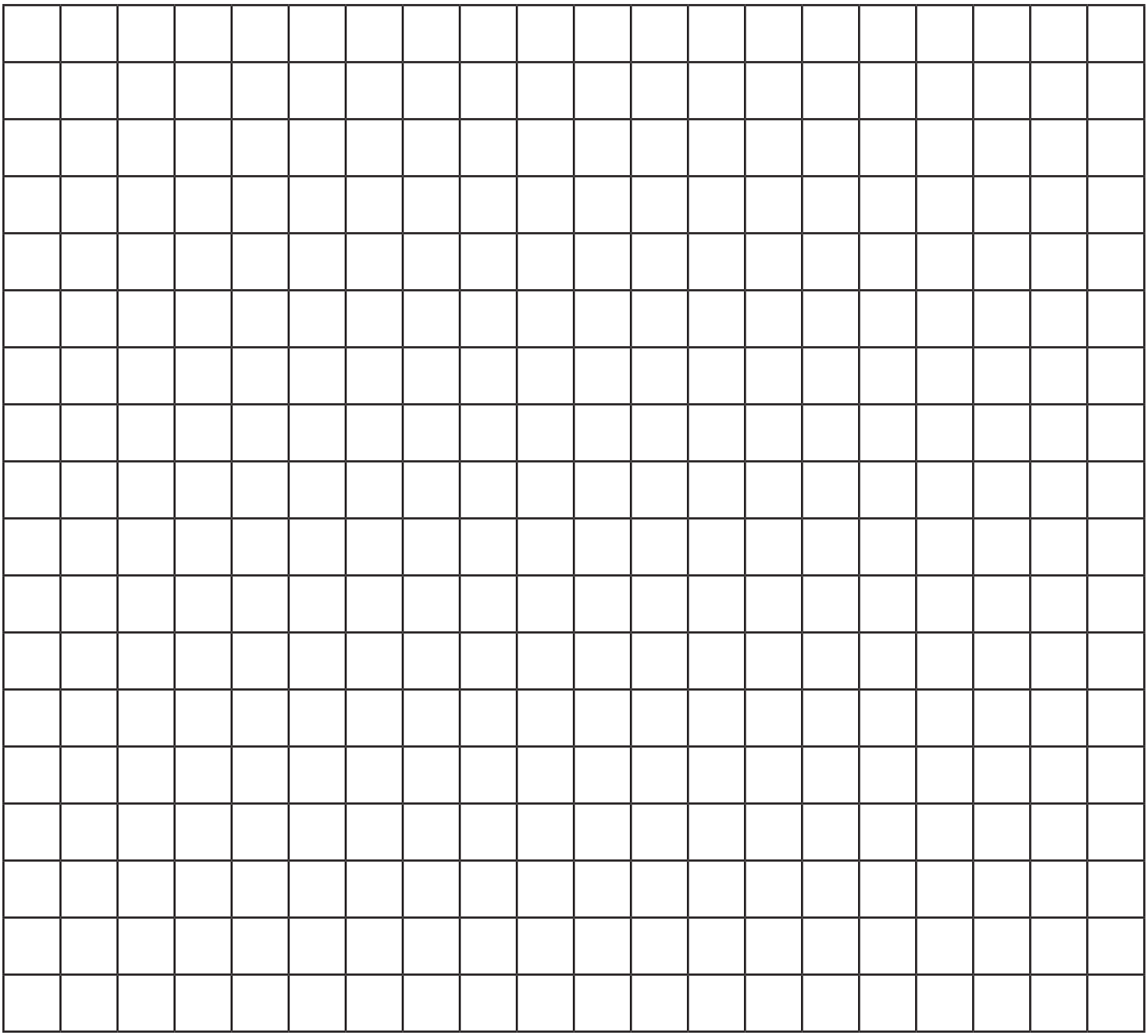
Materials: gameboard, pair of dice, 1 crayon - different color per player

Number of Players: 2

Directions:

1. Each player takes a turn rolling the dice to get two factors.
2. The player outlines and colors a rectangle on the gameboard to match the pair of factors. Example: a roll of 6 and 3 is colored as a 6 x 3 rectangle or a 3 x 6 rectangle.
3. The player writes the equation (area) inside the rectangle.
4. A player loses a turn when the rectangle cannot be drawn on the gameboard.
5. The winner is the player with the most area colored.

Variation/Extension: Students can add the two numbers on the dice for the first factor and then use 2, 5 or 10 as the second factor.



NAME _____ **DATE** _____

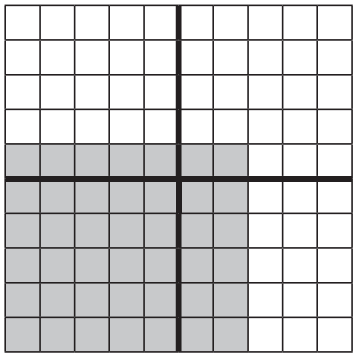
Missing Numbers & Fact Families

1 Fill in the missing numbers below.

2 × □ = 12	□ × 3 = 27	7 × □ = 14	□ × 3 = 30	□ × 2 = 10	10 × □ = 0
4 × 3 = □	10 × □ = 70	4 × 5 = □	7 × 3 = □	6 × □ = 18	□ × 6 = 30

2 Write the multiplication and division fact family that goes with each array. Use the arrays to find each product if you need to.

a



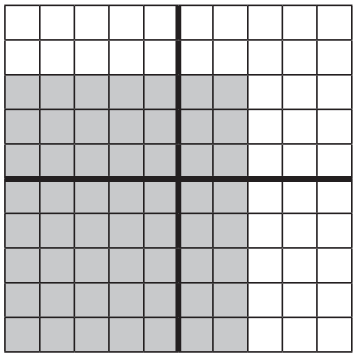
_____ × _____ = _____

_____ × _____ = _____

_____ ÷ _____ = _____

_____ ÷ _____ = _____

b



_____ × _____ = _____

_____ × _____ = _____

_____ ÷ _____ = _____

_____ ÷ _____ = _____

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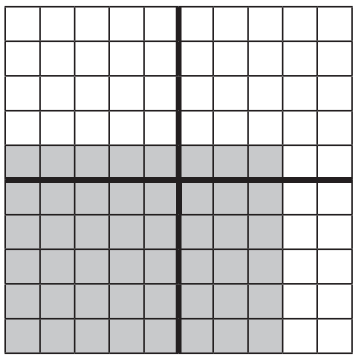
More Missing Numbers & Fact Families

1 Write the multiplication and division fact family that goes with the array. Use the array to find the product if you need to.

a



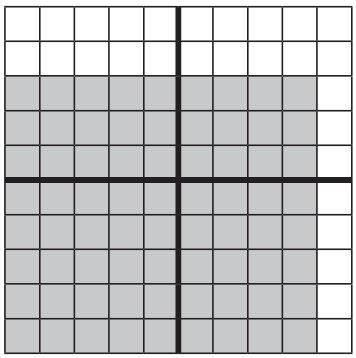
____ × ____ = ____

____ × ____ = ____

____ ÷ ____ = ____

____ ÷ ____ = ____

b



____ × ____ = ____

____ × ____ = ____

____ ÷ ____ = ____

____ ÷ ____ = ____

2 Fill in the missing numbers below.

4 × □ = 24	□ × 4 = 12	2 × □ = 16	□ × 5 = 50	5 × 7 = □	4 × □ = 16
5 × 6 = □	6 × 6 = □	9 × □ = 27	2 × 9 = □	7 × □ = 49	4 × 7 = □
8 × 4 = □	□ × 9 = 36	6 × □ = 48	□ × 3 = 21	9 × 6 = □	5 × 8 = □