

Topic 1: MME VI-I**Introduction to Black and Red Tiles**

- Red & Black tiles are opposite colors
- 1 Black tile = 1, 1 Red tile = -1
- The number of pieces in a collection that cannot be matched = net value
- A collection with an equal number of Red & Black tile have a net value of 0

Total # Pieces	# Red	# Black	Net Value	
			R/B	Integer
12	4	8	4B	+4
20	12			
20		12		
20				-10
	12	20		
	12			10
	12			-4
		8		4
		12		-6

General Observations:

Topic 2: MME VI-2**Addition and Subtraction of Integers with Black and Red Tiles**

- ✓ For the initial integer work it is easiest to denote the black tiles by B and the red tiles by R
1. Use your black and red tiles to model $4 + 6$
 - Can you do this is more than one way (with different collections for 4 and/or for 6)? What is the most efficient way?

 2. Use your black and red tiles to model $(-4) + (-6)$

Topic 3: MME VI-4

Multiplication of Integers with Black and Red Tiles

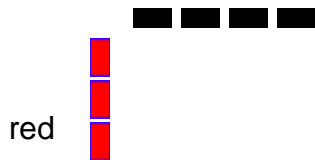
✓ For the array work, you need to sketch in the array

1. Use black and red tiles, with edge pieces, to form an array. One edge set should have net value 4 and the other edge set should have net value 3. Sketch in the array, what is the net value?



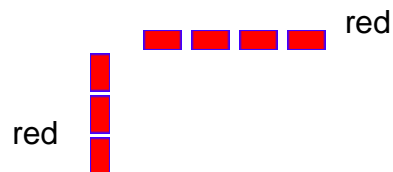
What multiplication sentence does this model?

2. Use black and red tiles, with edge pieces, to form an array. One edge set should have net value 4 and the other edge set should have net value -3. For red edges, start the array with all black pieces and then flip all of the red rows (or columns) once. Sketch in the array, what is the net value?



What multiplication sentence does this model?

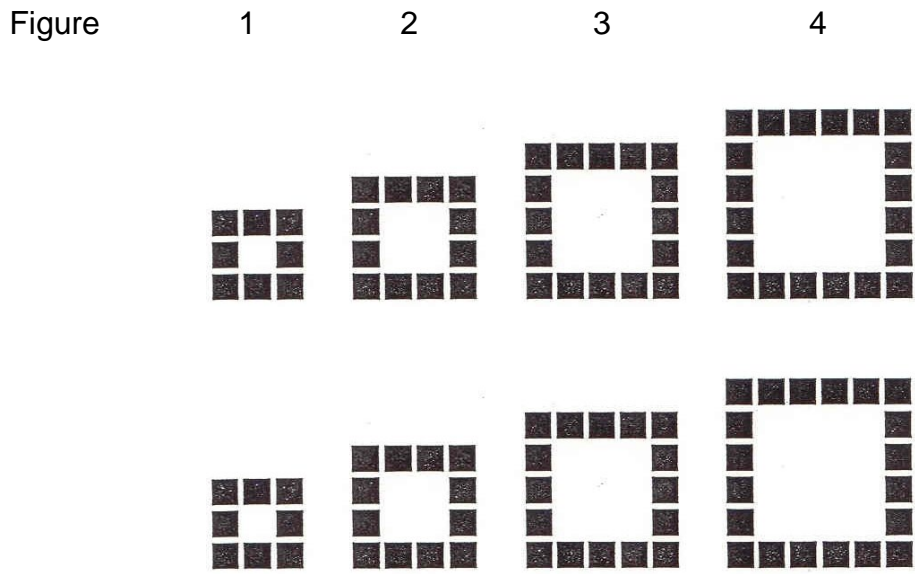
3. Use black and red tiles, with edge pieces, to form an array. One edge set should have net value -4 and the other edge set should have net value -3. For red edges, start the array with all black pieces and then flip all of the red rows (or columns) once. In this case, flip once for the red rows and then flip again for the red columns. Sketch in the array, what is the net value?



What multiplication sentence does this model?

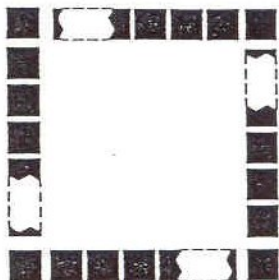
Topic 4: MME IX-2
Tile Patterns

1. The following represents the first four figures in Tile Sequence 1.
 - a. Show 2 different NUMERICAL ways to count these tiles by looping the diagrams. Don't just count each tile.



- b. Extend your ideas to the 20th figure. How many tiles are there?
 - c. Convert your numerical methods to WORDS. Check your method on the 20th figure.

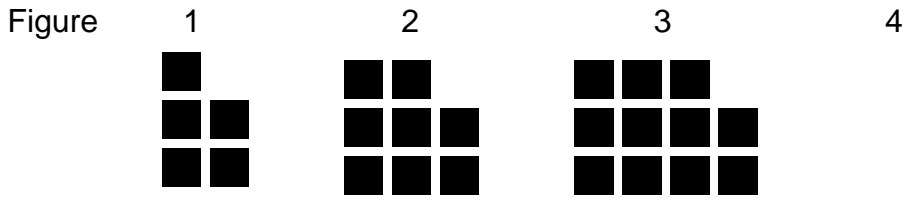
d. The following diagram shows n^{th} figure for Tile Sequence 1. Convert your numerical and word methods to SYMBOLS. Use n for the figure number and T for the total number of tiles. Check your method on the 20th figure. Does your symbolic method match the diagram for the n^{th} figure?



e. Which figure has 200 tiles? Explain your thinking.

2. The following represents the first three figures in Tile Sequence 2

a. Model and sketch the next tile figure in Tile Sequence 2.



b. Describe the 25th figure in words, how many tiles does it contain?

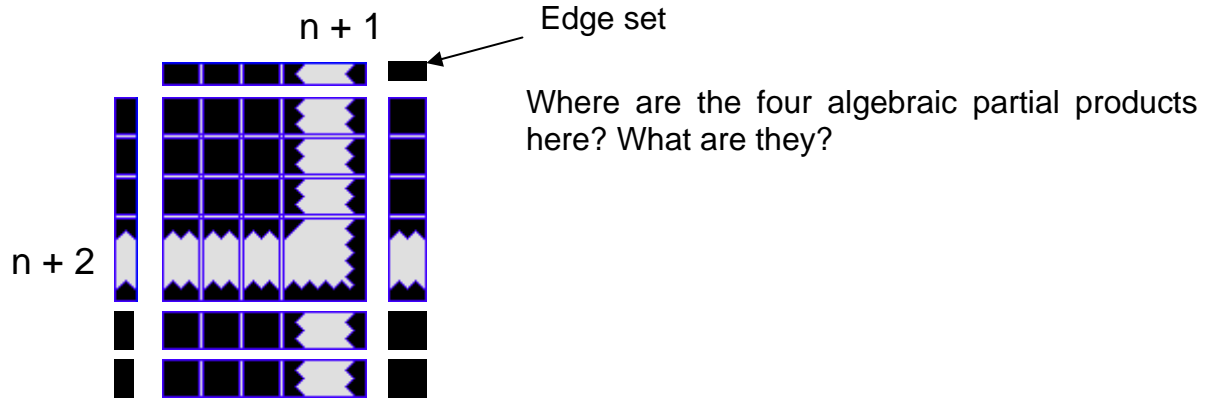
c. Describe a symbolic method for determining the number of tiles in the nth figure. Use n for the figure number and T for the total number of tiles.

d. Which figure has 500 tiles? Explain your thinking.

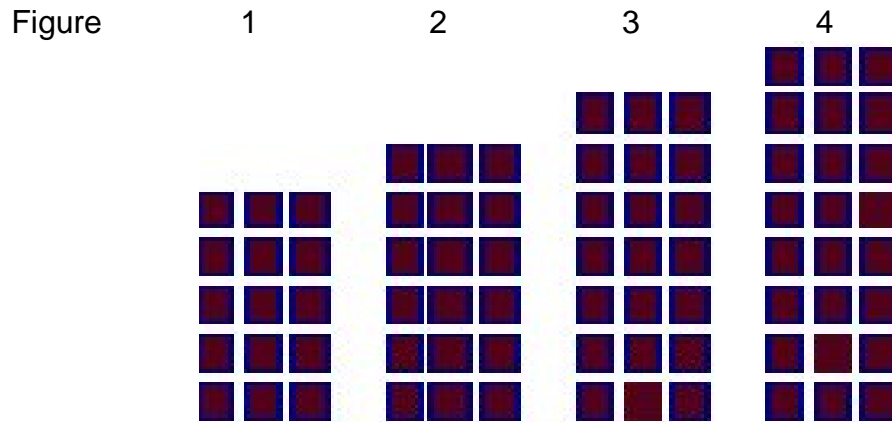
Topic 5: MME IX-3

Using Edge Pieces with Tile Patterns

- The following represents the product $(n + 1)(n + 2)$. The edges sets are markers and are not part of the product.



- For Tile Sequence A; What does the n^{th} figure look like? What are the edge dimensions for the n^{th} figure? Hint: The edge set here is simpler than the edge set in the previous problem.



3. For Tile Sequence B: What does the n^{th} figure look like? What are the edge dimensions for the n^{th} figure?

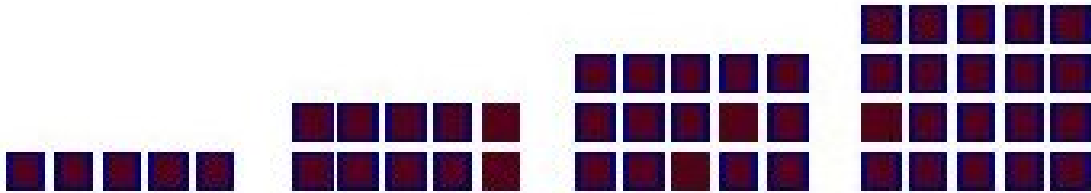
Figure

1

2

3

4



4. Use the algebra piece representations of the n^{th} figure of Sequence A and the n^{th} figure of Sequence B to determine for which figure number Sequence A = Sequence B.

