Do Now: Tell whether the number is prime or composite: L R

1. 16 prime or composite
2. 40 prime or composite
3. 53 prime or composite
4. 24 prime or composite
5. 61 prime or composite

A prime number is a whole number that is greater than one and has exactly two whole number factors, 1 and itself.

A composite number is a whole number that is greater than 1 and has more than two whole number factors.

4.1 Factors and Prime Factorization

7.NS
7.EE

- SWBAT write the prime factorization of numbers.
- SWBAT understand relationships among numbers.
- SWBAT grasp connections among math ideas. Understand how math ideas build on one another.

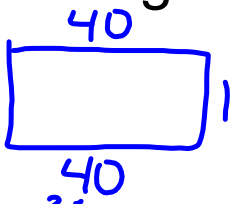
- Calculators: No

1	2	3		5		7			
11		13				17		19	
		23						29	
31						37			
41		43				47			
		53						59	
61						67			
71		73						79	
		83						89	
						97			

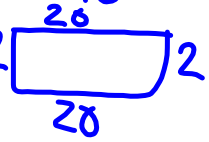
The area of a rectangle is 40 square inches. Find all possible dimensions of the rectangle. Which dimensions produce the rectangle with the least perimeter?

$\boxed{A = 40 \text{ in}^2}$

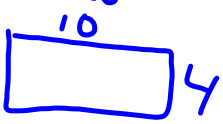
P: 82 = 40 · 1



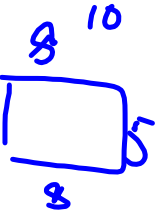
P: 44 = 20 · 2



P: 28 = 10 · 4



P: 26 = 8 · 5



8 · 5 is the least perimeter

8 in by 5 in

Members of the art club are learning to do calligraphy. Theirfirst project is to make posters to display their new lettering style. A poster will display 36 characters in order: the 26 uppercase letters of the alphabet and the digits 0 through 9. How many ways can the art club arrange 36 characters in a rectangular display with rows of equal length?

36

ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789

1

1 by 36
36 by 1

18 by 2
2 by 18

12 by 3
3 by 12

6 by 6

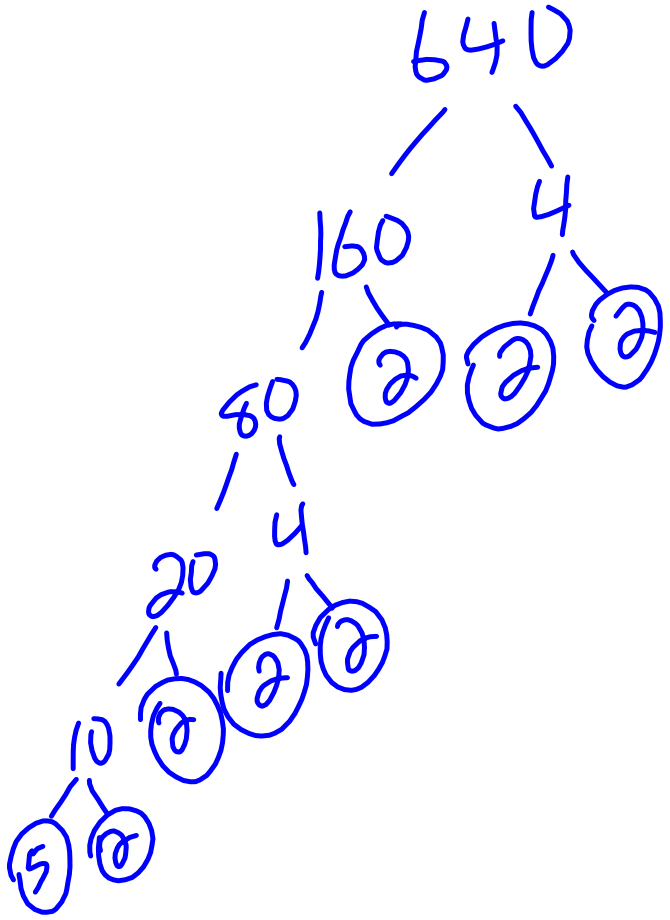
4 by 9
9 by 4

9 different displays

prime factorization - numbers written as a product of prime numbers

- Factor Tree
- Birthday Cake

Write the prime factorization of 640.
(Using the factor tree and exponents)



$$\begin{array}{r} {}^{1}128 \\ \times\ 5 \\ \hline 640 \end{array}$$

$2^7 \cdot 5 = 640$

$128 \cdot 5$

Write the prime factorization of 640.
(Using the birthday cake and exponents)

use only primes

1

Candle

5 | 5

2 | 10

2 | 20

2 | 40

2 | 80

2 | 160

2 | 320

2 | 640

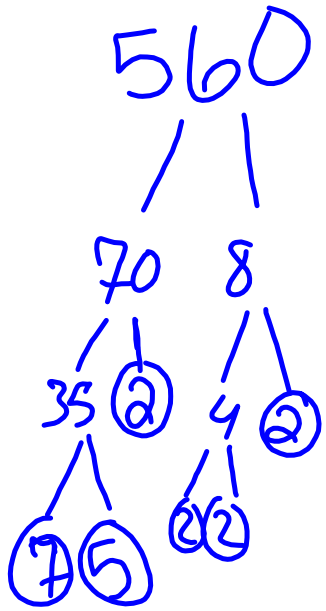
$2^7 \cdot 5 = 640$

Exit Pass 4.1

Tell whether the number is prime or composite. If it is composite, write its prime factorization using exponents.

1. 24 Composite $2^3 \cdot 3 = 24$
2. 51 Composite $3 \cdot 17 = 51$
3. 73 Prime
4. 560 Composite

560



$2^4 \cdot 7 \cdot 5$

Reflection of Today's Lesson

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Homework

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