REMINDERS:

- Unit 6 Test- TOMORROW!
  (Come to class prepared to take your test)

- 2nd Marking Period Ends- NEXT WEKK!

Unit 6
Review Jeopardy

OBJECTIVES

- Review concepts of unit 6 to prepare for test : patterns (adding subtracting, multiplying and dividing), x/y charts, proving equations correct, conjectures, and prime factorization

RULES:

- Students will solve problems in allotted time.
- Students will keep track of their points HAVE PAPER AND PENCIL HANDY
- Students will ask questions if needed!

Categories:

- Addition Patterns and Input Tables

- Multiplication Patterns

- Patterns and Exponents

- Conjectures and Primes

ADDITION PATTERNS AND INPUT TABLES

Finding Addition Patterns

Addition Pattern
Describe this addition pattern.
1, 4, 7, 10, 13, …

⊖ **Choose two adjacent terms.**

1, 4, 7, 10, 13, …
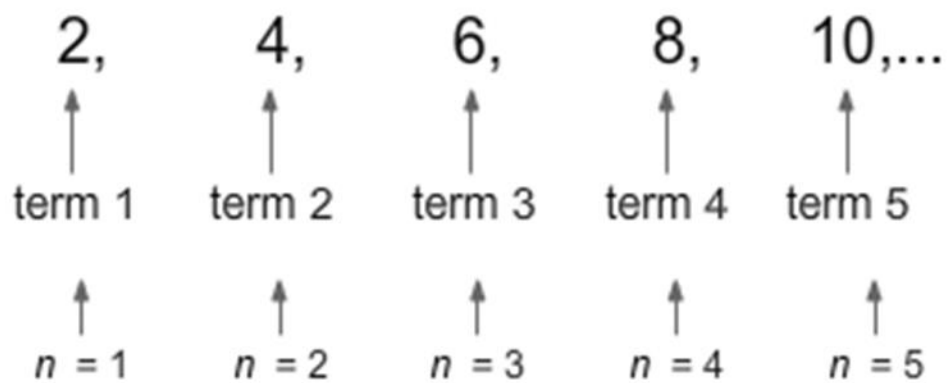
⊖ **Subtract the adjacent terms.**

13 − 10 = 3

Three is the number that you add to a term to get the next term.

⊖ **Add 3 to each term to check.**

1, 4, 7, 10, 13
+3 +3 +3 +3

Three is, in fact, added to each term of the pattern to get the next term.

Show term numbers in terms of *n*.

2,   4,   6,   8,   10,...

↑   ↑   ↑   ↑   ↑
term 1   term 2   term 3   term 4   term 5

↑   ↑   ↑   ↑   ↑
$n = 1$ $n = 2$ $n = 3$ $n = 4$ $n = 5$

100 POINTS

- What is the rule for this addition pattern? 12, 24, 36, 48, 60?

A. Add 10

B. Add 12

C. Subtract 12

200 Points

What would be the 5th term in the pattern for the formula 2n+5 (Draw yourself an input table)
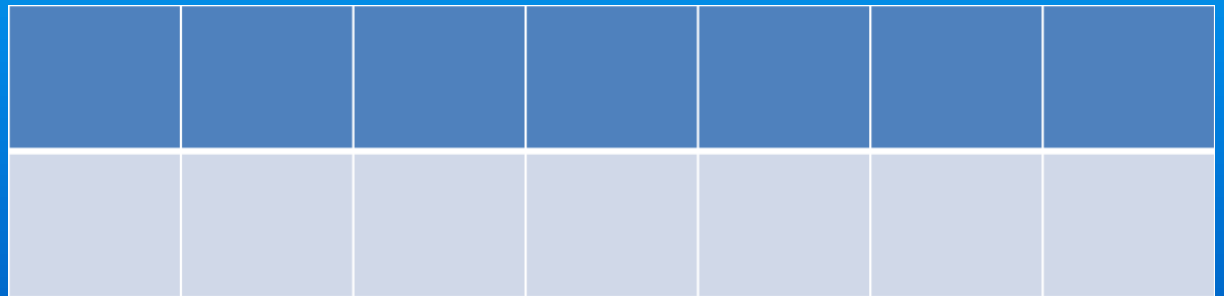
A. 18

B. 15

C. 12

D. Need more time

300 Points

In 1996, it cost 32¢ to mail a 1-oz letter, 55¢ to mail a 2-oz letter, 78¢ to mail a 3-oz letter, and $1.01 to mail a 4-oz letter. If the pattern continues, how much did it cost to send a 7-oz letter?

A. 1.93

B. $1.47

C. $1.70

MULTPLICATION PATTERNS

Describe the multiplication pattern!

4, 12, 36, 108, 324

1) Look at the first two terms: 4 and 12

2) THINK MULTIPLICATION: How do we get from 4 to 12?

3) Check to see if your pattern is correct with the remaining terms

100 Points

- 2, 6, 18, 54, _____. What is the next term in the pattern?

A. 108

B. 68

C. 162

200 POINTS

- Describe the Multiplication Pattern!

- 120, 60, 30, 15, 7.5

A. Multiply by 2

B. Multiply by .5 or ½

C. Subtract

300 Points

Solve.

A culture of bacteria quadruples (increases by a factor of 4) every hour. At the beginning, 100 bacteria are discovered. How many bacteria will there be after 5 hours?

$100 \cdot 4 = \boxed{}$

There will be $\boxed{}$ bacteria after 5 hours.

$\boxed{} \cdot 4 = \boxed{}$

$1600 \cdot \boxed{} = \boxed{}$

$\boxed{} \cdot \boxed{} = \boxed{}$

$\boxed{} \cdot \boxed{} = \boxed{}$

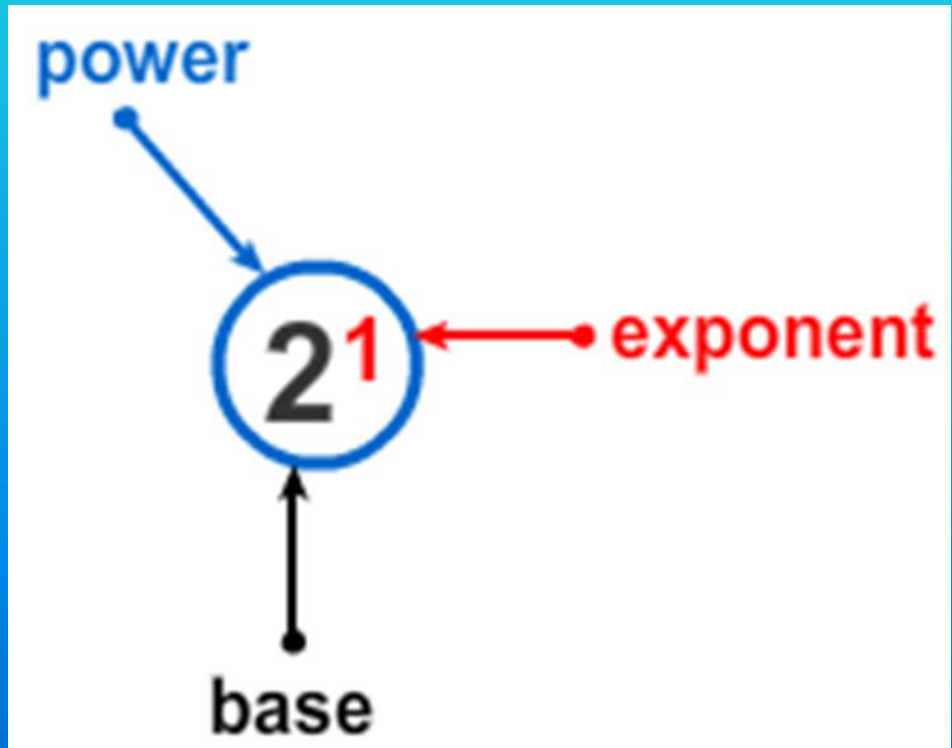A. 64,000

B. 400

C. 1,600

D. 102,400

PATTERNS

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EXPONENTS

We use exponents to show repeated multiplication of a number that we call the base.

The exponent tells how many times to use the base as a factor.

The base and exponent together are called a *power*.

To expand a power, write out all the factors.

Here are examples of the expanded form of two powers:

- a power that has an exponent of 4
- a power that has an exponent of 5

$$5^4 = 5 \cdot 5 \cdot 5 \cdot 5$$

$$3^5 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$

More Patterns

Rule: $\underline{3 \times 2^n}$

Term	1	2	3	4
Term Value	3×2^1 3×2 6	3×2^2		

100 Points

$$125^0 = \underline{\hspace{3cm}}$$

A) 0

B) 125

C) 1

200 Points

$$10 + (2 + 1)^3 \div 9$$

A) 5

B) 13

C) 81

300 Points

Term	1	2	3	4
Term Value				

Rule: $\underline{2 \text{ x } 5^n}$

What will our answer be if we use term 3 for our

- Exponent? **Term**

A. 30

B. 250

C. 20

CONJECTURES

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PRIMES

Is it PRIME?

❖ A whole number great than 1.

❖ Has two whole number factors.

❖ Examples:

2- 2 is prime. It is a whole number greater than 1. It has exactly two whole number factors 1 and 2.

❖ 7-7 is prime. It is a whole number greater than 1. It has exactly two whole number factors 1 and .

Is It
COMPOSITE

❖A whole number greater than 1.

❖Has MORE than two whole number factors.

❖EXAMPLES:
12- 12 is composite because it has more than two whole number factors. 1,2,3,4,6,12

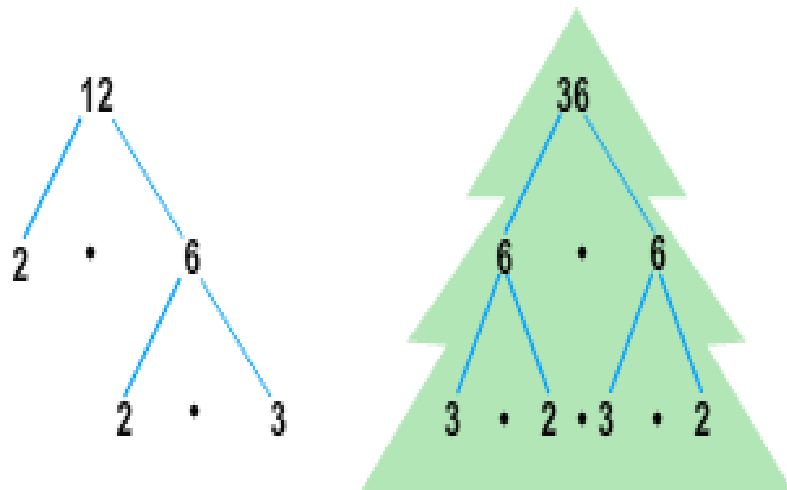❖CAN YOU THINK OF ANY COMPOSITE Numbers?

CONJECTURES:

- To make an educated attempt at answering a question based on known information. It could be true, but not yet proven to be true.

Least Common Multiple (LCM)
Find the LCM of 12 and 36.

⊖ Make factor trees for 12 and 36.

⊖ Write the prime factorizations of 12 and 36.

$$12 = 2 \cdot 2 \cdot 3 = 2^2 \cdot 3$$
$$36 = 2 \cdot 2 \cdot 3 \cdot 3 = 2^2 \cdot 3^2$$

⊖ Find the greater power of each factor.

There are two different factors: 2 and 3.

The greater power of 2 in the prime factorizations is 2^2.

The greater power of 3 in the prime factorizations is 3^2.

⊖ **Calculate the LCM.**
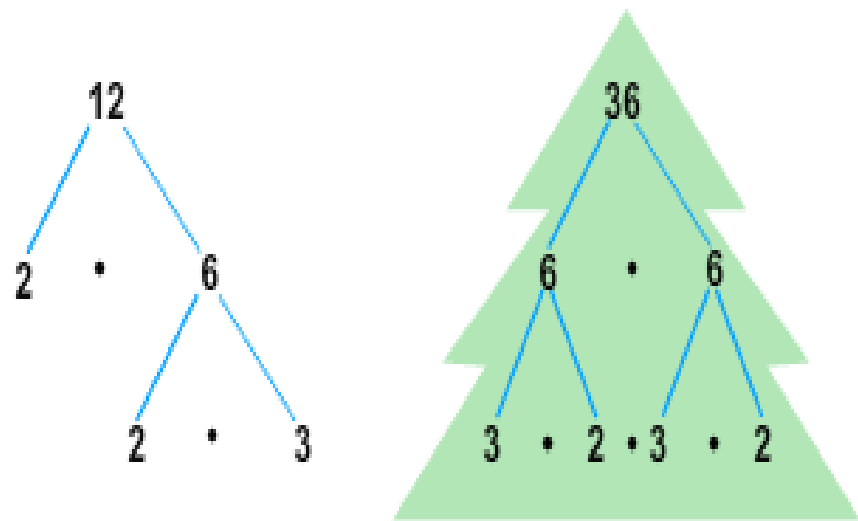
$$LCM = 2^2 \cdot 3^2 = 4 \cdot 9 = 36$$

The LCM is the product of the greater power of each prime factor in the prime factorizations.

The LCM of 12 and 36 is 36.

Greatest Common Factor (GCF)
Find the GCF of 12 and 36.

⊖ Make factor trees for 12 and 36.

⊖ Write the prime factorizations of 12 and 36.

$$12 = 2 \cdot 2 \cdot 3$$
$$36 = 2 \cdot 2 \cdot 3 \cdot 3$$

⊖ Line up and circle any matching factors.

$$12 = 2 \cdot 2 \cdot 3$$
$$36 = 2 \cdot 2 \cdot 3 \cdot 3$$

⊖ Multiply each factor that has a match.

$$GCF = 2 \cdot 2 \cdot 3 = 12$$

There are two matches of the factor 2, and there is one match of the factor 3.

The GCF of 12 and 36 is 12.

100 Points

Which number is an example of a PRIME number?

A. 21
B. 4.4
C. 10
D. 15

200 Points

- Which is a counterexample to the conjecture? "The sum of two prime numbers is always an even number?"

A.	$17 + 2 = 19$
B.	$3 + 7 = 10$
C.	$1 + 7 = 8$
D.	$1 + 2 = 3$

300 Points

What would be the LCM for 15 and 6? (Draw a Prime Factorization Tree to help you determine the LCM):

A. 3

B. 90

C.30

400 Points

What is the GCF of 36 and 24? (Draw a Prime Factorization Tree to help you determine the GCF).

A. 72

B. 12

C. 9

GREAT JOB!!!

QUESTIONS?

- If you need help, please come to Office hours today at 2 PM with SPECIFIC QUESTIONS.

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UNIT 6 TEST TOMORROW ☺