Lesson 7.4

Prime and Composite Numbers

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STANDARD:

4.OA.4 Find all factor pairs for a whole number in the range 1-100.

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I CAN STATEMENT:

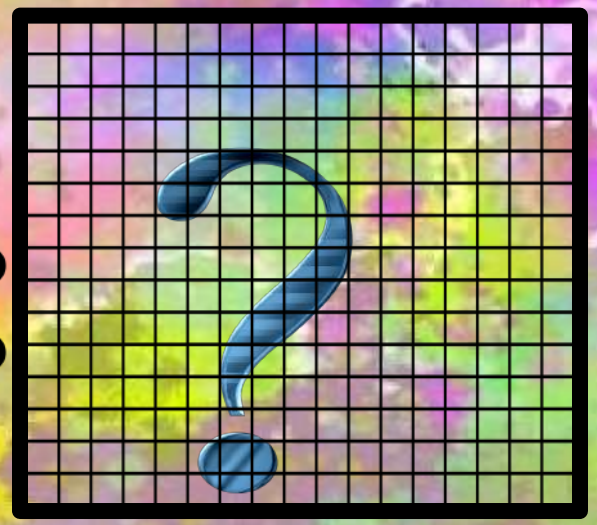
I can factors to determine if a whole number is prime or composite.

ESSENTIAL QUESTION:

How can you identify prime and composite numbers?

Objective:

Today, we will use factors to determine whether a whole number greater than 1 is prime or composite.

$7 \times 3 =$ 

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Study the definitions and make sure their in your notebook.

DEFINITIONS

prime number	A whole number greater than 1 that has **EXACTLY** two factors, 1 and itself.
composite number	A whole number greater than 1 that has more than 2 factors.

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PRIME NUMBER

Numbers greater than 1 that have only 2 factors are called PRIME numbers. Remember at the end of yesterday's lesson, we found out that 13 had only 1 and 13 as factors. So, 13 is a prime number!

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PRIME NUMBER

Special Notes:

- Zero is special because no matter what you multiply by, zero the product is always zero. So it's not ***prime***!
- ***One*** can't be ***prime*** because it is not greater than 1 and it does not have ***two*** factors.

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COMPOSITE NUMBER

Numbers greater than 1 that have more than 2 factors are called composite numbers. 14 is an example of a composite number because its factors are 1, 2, 7, and 14.

COMPOSITE NUMBER

Special Notes:

- Zero is special because no matter what you multiply by zero the product is always zero. So it's not ***composite***!
- ***One*** can't be ***composite*** because it is not greater than 1 and it does not have ***two*** factors.

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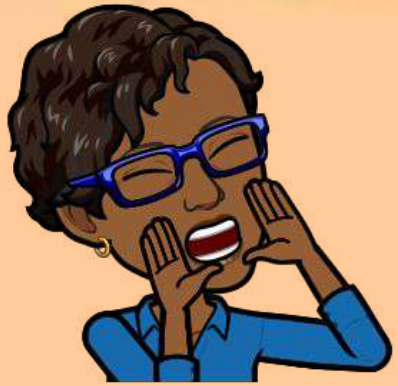
Special Notes:

➔ You can use arrays and multiplication to see if a number is prime or composite.

Let's take a look at the following numbers and list all the factors. This will help you to determine if the number is PRIME or COMPOSITE.

PRIME



OR

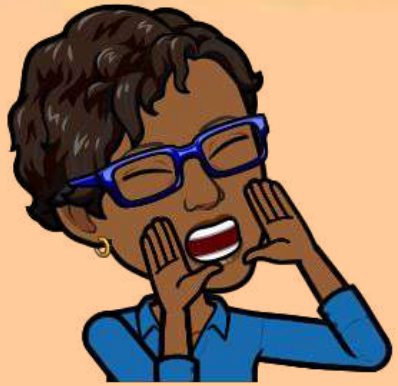
COMPOSITE

You can find the factors of 17 by multiplying
1 x 17 and 17 x 1.
It's factors are
1 and 17!

PRIME

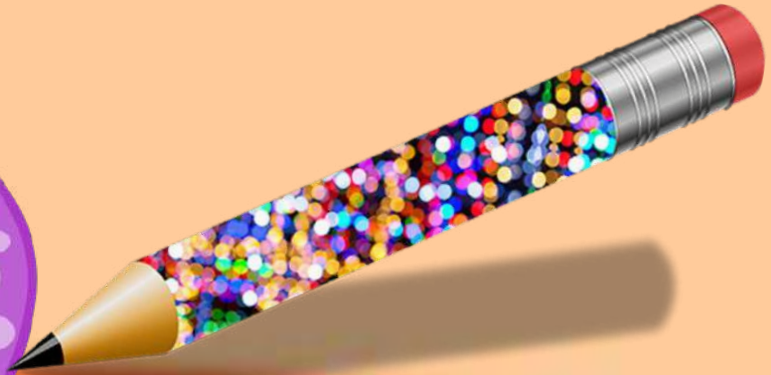
So 17 is a prime number!!

PRIME



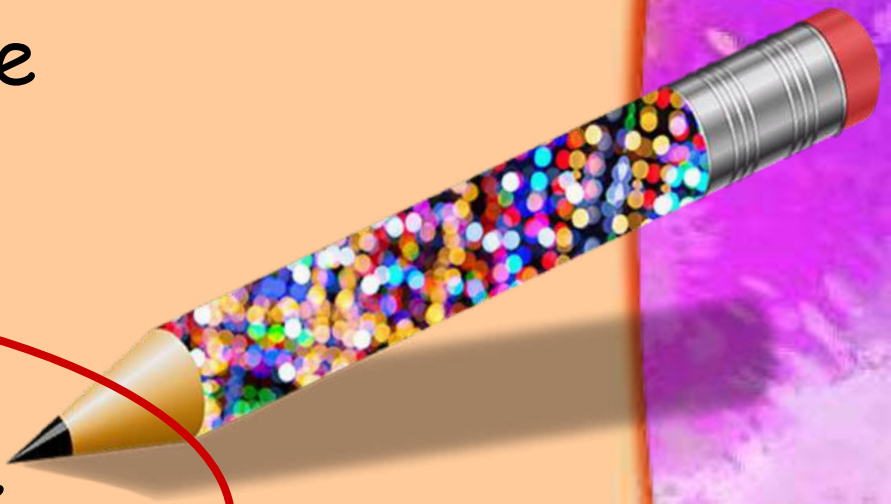
OR

COMPOSITE

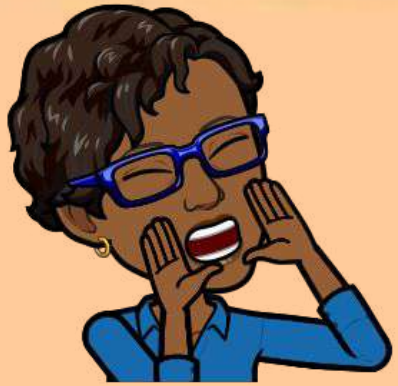


You can find the factors of 8 by multiplying
1 x 8 and 2 x 4
Here the factors are
1, 2, 4, and 8

So 8 is a composite number!!

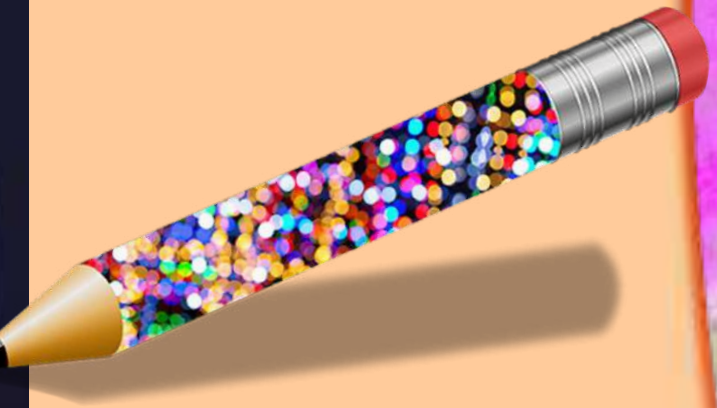


PRIME



OR

COMPOSITE



You can find the factors of 100 by multiplying
1 x 100, 2 X 50,
4 X 25, 5 X 20, 10 X 10
It's factors are
1, 2, 4, 5, 10, 25, 50, 100

So 100 is a
composite number!!

Partner Time

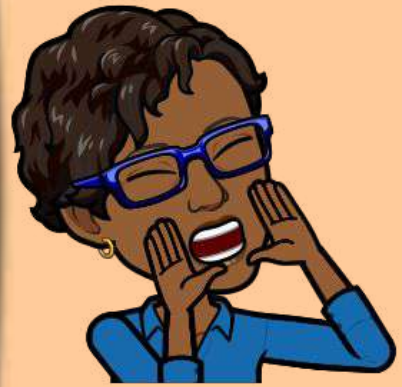
Challenge: There are 1,296 books in the library. How can you tell that 1, 296 is a composite number without finding all the factor pairs? Your partner and you have 5 minutes to work it out!

Partner Time

We know that 1 and 1,296 are factors. We also know that because it's an even number, there HAS to be 2 x something that will equal 1,296. It has to have more than just 2 factors!

Will this be true for all even numbers?
Are ALL even numbers composite?

PRIME

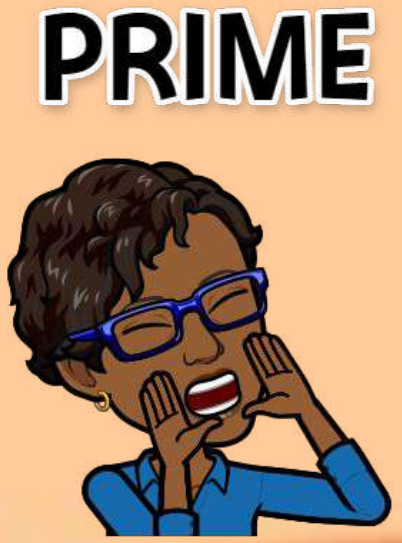


NO! 2 is EVEN and a PRIME number because the only factors are 1 and 2.

2 is the ***ONLY EVEN PRIME NUMBER***!

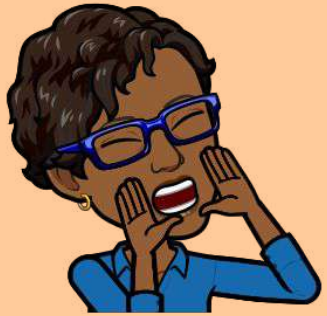
We just found out that most even numbers are composite (except for 2), Do you know what is true about odd numbers? Are they always prime? What do you think?

Odd numbers can be either one! You must use your basic facts to decide if it's prime or composite. Let's try a few!



Your Turn

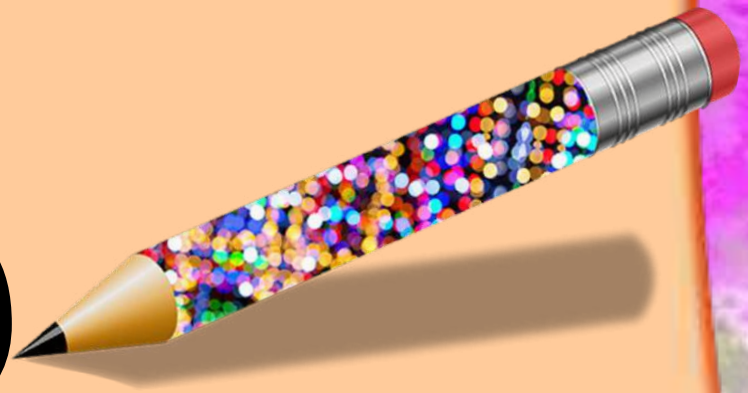
PRIME



OR

COMPOSITE

28



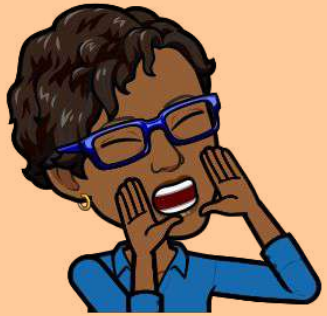
You can find the factors of 28 by multiplying
1 x 28, 2 X 14, 4 X 7

It's factors are
1, 2, 4, 7, 14, 28

So 28 is a composite number!!

Your Turn

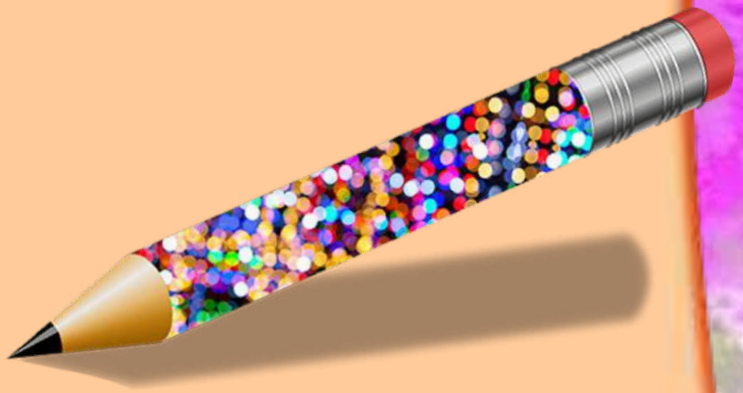
PRIME



OR

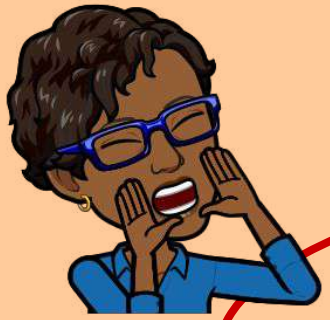
COMPOSITE

23



You can find the factors of 23 by multiplying 1 x 23.

PRIME



It's factors are 1 and 23

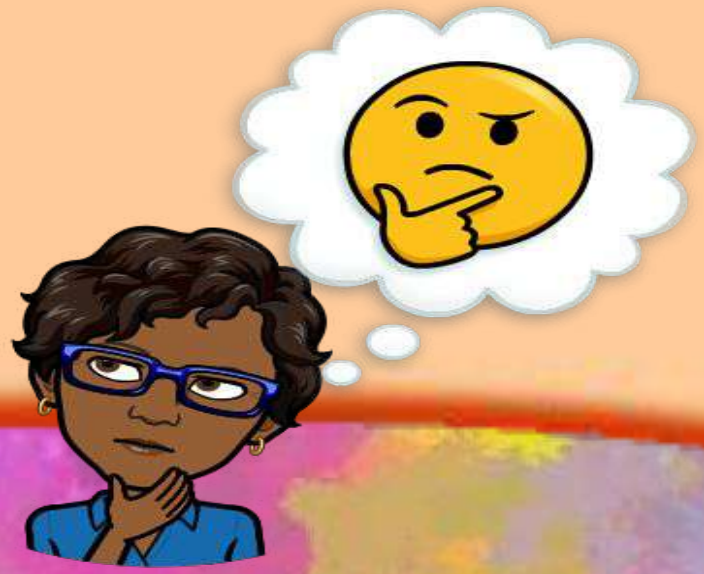
So 23 is a prime number!!

Robert says that 81 is a prime number. Use arrays to see if he is correct. Record your answer.

You see 4,860 skittle in the rainbow. Your sister says that it is a composite number because it is even. Is she correct? How do you know? Record your answer.

Exit Ticket: Think About It

What is the difference between prime and composite numbers? Are there any "tricks" to knowing if a number is prime or composite without finding all the factors?



INDEPENDENT WORK

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COOL BEANS

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HOMEWORK

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