



Finding Joy in Collaborative Math

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NEGATIONS

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Two clowns named **YEP** and **NOPE** are best friends. Their favorite game to play is called “Negations.” Whenever **YEP** states an opinion on something, **NOPE** immediately makes the opposite statement. Neither clown cares whether they say true things or nonsense.

For example:

YEP: At night, all people are asleep.

NOPE: Some people are not asleep at night. For example, my neighbor plays his drum all night long!

Or:

YEP: It is never too late to learn!

NOPE: Sometimes it is too late to learn. For example, it’s too late for us to learn how to dance classical ballet.

Q1: Why is **NOPE**’s response in each case above the OPPOSITE of **YEP**’s?

In most cases, the clowns have no difficulties objecting to each other. But sometimes they struggle to get it right. They once had the following interaction:

YEP: All bunnies can fly.

NOPE: No bunnies can fly!

Neither was sure if **NOPE**’s reply was correct.

Q2: Is **NOPE**’s response correct? If so, why? If not, what should it be and why?

*Hint: What would be enough to prove **YEP**’s statement wrong?*

For each statement **YEP** makes below, decide with your group which statement from **NOPE** (A or B or C) should be the correct “opposite” or “negation.” Also decide which of the statements (A or B or C) are true and which are false.

Q3:

YEP: All kids go to school!

NOPE:

- A. Some kids go to school!
- B. Some kids do not go to school!
- C. All kids do not go to school!

Q4:

YEP: Some books are interesting!

NOPE:

- A. Some books are not interesting!
- B. All books are interesting!
- C. All books are not interesting!

The clowns noticed a few things after a while. See if you notice it too:

Q5: To negate a statement of the type **All (...) do (...)** it is enough to find _____? _____
 So that the statement becomes _____? _____

Q6: To negate the statement **Some (...) do (...)** we get the statement _____? _____

Find the negations of each of the following. Discuss with your group/

Q7: Some stars are visible in bad weather.

Q8: All princesses wear pink.

Q9: All of Bob’s jokes are terrible.

Q10: Sometimes **YEP** eats spumoni ice cream.

