## Unit 3 Lesson 5: Negative Rational Exponents

### 1 Math Talk: Don’t Be Negative (Warm up)

#### Student Task Statement

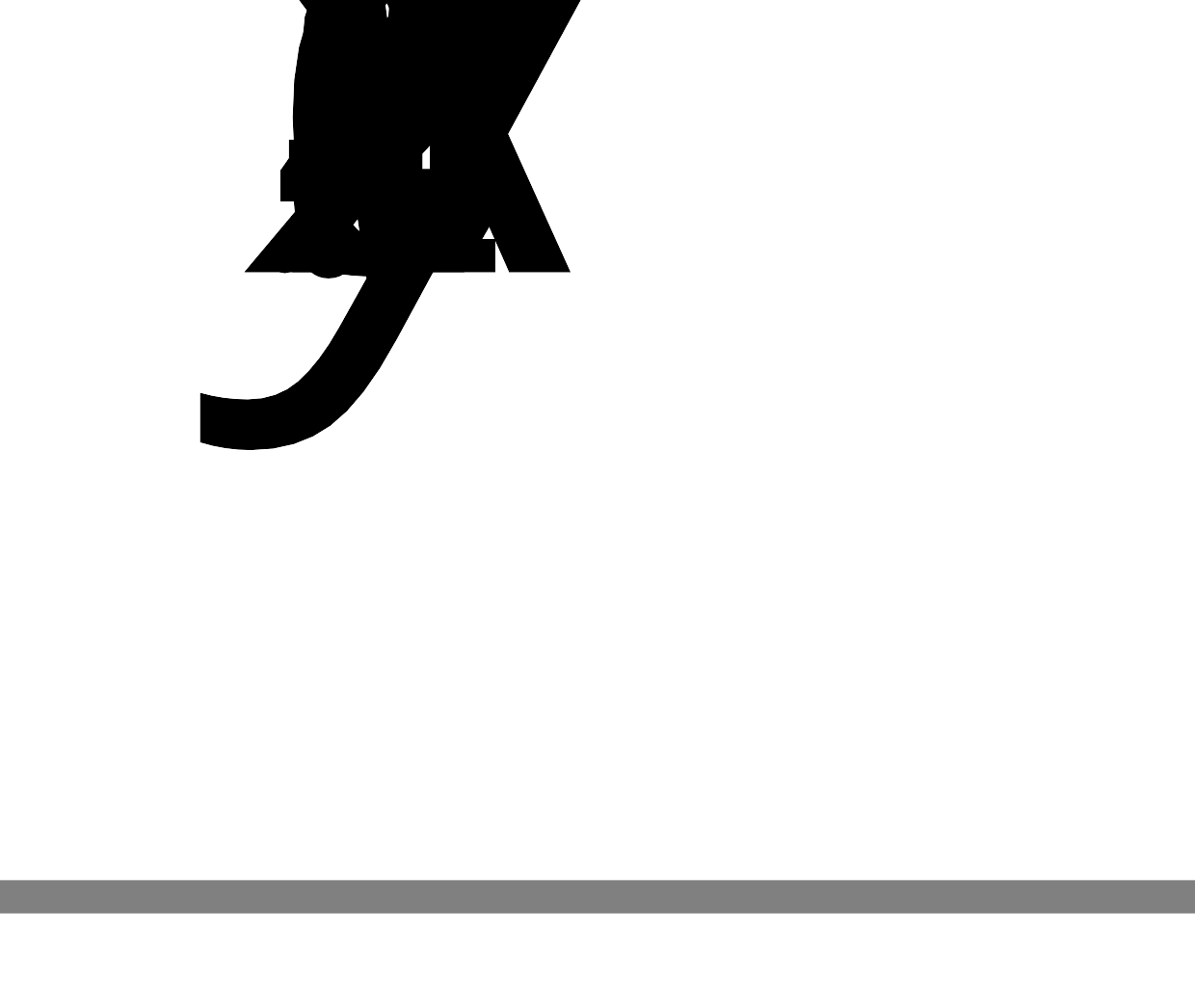
Evaluate mentally.

### 2 Negative Fractional Powers Are Just Numbers

#### Student Task Statement

1. Complete the table as much as you can without using a calculator. (You should be able to fill in three spaces.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | * -2 |  |  | * -1 |  |  | * 0 |
| * (using exponents) |  |  |  |  |  |  |  |
| * (decimal approximation) |  |  |  |  |  |  |  |

* 1. Plot these powers of 2 in the coordinate plane. ​​​​​​
  2. Connect the points as smoothly as you can.
  3. Use your graph of to estimate the value of the other powers in the table, and write your estimates in the table.
* 

1. Let’s investigate .
   1. Write using radical notation.
   2. What is the value of ?
   3. Raise your estimate of to the third power. What should it be? How close did you get?
2. Let’s investigate .
   1. Write using radical notation.
   2. What is ?
   3. Raise your estimate of to the third power. What should it be? How close did you get?

### 3 Any Fraction Can Be an Exponent

#### Student Task Statement

1. For each set of 3 numbers, cross out the expression that is not equal to the other two expressions.
   1. , ,
   2. , ,
   3. , ,
   4. , ,
2. For each expression, write an equivalent expression using radicals.
3. For each expression, write an equivalent expression using only exponents.

### 4 Make These Exponents Less Complicated (Optional)

#### Student Task Statement

Match expressions into groups according to whether they are equal. Be prepared to explain your reasoning.



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