## Unit 3 Lesson 4: Positive Rational Exponents

### 1 Math Talk: Regrouping Fractions (Warm up)

#### Student Task Statement

Find the value of each expression mentally.

### 2 You Can Use Any Fraction As an Exponent

#### Student Task Statement

1. Use exponent rules to explain why these expressions are equal to each other:

|  |  |
| --- | --- |
|  |  |



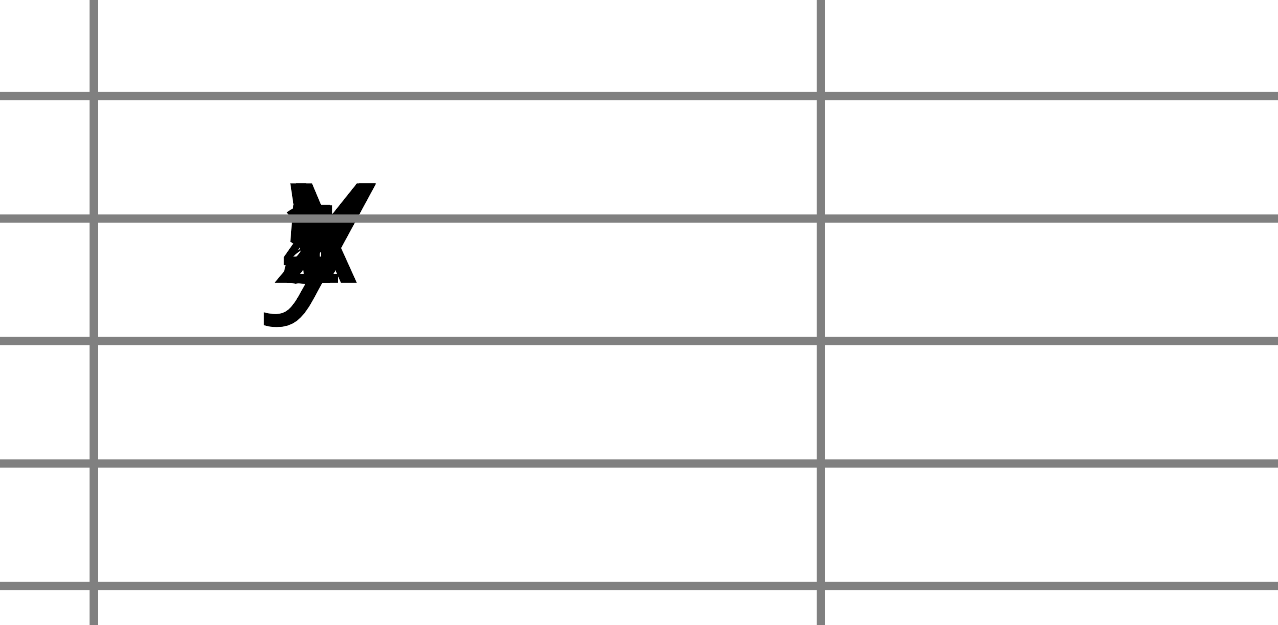
1. Write using radicals.
2. Write using radicals. Show your reasoning using exponent rules.

### 3 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.)

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

* 1. Plot the points that you filled in.
  + 
  1. Connect the points as smoothly as you can.
  2. Use this 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 ?
   3. Raise your estimate from the table 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 the value of ?
   3. Raise your estimate from the table of to the third power. What should it be? How close did you get?



© CC BY 2019 by Illustrative Mathematics®