Notes

6.1 Powers and Exponents (6.EE.1 and 6.NS.3)

Vocabulary Start-Up

A product of like factors can be written in exponential form using an exponent and a base. The base is the number used as a factor. The exponent tells how many times a base is used as a factor.

1. Fill in the boxes with the words *factors*, *exponent*, and *base*.

$$\underbrace{10}_{\text{factor}} \times \underbrace{10}_{\text{base}} = 10^{\overbrace{2}^{\text{exponent}}}$$

Base – the number being used as a factor.

Exponent – the number that tells how many times the base is used as a factor.

Powers – Numbers expressed using exponents.

Perfect Squares – the product of a whole number times the same whole number.

Guided Practice:

Write each product using an exponent.

1.) $8 \cdot 8 \cdot 8$ 8^3

2.) $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$ 1^5

3.) $4 \cdot 4$ 4^2

Write each power as a product of the same factor. Then, find the value.

4.) $\left(\frac{1}{7}\right)^3$ $\frac{1}{7} \times \frac{1}{7} \times \frac{1}{7} = \frac{1}{343}$

5.) 2^5 $2 \times 2 \times 2 \times 2 \times 2 = 32$

6.) 1.4^2 $1.4 \times 1.4 = 1.96$

7.) Coal mines have shafts that can be as much as 7^3 feet deep. About how many feet deep in Earth's crust are these shafts?

$7 \times 7 \times 7 = 343$ feet deep

Building on the Essential Question – How is using exponents helpful?

It lets you write it in simpler/shorter form.

Rate Yourself – How confident are you about powers and exponents? Shade in the correct section.