

LearningObjective: Students will be able to use formal language to describe a power and look at the specific case of perfect squares.

$$\begin{array}{r} 3 \\ 56 \\ \times 5 \\ \hline 0 \end{array}$$

## WarmUp

DMSB

$$\begin{array}{r} 0053 \\ 56 \overline{)2968} \\ -280 \downarrow \\ \hline 168 \\ -168 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 41 \\ 94 \overline{)3854} \\ -376 \downarrow \\ \hline 94 \end{array}$$

$$\begin{array}{r} 798 \\ 84 \overline{)6798} \\ -756 \downarrow \\ \hline 672 \\ \underline{672} \\ 0 \end{array}$$

$$\begin{array}{r} 24 \\ 33 \overline{)792} \\ -66 \downarrow \\ \hline 132 \\ \underline{132} \\ 0 \end{array}$$

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## 1.1 Record and Practice Journal

Find the value of the expression. Use estimation to check your answer.

1.  $5947 + 2001$

**7948**

2.  $\begin{array}{r} 2587 \\ + 1654 \\ \hline \end{array}$

**4241**

3.  $5684 + 3118$

**8802**

4.  $1596 - 302$

**1294**

6.  $9564 - 7381$

**1983**

8.  $\begin{array}{r} 7094 \\ - 989 \\ \hline \end{array}$

**6105**

7.  $851 \div 37$

**23**

8.  $\frac{612}{68}$

**9**

9.  $8970 \div 345$

**26**

10.  $\frac{5424}{52}$

**104 R16 or**

**$104\frac{4}{13}$**

11.  $8549 \div 198$

**43 R35 or**

**$43\frac{35}{198}$**

12.  $74,386 \div 874$

**85 R96 or**

**$85\frac{48}{437}$**

13. Your family is traveling 345 miles to an amusement park. You have already traveled 131 miles. How many more miles must you travel to the amusement park?

**214 miles**

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Lesson 1.2

September 5, 2014

**Essential Question** How can you use repeated factors in  
real-life situations?

Lesson 1.2

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## Lesson Objective:

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## Self-EvaluationScale

Score	Description
4	I can teach other students how to use formal language to describe a power and look at the specific case of perfect squares.
3	I can use formal language to describe a power and look at the specific case of perfect squares.
2	I recognize, but still need help to use formal language to describe a power and look at the specific case of perfect squares.
1	I do not know how to use formal language to describe a power and look at the specific case of perfect squares.

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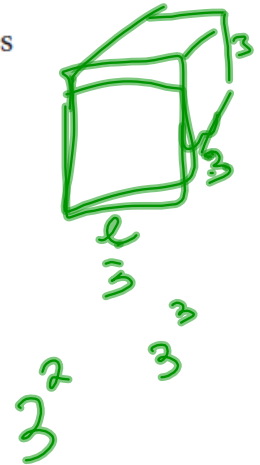
## Activity 1, 2, & 3

With a partner, work on Activity 1, 2, & 3 on pages 7, 8, & 9 of your Big Ideas Record and Practice Journal.

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A **power** is a product of repeated factors. The **base** of a power is the repeated factor. The **exponent** of a power indicates the number of times the base is used as a factor.

base →  $3^4$  =  $3 \cdot 3 \cdot 3 \cdot 3$  = 81  
exponent →  $3^4$   
3<sup>4</sup> =  $3 \cdot 3 \cdot 3 \cdot 3$  = 81  
 power                      3 is used as a factor 4 times.



Power	Words
$3^2$	Three <i>squared</i> , or three to the second
$3^3$	Three <u><i>cubed</i></u> , or three to the third
$3^4$	Three to the fourth <i>power</i>

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repeated factor = Base

## 1 Writing Expressions as Powers

Write each product as a power.

a.  $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$

$4^5$

Because 4 is used as a factor 5 times, its exponent is 5.

∴ So,  $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 4^5$ .

b.  $12 \times 12 \times 12$

Because 12 is used as a factor 3 times, its exponent is 3.

∴ So,  $12 \times 12 \times 12 = 12^3$ .



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## OnYourOwn

Write the product as a power.

1.  $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

2.  $15 \times 15 \times 15 \times 15$

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## 2 Finding Values of Powers

Find the value of each power.

a.  $7^2$

$7^2 = 7 \cdot 7$  Write as repeated multiplication.

$= 49$

Simplify.

b.  $5^3$

$5^3 = 5 \cdot 5 \cdot 5$

$= 125$

The square of a whole number is a **perfect square**.

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### 3 Identifying Perfect Squares

**Determine whether each number is a perfect square.**

**a.** 64

Because  $8^2 = 64$ , 64 is a perfect square.

**b.** 20

No whole number squared equals 20. So, 20 is not a perfect square.

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## OnYourOwn

Find the value of the power.

3.  $6^3$

$6 \cdot 6 \cdot 6$

4.  $9^2$

$9 \cdot 9$

5.  $3^4$

$3 \cdot 3 \cdot 3 \cdot 3$

6.  $18^2$

$18 \cdot 18$

Determine whether the number is a perfect square.

7. 25

8. 2

9. 99

10. 100

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# Assignment

Complete problems 4, 5, 14, 15, 25, 26, 36, 37, & 38 on pages 14 & 15 in your Big Ideas Text Book.

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# Homework

In your Big Ideas Record and Pracce  
Journal page 10.