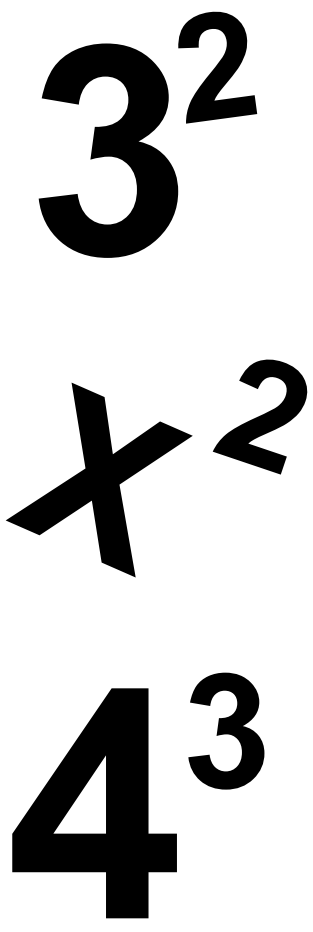
Name: _____ Date: _____

Puzzling Exponents

Powers



Keesha's class is writing a math puzzle book. Her group is writing a puzzle involving powers. The puzzle below is the one they printed in their book. Can you solve their puzzle?

Use your calculator to find the missing part of each equation. Then find the answer in the second, or answer, column. Write this letter on the line above the correct problem number to discover the truth about exponents!

1.	35^4 = _____	**A**	47
2.	____^{6} = 531,441	**E**	21
3.	19^{-} = 2,476,099	**F**	1,048,576
4.	____^{6} = 85,766,121	**L**	9
5.	16^5 = _____	**N**	56
6.	____^{2} = 471,969	**O**	687
7.	254^{-} = 64,516	**P**	2
8.	____^{4} = 4,879,681	**R**	126
9.	14^6 = _____	**S**	7,529,536
10.	____^{3} = 2,000,376	**T**	1,500,625
11.	174^{-} = 5,268,024	**U**	5
12.	78^3 = _____	**W**	474,552
13.	____^{4} = 9,834,496	**X**	3

___	___	___	___	___	___	___	___	___	___	___	___
4	11	7	6	13	4	13	1	9	8	10	4

___	___	___	___	___	___	___	___	!
7	6	12	4	10	5	3	2	

Thinking Cap

Work with a partner to make up your own puzzle involving powers. What strategies did you use? Why did you use the strategies you did?

Puzzling Exponents

Topic: Powers

Objective: To use the calculator to evaluate powers.

NCTM Standards: Reasoning, Number and Number Relationships

Powers

Using the Activity

Students use the calculator in this activity to evaluate powers.

- The x^y key can be used to evaluate all powers.
- The x^2 key can be used to raise numbers to the second power.

Example To find the answer to the first problem, enter 35 x^y 4 $=$. The answer is 1,500,625. Then look in the answer column to find the letter identified with this answer. Since the letter is T, place a T at the bottom of the page in each blank that is labeled with a 1.

Assessment The answer to each problem is listed in the answer column on the right side of the page. If students arrive at an answer that is not found in this column, ask them to complete the problem again.

Answers

1. *See example above.*

2. *9* x^y *6* $=$ *531,441; The letter is L.*

3. *19* x^y *5* $=$ *2,476,099; The letter is U.*

4. *21* x^y *6* $=$ *85,766,121; The letter is E.*

5. *16* x^y *5* $=$ *1,048,576, The letter is F.*

6. *687* x^y *2* $=$ *471,969; The letter is O.*

7. *254* x^y *2* $=$ *64,516; The letter is P.*

8. *47* x^y *4* $=$ *4,879,681; The letter is A.*

9. *14* x^y *6* $=$ *7,529,536; The letter is S.*

10. *126* x^y *3* $=$ *2,000,376; The letter is R.*

11. *174* x^y *3* $=$ *5,268,024; The letter is X.*

12. *78* x^y *3* $=$ *474,552, The letter is W.*

13. *56* x^y *4* $=$ *9,834,496; The letter is N.*

Thinking Cap Answers

Answers may vary. See students' work.