Lesson 7A	**Exponents** *Using prediction to determine the greater value of a pair of exponents.*
Relate	Introduce the lesson by asking students what skills they use to predict something will occur. Share with students that in today's lesson they will predict which number in a pair of exponents is greatest and determine reasons for their predictions.
Experience	Review with student the basic rules of exponents and how to read exponents. Example: 4^2 is read four to the power of 2 or four raised to the second power or four to the second. Explain that this means 4 x 4 or simplified to 16. Share with students that exponents provide a type of shorthand for calculating the multiplication of a number by itself several times. Have students practice reading and computing simple exponents from the text or sample items written on the board.
Apply	Make copies of the handout *Discovering Exponents*. Have students work individually to predict which exponent in each pair is of greatest value. When they are done, have them check their answers using a calculator and determine their accuracy.
Cooperate	Have the students divide into small groups and share their results. Have the students brainstorm reasons to support their correct predictions and document their ideas. Have students share with the class statements about their findings and discuss whether or not these findings can be used in the future to predict the greatest or least number.
Transfer	Ask why exponents are used instead of an actual number. Students should state that it is often easier to write a number with an exponent than the number itself, such as 5^{20} instead of 95,367,431,640,625. Have students brainstorm how exponents are used in real-life situations. Examples may include: measuring area (square feet), identifying the size of computer files, processors, and programs (a MegaByte is equivalent to 1024 KiloBytes), scientific calculations to interpret data, measuring volume and mass, calculating interest over time (compound interest uses logarithms – a special type of exponent), determining chemical concentrations. You may wish to share the following information with students regarding the size of certain "bits" or "bytes": 1 bit = a 1 or 0 (b) 8 bits = 1 byte (B) 1024 bytes = 1 Kilobyte (KB) 1024 Kilobytes = 1 Megabyte (MB)

1024 Megabytes = 1 Gigabyte (GB)
1024 Gigabytes = 1 Terabyte (TB)

Smart FTP Knowledge Base at http://www.smartftp.com/support/kb/bits-bytes-mega-giga-tera-f53.html

Discovering Exponents

For each pair of exponents listed below determine which is greater. First guess and then check your answer using the calculator, x^2 or y^x key.

	Guess	Check
1. 2^3 or 3^2		
2. 4^5 or 5^4		
3. 6^2 or 2^6		
4. 8^9 or 9^8		
5. 7^9 or 9^7		
6. 5^8 or 8^5		
7. 3^9 or 9^3		
8. 3^4 or 4^3		
9. 2^5 or 5^2		
10. 1^7 or 7^1		
11. 3^0 or 0^3		
12. 2^{-5} or 5^{-2}		
13. 9^{-3} or 3^{-9}		
14. 0^1 or 1^0		

Write five statements about your findings.

1.

2.

3.

4.

5.