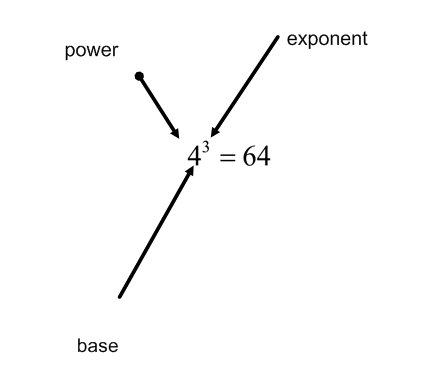
**4.2 Working with Exponents**

**PART A: Review**



What is the power in the example above? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the base? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the exponent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3 Power Rules**

When multiplying powers with the same base, add exponents.

**You try:**

When dividing powers with the same base, subtract the exponents.



**You try:**

To raise a power to a power, multiply exponents.

**You try:**

**PART B: Working with Negative and Zero Exponents**

Fill in the table below by continuing the pattern. DO NOT USE decimals, use FRACTIONS

|  |  |  |
| --- | --- | --- |
| Power | Power Evaluated | Pattern |
| 24 | 16 | 16 /2 = 8 |
| 23 | 8 | 8/2 = 4 |
| 22 | 4 |  |
| 21 | 2 |  |
| 20 |  |  |
| 2-1 |  |  |
| 2-2 |  |  |
| 2-3 |  |  |

|  |  |  |
| --- | --- | --- |
| Power | Power Evaluated | Pattern |
| 53 | 125 | 125/5 = 25 |
| 52 | 25 | 25/5 = 5 |
| 51 | 5 |  |
| 50 |  |  |
| 5-1 |  |  |
| 5-2 |  |  |
| 5-3 |  |  |

What do you notice about 20 and 50?

Use your calculator to evaluate 80 and 12460?

In general, any number raised to the power of zero is equal to \_\_\_\_\_\_\_\_.

How do 2-1 and 21 compare?

How do 5-1 and 51 compare?

How do 2-2 and 22 compare?

How do 5-2 and 52 compare?

Does having a negative exponent, make the answer negative?

**In general,**

**You try: If , then \_\_\_\_\_\_\_\_\_\_\_**

**Exercises:** Evaluate.

1. 5-3 =
2. (-4)-2 =
3. -3-4 =

(See page 219 to check your answers)

**PART C: Negative Exponents with FRACTIONAL bases.**

There is a faster way! Just flip the fraction base (take the reciprocal) and make the exponent positive.

**You try:**

Check your answer on page 220.

**PART D: Multi-step Problems**

Evaluate

**You try: .**

Check your answer on page 220.

**Homework: 1c,d,e; 2a,c,f; 4b,d,e; 5b,d,e; 6b,d,e; 7a,b,c; 8d,e,f;9, 11b,d; 13**