

Number Theory: Prime Factorization

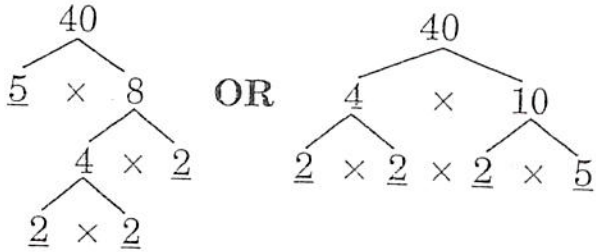
Draw a factor tree for each number. Then write the prime factorization. Use exponents when possible.

Prime factorization of a composite number is taking that number and expressing it as a product of all prime factors.

Factor tree:

Prime Factorization

$$2 \cdot 2 \cdot 2 \cdot 5 = 2^3 \cdot 5$$



MATH FACTS
The famous artist M. C. Escher used math concepts to create bizarre, yet beautiful, artistic images! His work is so detailed that it appears mind boggling to people when they first look at it.

TIP: Remember, the prime factorization must be written in order from smallest base up to largest base. $2^3 \cdot 5$, not $5 \cdot 2^3$

- | | |
|--------|--------|
| 1. 36 | 2. 84 |
| 3. 100 | 4. 64 |
| 5. 81 | 6. 144 |
| 7. 51 | 8. 240 |

MATH BRIDGE

Name: _____

Date: _____

Period: _____

Prime Factor Strings!

SPOT THE INTRUDER! Some of the factor strings below are not really PRIME factor strings. Find the intruders and circle them!

$2^2 \cdot 3 \cdot 5$

$4 \cdot 5 \cdot 7$

$2 \cdot 3^2 \cdot 5^3$

$2^2 \cdot 5 \cdot 9^2$

$3 \cdot 5^2 \cdot 11$

$5 \cdot 11 \cdot 12$

$2^4 \cdot 3 \cdot 5$

7^3

$2^8 \cdot 11$

$3^5 \cdot 13$

$3 \cdot 5^2$

$2^2 \cdot 4^2 \cdot 5^2$

$7^2 \cdot 13$

$7 \cdot 11 \cdot 13 \cdot 27$

WHAT'S MY PRODUCT? Where there are factors, there are products! Rewrite the following factor strings in EXPANDED FORM; then multiply all the factors to get a product.

1. $2^3 \cdot 7$

Expanded Form: _____

Product: _____

6. $2^2 \cdot 5^2$

Expanded Form: _____

Product: _____

11. $2^2 \cdot 7$

Expanded Form: _____

Product: _____

2. $2 \cdot 3 \cdot 7$

Expanded Form: _____

Product: _____

7. $3^2 \cdot 11$

Expanded Form: _____

Product: _____

12. $3^3 \cdot 11$

Expanded Form: _____

Product: _____

3. $2^2 \cdot 3^2$

Expanded Form: _____

Product: _____

8. $2^3 \cdot 3 \cdot 5$

Expanded Form: _____

Product: _____

13. $2^2 \cdot 19$

Expanded Form: _____

Product: _____

4. $2^3 \cdot 11$

Expanded Form: _____

Product: _____

9. $2 \cdot 3^2$

Expanded Form: _____

Product: _____

14. 3^4

Expanded Form: _____

Product: _____

5. $3^2 \cdot 5$

Expanded Form: _____

Product: _____

10. $2^2 \cdot 3 \cdot 5$

Expanded Form: _____

Product: _____

15. $2^5 \cdot 3$

Expanded Form: _____

Product: _____