

Name:

## Prime Factorization Worksheet

---

1. Find the prime factorization for the following numbers.

a. 55: \_\_\_\_\_

b. 89: \_\_\_\_\_

c. 1540: \_\_\_\_\_

2. Consider the number  $A = 2^3 \times 5^2 \times 7$ . To answer the following, try to use the prime factorization.

a. Is A divisible by 7? Explain.

b. Is A divisible by 3? Explain.

c. Is A divisible by 35? Explain.

d. Is A divisible by 21? Explain.

e. Is  $2^4 \times 3 \times 5^2 \times 7$  a multiple or a factor of A? Explain.

f. Is  $2^2 \times 3 \times 5^2 \times 7$  a multiple or a factor of A? Explain.

g. Is  $2^2 \times 5^2 \times 7$  a multiple or a factor of A? Explain.

Name:

3. Consider the mega-sized number  $M = 3^5 \times 5^2 \times 7 \times 11^5 \times 13^5$ .
- Is  $M$  divisible by 7? Explain.
  - Is  $M$  divisible by 2? Explain.
  - Is  $M$  divisible by 28? Explain.
  - Is  $M$  divisible by 55? Explain.
  - Is  $M$  divisible by 45? Explain.
  - Is  $3^4 \times 5 \times 7 \times 11^4 \times 13$  a multiple of  $M$ , a factor of  $M$ , or neither? Explain.
  - Is  $3^7 \times 5^3 \times 7 \times 11^5 \times 13^5$  a multiple of  $M$ , a factor of  $M$ , or neither? Explain.
  - Is  $3^3 \times 5 \times 7^3 \times 11^5 \times 13^5$  a multiple of  $M$ , a factor of  $M$ , or neither? Explain.