

Name: _____

Date: _____

Divisibility Rules

| A number is divisible by . . . | Divisible | Not Divisible |
|---|----------------|----------------|
| 2 if the last digit is even (0, 2, 4, 6, or 8). | 3,97 8 | 4,97 5 |
| 3 if the sum of the digits is divisible by 3. | 315 | 139 |
| 4 if the last two digits form a number divisible by 4. | 8,5 12 | 7,5 18 |
| 5 if the last digit is 0 or 5. | 14,97 5 | 10,97 8 |
| 6 if the number is divisible by both 2 and 3 | 48 | 20 |
| 9 if the sum of the digits is divisible by 9. | 711 | 93 |
| 10 if the last digit is 0. | 15,99 0 | 10,53 6 |

| Number | Digit Sum | Circle the Factors | Divisible by: |
|-------------|-----------|-----------------------|---------------|
| 102 | | 2 3 4 5 6 9 10 | |
| 144 | | 2 3 4 5 6 9 10 | |
| 150 | | 2 3 4 5 6 9 10 | |
| 168 | | 2 3 4 5 6 9 10 | |
| 316 | | 2 3 4 5 6 9 10 | |
| 1470 | | 2 3 4 5 6 9 10 | |
| 7120 | | 2 3 4 5 6 9 10 | |

Prime Factorization

A **prime number** is a whole number greater than 1 that has exactly two factors, 1 and itself.

A **composite number** is a whole number greater than 1 that has more than two factors.

| Whole Numbers | Factors |
|---------------|-------------|
| 2 | 1, 2 |
| 3 | 1, 3 |
| 5 | 1, 5 |
| 7 | 1, 7 |
| 4 | 1, 2, 4 |
| 6 | 1, 2, 3, 6 |
| 8 | 1, 2, 4, 8 |
| 9 | 1, 3, 9 |
| 10 | 1, 2, 5, 10 |
| 0 | many |
| 1 | 1 |

The numbers 0 and 1 are neither prime nor composite.

Find the prime factorization of each number.

Example 1: 44

Example 2: 210

Example 3: 64

Example 4: 98

Example 5: 180

Example 6: 23

Replace each ■ with prime factors to make a true sentence.

35. $2^3 \cdot \blacksquare \cdot 11 = 616$

36. $2 \cdot \blacksquare \cdot 5^2 = 450$

37. $3 \cdot 2^4 \cdot \blacksquare = 1,200$

38. $2^2 \cdot \blacksquare \cdot 3 = 1,500$