

1.4 Prime Factorization

The prime factorization of a composite number is the number written as a product of its prime numbers.

Factor Tree **Ex.** 60 $60 = 2 \cdot 2 \cdot 3 \cdot 5$
 or in exponential form = $60 = 2^2 \cdot 3 \cdot 5$

```

    60
    ^
   10 * 6
  ^   ^
 5 * 2 3 * 2
  
```

1) $20 = 2 \cdot 2 \cdot 5$
 or $2^2 \cdot 5$

```

    20
    ^
   5 * 4
      ^
     2 * 2
  
```

2) $88 = 2^3 \cdot 11$

```

    88
    ^
   8 * 11
    ^
   4 * 2
    ^
   2 * 2
  
```

80

```

    80
    ^
   40 * 2
    ^
   20 * 2
    ^
   10 * 2
    ^
   5 * 2
  
```

3) 90

```

    90
    ^
   10 * 9
  ^   ^
 2 * 5 3 * 3
  
```

4) $25 = 5^2$

```

    25
    ^
   5 * 5
  
```

7.) 13 Prime

```

    13
    ^
   1 * 13
  
```

5) 18 = $2 \cdot 3^2$

```

    18
    ^
   6 * 3
  ^   ^
 2 * 3 3
  
```

6) $54 = 2 \cdot 3^3$

```

    54
    ^
   9 * 6
  ^   ^
 3 * 3 3 * 2
  
```

8) 80 = $2^4 \cdot 5$

```

    80
    ^
   10 * 8
  ^   ^
 2 * 5 4 * 2
    ^
   2 * 2
  
```