# Prime Factorization

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## Mathematics 9
## Prime Factorization

A. Elementary Short Division Review

In Elementary School you were taught how to do short division of numbers.

$$3\overline{)135}\quad 45$$

1) $4\overline{)92}\quad 23$

2) $5\overline{)260}\quad 52$

3) $8\overline{)992}\quad 124$

4) $12\overline{)4092}\quad 341$

B. Prime Numbers and Composite Numbers

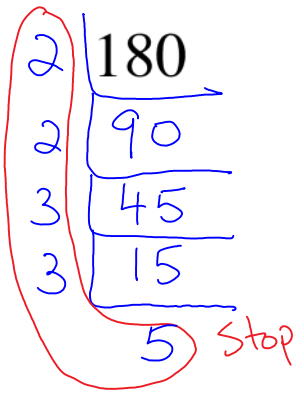
A number which is only divisible by one and itself (two divisors) is called a **prime number**. A number which has more than two factors is called a **composite number**.

Can you list the first 10 prime numbers?

2, 3, 5, 7, 11, 13, 17, 19, 23, 29 ...

C. Prime Factorization

Prime Factorization is a method of breaking a number down into the prime numbers which multiply to the given number. We can use a form of elementary short division to help us out.




Upside down division

$180 = 2 \times 2 \times 3 \times 3 \times 5$

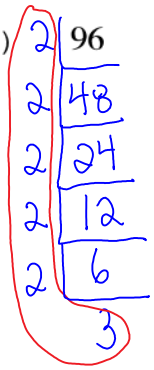
or

$2^2 \times 3^2 \times 5$

Factor the following numbers using Prime Factorization.

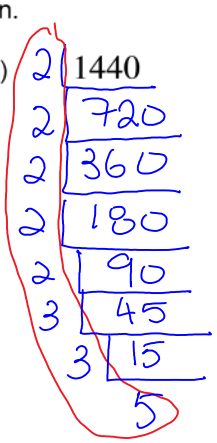
48
2 | 96

1)




$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

2)




720
2 | 1440
360
2 | 720

$1440 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$

Assignment: Prime Factorization Assignment #1 – 16

Mathematics 9
Prime Factorization
Assignment

A. Factor the following numbers using Prime Factorization.

1. 42

2. 72

3. 90

4. 100

5. 156

6. 168

7. 225

8. 252

9. 378

10. 459

11. 525

12. 550

13. 588

14. 756

15. 900

16. 1575