Finding GCF's and LCM's and some Applications

$2lmn + 3lm$

$1lm$

lm

$6pq$ $\quad$ $4p^2q$

$2\ 3\ p\ q$ $\quad$ $2\ 2\ p\ p\ q$

$2\ 3\ p\ q$

$2\ 2\ p\ p\ q$

$\boxed{2pq}$

$6x^4y^3z^2$

$2\ 3xxxxyyyzz$

$8x^5y^2z$

$2\ 4xxxxxyyz$

$2\ 22xxxxxyyz$

$2\ 3xxxxyyyzz$

$2\ 22xxxxxyyz$

$2x^4y^2z$

Finding the Least Common Multiple of Two Numbers

We are looking for a multiple. The multiple must be common to both numbers. We need to pick the least of such common multiples.

MULTIPLES

Give the first 5 multiples for:

5 10 15 20 25 30

12 24 36 48 60 72

21 42 63 84 105

The LCM of 12 and 15

Method 1

1) List the first few multiples of each number.

	1 x 12	2 x 12	3 x 12							
12:	12	24	36	48	60	72	84	96	108	120
15:	15	30	45	60	75	90	105	120	135	

2) Circle the common multiples.

3) The least of these will be your Least Common Multiple:

60

The LCM of 12 and 15.

Method 2

1) Prime factor each number.

12 = 2 • 2 • 3

15 = 5 • 3

LCM: 3x2x2x5

60

2) Circle each pair of common prime factors.

3) Circle each remaining prime factor.

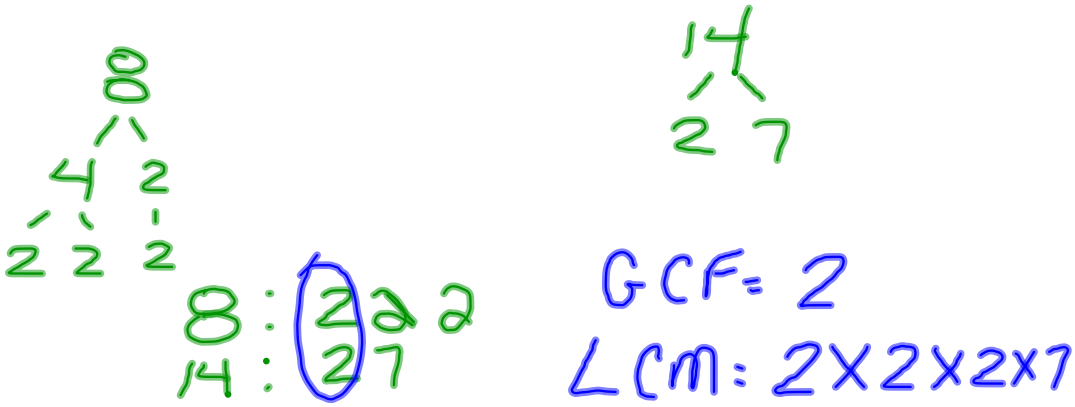
4) Multiply together one factor from each circle to get the

Least Common Multiple : **3 • 2 • 2 • 5 = 60**

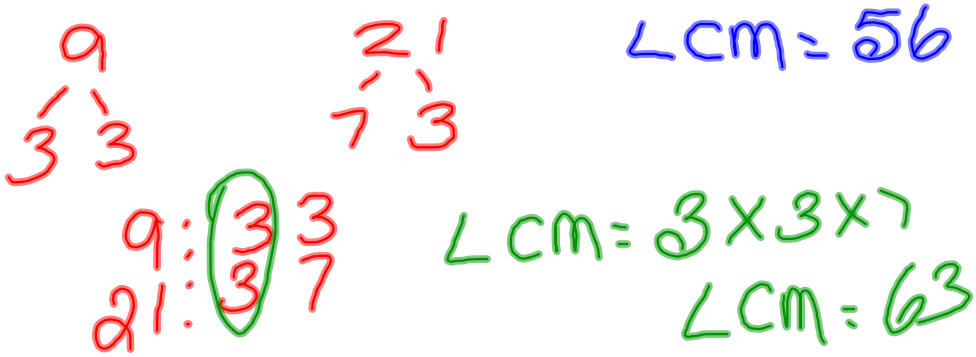
Note that the common factor, 3, was only used once.

LCM

8 and 14



9 and 21



16 and 24

Make a factor tree and find the GCF, LCM, and all the factors of each number.

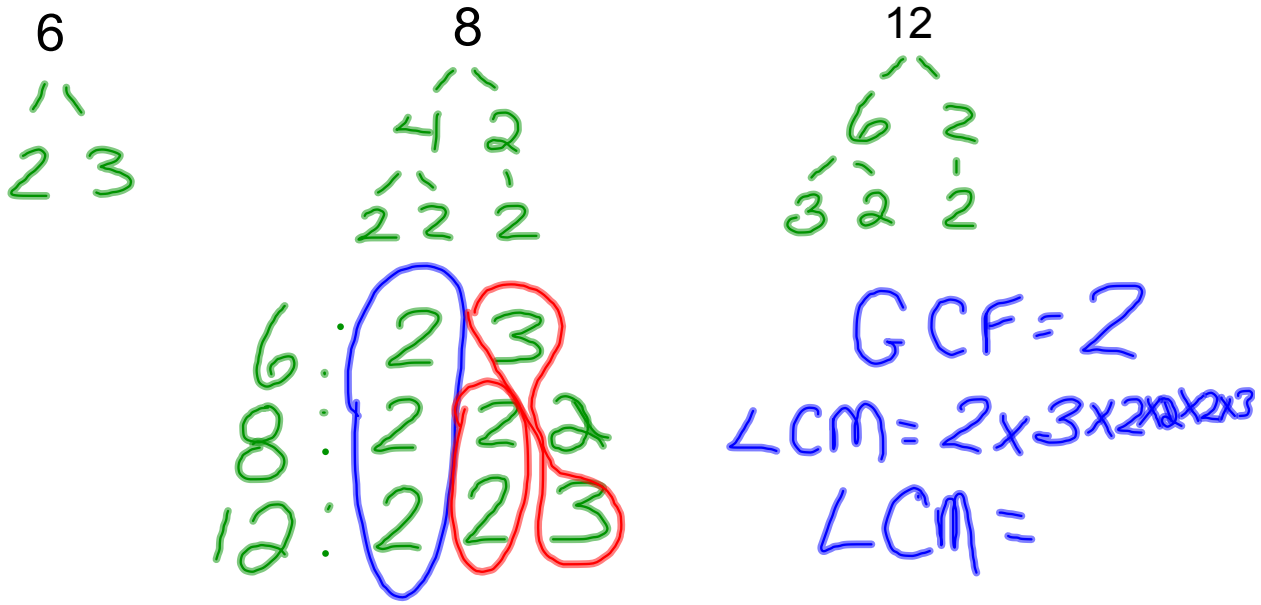
1. 40 & 60

2. 24 & 30

3. 10 & 45

4. 21 & 35

GCF and LCM with 3 numbers



15

3 5

20

2 10

2 2 5

30

15 2

3 5 2

15 : 3 5

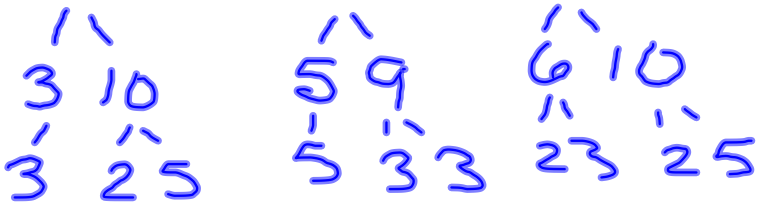
20 : 2 2 5

30 : 2 3 5

GCF = 5

LCM = 60

30 45 60



30: 2 3 5

45: 3 3 5

60: 2 2 3 5

GCF: 15

LCM = 180

Determine the GCF of each pair of monomials:

a) $4a, 6a$ b) $2x^2,\ 3x$ c) $12abc, 3abc$

d) $9mn^2, 8mn$ e) $6x^2y^2, 9xy$