

The Least Common Multiple

Determine the least common multiple of 18, 20, and 30
using prime factorization

Step #1 Write the prime factorization of each number.

Step #2 Express each number as a product of powers.

Step #3 Circle the greatest power of each prime number.

Step #1 Write the prime factorization of each number.

$$18 \Rightarrow 2 \times 3 \times 3$$

$$20 \Rightarrow 2 \times 2 \times 5$$

$$30 \Rightarrow 2 \times 3 \times 5$$

Step #2 Express each number as a **product of powers.**

$$18 \Rightarrow 2 \cdot 3 \cdot 3 = 2 \cdot 3^2$$

$$20 \Rightarrow 2 \cdot 2 \cdot 5 = 2^2 \cdot 5$$

$$30 \Rightarrow 2 \cdot 3 \cdot 5$$

Step #3 Circle the greatest power of each prime number.

$$18 \Rightarrow 2 \cdot 3 \cdot 3 = 2^1 \cdot 3^2$$

$$20 \Rightarrow 2 \cdot 2 \cdot 5 = 2^2 \cdot 5^1$$

$$30 \Rightarrow 2 \cdot 3 \cdot 5 = 2^1 \cdot 3^1 \cdot 5^1$$

$$2^2 \times 3^2 \times 5^1$$

$$4 \times 9 \times 5 = 180$$

Solution: $2^2 \cdot 3^2 \cdot 5 = 4 \cdot 9 \cdot 5$
 $= 180$

Determine the least common multiple of 120 & 309

$$120 \Rightarrow 2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3^1 \times 5^1$$

$$309 \Rightarrow 3 \times 103 = 3^1 \times 103^1$$

$$2^3 \times 3^1 \times 5^1 \times 103^1$$

$$8 \times 3 \times 5 \times 103$$

$$= 12360$$



Questions:

4 a,c,f

5 a,c,f

6 a,c,e

7

8 a,c,e,f

9 a,b,c

10 a,c,e,f

11 a,c

12