Topic: Prime factorization and product of primes

Question: What is the prime factorization of 120?

Answer choices:

A $2 \cdot 2 \cdot 5$

B $2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$

C $2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$

D $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$

Solution: C

We need to find the product of prime numbers that make up 120.

$$120$$

$$12 \cdot 10$$

$$6 \cdot 2 \cdot 5 \cdot 2$$

$$3 \cdot 2 \cdot 2 \cdot 5 \cdot 2$$

Now we'll collect the factors in ascending order.

$$2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$$

We can also write it as

$$2^3 \cdot 3 \cdot 5$$

Topic: Prime factorization and product of primes

Question: What is the prime factorization of 300?

Answer choices:

A $2 \cdot 3 \cdot 3 \cdot 5$

B $2 \cdot 2 \cdot 3 \cdot 3 \cdot 5$

C $2 \cdot 2 \cdot 3 \cdot 5$

D $2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$

Solution: D

We need to find the product of prime numbers that make up 300.

$$300$$

$$30 \cdot 10$$

$$6 \cdot 5 \cdot 5 \cdot 2$$

$$3 \cdot 2 \cdot 5 \cdot 5 \cdot 2$$

Now we'll collect the factors in ascending order.

$$2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$$

We can also write it as

$$2^2 \cdot 3 \cdot 5^2$$

Topic: Prime factorization and product of primes

Question: Which factorization is complete?

Answer choices:

A $100 = 10^2$

B $100 = 4 \cdot 25$

C $100 = 10 \cdot 10$

D $100 = 2^2 \cdot 5^2$

Solution: D

If we want to completely factor 100, the factorization breaks down as

$$100$$

$$50 \cdot 2$$

$$25 \cdot 2 \cdot 2$$

$$5 \cdot 5 \cdot 2 \cdot 2$$

Now we'll collect the factors in ascending order.

$$2 \cdot 2 \cdot 5 \cdot 5$$

We can also write it as

$$2^2 \cdot 5^2$$