

Expressing prime factors using exponents

Grade 6 Factoring Worksheet

Write each number as a product of prime factors. Then write the answer using exponents.

Number	Prime factorization	Exponent form
1) 144		
2) 150		
3) 168		
4) 180		
5) 196		
6) 210		
7) 216		
8) 225		
9) 240		
10) 252		
11) 270		
12) 294		

Answers

Number	Prime factorization	Exponent form
1) 144	$2 \times 2 \times 2 \times 2 \times 3 \times 3$	$2^4 \times 3^2$
2) 150	$2 \times 3 \times 5 \times 5$	$2 \times 3 \times 5^2$
3) 168	$2 \times 2 \times 2 \times 3 \times 7$	$2^3 \times 3 \times 7$
4) 180	$2 \times 2 \times 3 \times 3 \times 5$	$2^2 \times 3^2 \times 5$
5) 196	$2 \times 2 \times 7 \times 7$	$2^2 \times 7^2$
6) 210	$2 \times 3 \times 5 \times 7$	$2 \times 3 \times 5 \times 7$
7) 216	$2 \times 2 \times 2 \times 3 \times 3 \times 3$	$2^3 \times 3^3$
8) 225	$3 \times 3 \times 5 \times 5$	$3^2 \times 5^2$
9) 240	$2 \times 2 \times 2 \times 2 \times 3 \times 5$	$2^4 \times 3 \times 5$
10) 252	$2 \times 2 \times 3 \times 3 \times 7$	$2^2 \times 3^2 \times 7$
11) 270	$2 \times 3 \times 3 \times 3 \times 5$	$2 \times 3^3 \times 5$
12) 294	$2 \times 3 \times 7 \times 7$	$2 \times 3 \times 7^2$