

Homework

(vii) Find the least number by which 1323 must be multiplied so that the product is a perfect cube.

sol: The prime factors of 1323 are $= 3 \times 3 \times 3 \times 7 \times 7$
 $= 3 \times 3 \times 3 \times 7 \times 7$ clearly 1323 must be multiplied by 7.

(viii) Find the smallest number by which 8768 must be divided so that the quotient is a perfect cube?

sol: The prime factors of 8768 are
 $= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 137$
 $= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times 137$
 clearly, 8768 must be divided by 137

2	8768
2	4384
2	2192
2	1096
2	548
2	274
137	137
	1

(ix) Find the smallest number by which 27783 be multiplied by to get a perfect ^{cube} number.

sol: The prime factors of 27783 are
 $= 3 \times 3 \times 3 \times 3 \times 7 \times 7 \times 7$
 $= (3 \times 3 \times 3) \times (7 \times 7 \times 7) \times 3$

3	27783
3	9261
3	3087
3	1029
7	343
7	49
7	7

clearly, 27783 must be multiplied by $3 \times 3 = 9$

(x) With what least number must 8640 be divided so that the quotient is a perfect cube?

sol: The prime factors of 8640 are
 $= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 5$
 $= (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (3 \times 3 \times 3) \times 5$
 clearly, 8640 must be divided by 5

Prime factors of 8640

2	8640
2	4320
2	2160
2	540
2	270
3	135
3	45
3	5

Q1) What is the smallest number that must be multiplied to 77175 to make it a perfect cube?

Sol: The prime factors of 77175 are

$$= 3 \times 3 \times 5 \times 5 \times 7 \times 7 \times 7$$

$$= (7 \times 7 \times 7) \times 3 \times 3 \times 5 \times 5$$

clearly, 77175 must be

multiplied by $3 \times 5 = 15$

3	77175
3	25725
5	8575
5	1715
7	343
7	49
7	7
	1