THIRD SPACE LEARNING

Prime Factors Worksheet

Number and Quantity

Grades 6 to 8

Skill Questions

Name: .....

Date: .....

1 What is 18 as a product of its prime factors?

Answer

2 Show the prime factors of 75.

Answer

3 What are the prime factors of 42?

Answer

4 What is 16 as a product of its prime factors?

Answer

5 Express 63 as a product of its prime factors

Answer

6 Express the number 246 as a product of prime factors.

Answer

7 Using the fact that $2 \times 3 = 6$, what is 60 as a product of its prime factors?

Answer

8 Using the fact that $2 \times 3 = 6$, what is 120 as a product of its prime factors?

Answer

9 Using the fact that $2 \times 3 \times 5 = 30$, what is 15 as a product of its prime factors?

Answer

10 Using the fact that $2 \times 3 \times 5 = 30$, what is 120 as a product of its prime factors?

Answer

Applied Questions

11 a Write 860 as a product of prime factors. Express your answer in index form.

Answer

b Find the lowest number by which 860 would need to be multiplied to give a square number.

Answer

12 a Write 2,464 as a product of prime factors. Express your answer in index form.

Answer

b Find the lowest number by which 2,464 would need to be multiplied by to give a cube number.

Answer

13 If $A = 3^a \times 5^b$ write the following as a product of prime factors.

a Write 860 as a product of prime factors. Express your answer in index form.

Answer

b Find the lowest number by which 860 would need to be multiplied to give a square number.

Answer

c Find the lowest number by which 860 would need to be multiplied to give a square number.

Answer

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14 A number is written as a product of its prime factors as $2^3 \times 3 \times 5$. Work out the number.

Answer

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15 By using their prime factor decomposition, decide whether the following numbers are square, cube or neither.

a 2×3

Answer

b $3^3 \times 7$

Answer

c $3^2 \times 7^2$

Answer

d $2^3 \times 5^3$

Answer

e $2^4 \times 5^4 \times 7^4$

Answer

f $2^6 \times 5^6 \times 7^6$

Answer

Answers

Question number	Question	Answers	Standard
1	What is 18 as a product of its prime factors?	$18 = 2 \times 3 \times 3$ $18 = 2 \times 3^2$	6.NS.B.2 6.EE.A.1
2	Show the prime factors of 75.	3 and 5	6.NS.B.2 6.EE.A.1
3	What are the prime factors of 42?	2, 3 and 7	6.NS.B.2 6.EE.A.1
4	What is 16 as a product of its prime factors?	$16 = 2 \times 2 \times 2 \times 2$ $16 = 2^4$	6.NS.B.2 6.EE.A.1
5	Express 63 as a product of its prime factors.	$63 = 3 \times 3 \times 7$ $63 = 3^2 \times 7$	6.NS.B.2 6.EE.A.1
6	Express the number 246 as a product of prime factors.	$246 = 2 \times 3 \times 41$	6.NS.B.2 6.EE.A.1
7	Using the fact that $2 \times 3 = 6$, what is 60 as a product of its prime factors?	$60 = 6 \times 10$ $60 = 2^2 \times 3 \times 5$	6.NS.B.2 6.EE.A.1
8	Using the fact that $2 \times 3 = 6$, what is 120 as a product of its prime factors?	$120 = 6 \times 20$ $120 = 2^3 \times 3 \times 5$	6.NS.B.2 6.EE.A.1
9	Using the fact that $2 \times 3 \times 5 = 30$, what is 15 as a product of its prime factors?	$15 = 30 \div 2$ $15 = 3 \times 5$	6.NS.B.2 6.EE.A.1
10	Using the fact that $2 \times 3 \times 5 = 30$, what is 120 as a product of its prime factors?	$120 = 30 \times 4$ $120 = 2^3 \times 3 \times 5$	6.NS.B.2 6.EE.A.1

Question number	Question	Answers	Standard
11	a) Write 860 as a product of prime factors. Express your answer in index form. b) Find the lowest number by which 860 would need to be multiplied to give a square number.	a) $2^2 \times 5 \times 43$ b) $5 \times 43 = 215$	6.NS.B.2 6.EE.A.1
12	a) Write 2,464 as a product of prime factors. Express your answer in index form. b) Find the lowest number by which 2,464 would need to be multiplied by to give a cube number.	a) $2^5 \times 7 \times 11$ b) $2 \times 7^2 \times 11^2 = 11{,}858$	6.NS.B.2 6.EE.A.1
13	If $A = 3^a \times 5^b$ write the following as a product of prime factors. a) 3A b) 5A c) 25A	a) $3A = 3^{a+1} \times 5^b$ b) $5A = 3^a \times 5^{b+1}$ c) $25A = 3^a \times 5^{b+2}$	6.NS.B.2 6.EE.A.1
14	A number is written as a product of its prime factors as $2^3 \times 3 \times 5$. Work out the number.	$8 \times 3 \times 5 = 120$	6.NS.B.2 6.EE.A.1
15	By using their prime factor decomposition, decide whether the following numbers are square, cube or neither. a) 2×3 b) $3^3 \times 7$ c) $3^2 \times 7^2$ d) $2^3 \times 5^3$ e) $2^4 \times 5^4 \times 7^4$ f) $2^6 \times 5^6 \times 7^6$	a) Neither b) Neither c) Square d) Cube e) Square f) Square and Cube	6.NS.B.2 6.EE.A.1

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