Y7H U13 Prime Factor Decomposition. Knowledge Organiser

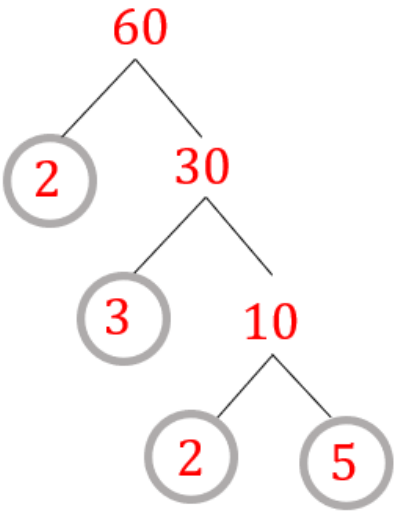
A prime number has exactly 2 factors, one and the number itself.

A compound integer is a number that can be written as the product of prime factors.

Use index notation for prime factorisation

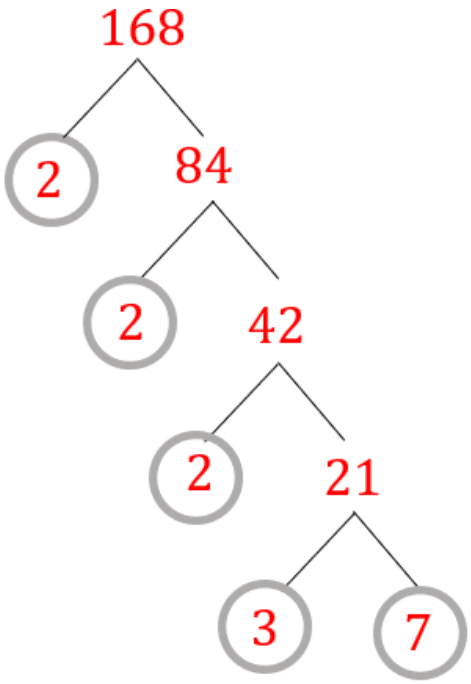
Write the following numbers as the product of their prime factors.
Give your answer in index form.

a) 60



$60 = 2^2 \times 3 \times 5$

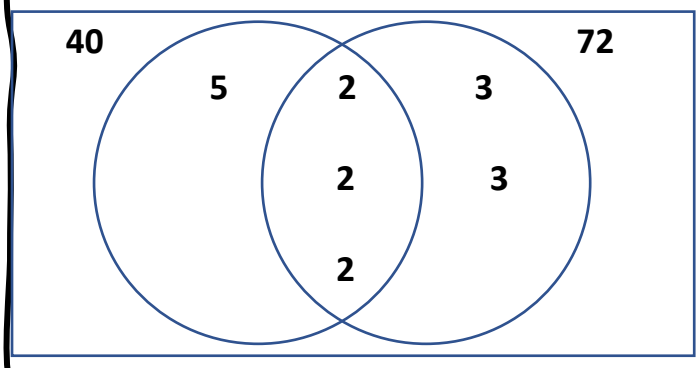
b) 168



$168 = 2^3 \times 3 \times 7$

Find the HCF from a Venn Diagram

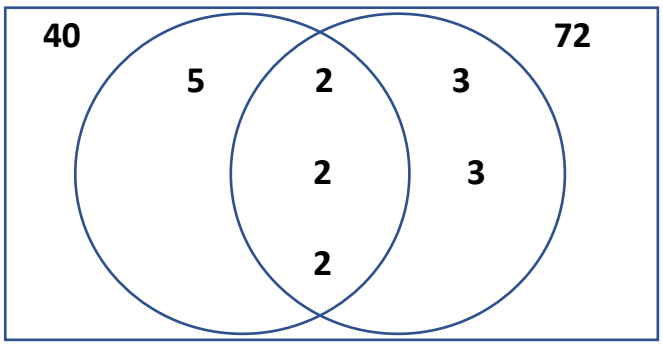
Find the HCF from the following Venn diagram.



HCF = 2 × 2 × 2 = 8

Find the LCM from a Venn Diagram

Find the LCM from the following Venn diagram.



LCM = 2 × 2 × 2 × 3 × 3 × 5 = 360

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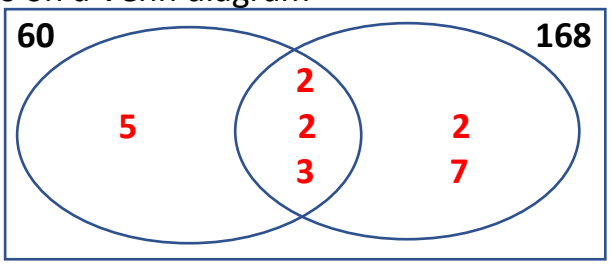
Draw a Venn diagram to show prime factors of 2 numbers

Write the following numbers as the product of their prime factors.

a) 60 b) 168

$60 = 2^2 \times 3 \times 5$ **$168 = 2^3 \times 3 \times 7$**

Display these numbers on a Venn diagram



Use prime factor decomposition to find other facts

Use prime factors to find the HCF and LCM of 60 and 168

(Use Venn diagram above)

HCF = $2 \times 2 \times 3 = 12$ **LCM = $2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$**

Write down 3 common multiples of 84 and 140

840, 1680, 2520 … (multiples of 840)

Written as the product of its prime factors, $252 = 2^2 \times 3^2 \times 7$

What is the smallest number you could multiply 252 by to create a square number?

7 (all prime factors have an EVEN index for a square number)

Sparx
Prime factorisation M108
HCF from Venn diagram M698
LCM from Venn diagram M227
Factors from Venn diagram M365
Use prime factors M365

Use prime factors to find other factors

Written as the product of its prime factors,
$450 = 2 \times 3^2 \times 5^2$

Use the prime factors of 450 to write all the factors of 450.

1 and 450
2 and 225 (2 and $3^2 \times 5^2$)
3 and 150 (3 and $2 \times 3 \times 5^2$)
5 and 90 (5 and $2 \times 3^2 \times 5$)
6 and 75 (2×3 and 3×5^2)
9 and 50 (3^2 and 2×5^2)
10 and 45 (2×5 and $3^2 \times 5$)
15 and 30 (3×5 and $2 \times 3 \times 5$)
18 and 25 (2×3^2 and 5^2)