Highest Common Factor

LO: Find the highest common factor using prime factorisation.

12 September 2025

Week 3, Day 5

Mental Maths

List down the factors of each given numbers.

1. Factors of 64:	2	3	4	18	20	36	
2. Factors of 8:	1	3	4	6	7	8	
3. Factors of 100:	3	4	5	15	30	35	100
4. Factors of 54:	1	3	7	12	18	26	
5. Factors of 17:	1	3	7	13	14	17	
6. Factors of 90:	4	6	8	15	18	60	
7. Factors of 75:	1	3	7	15	20	35	75

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Mental Math - Answers

Answers

1. Factors of 64:	**2**	3	**4**	18	20	36	
2. Factors of 8:	**1**	3	**4**	6	7	**8**	
3. Factors of 100:	3	**4**	**5**	15	30	35	**100**
4. Factors of 54:	**1**	**3**	7	12	**18**	26	
5. Factors of 17:	**1**	3	7	13	14	**17**	
6. Factors of 90:	4	**6**	8	**15**	**18**	60	
7. Factors of 75:	**1**	**3**	7	**15**	20	35	**75**

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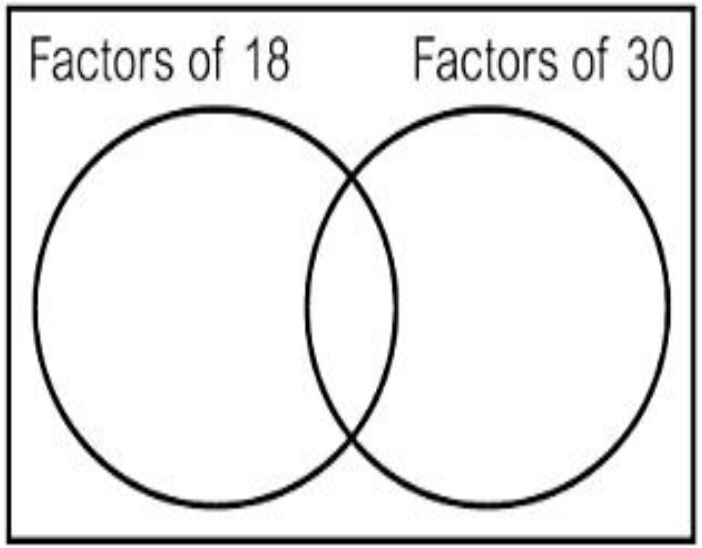
Starter

a Write the factors of 18 and 30 using this Venn diagram.

b What is the highest common factor (HCF) of 18 and 30?



Highest Common Factor

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GCSE/iGCSE Assessment Objective Specification – Foundation/Higher

- use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property

G	use the terms 'odd', 'even', 'prime numbers', 'factors' and 'multiples'
H	identify prime factors, common factors and common multiples

E	find highest common factors (HCF) and lowest common multiples (LCM)

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	use the terms 'odd', 'even', 'prime numbers', 'factors' and 'multiples'
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Highest Common Factor

LO: Find the highest common factor using prime factorisation.

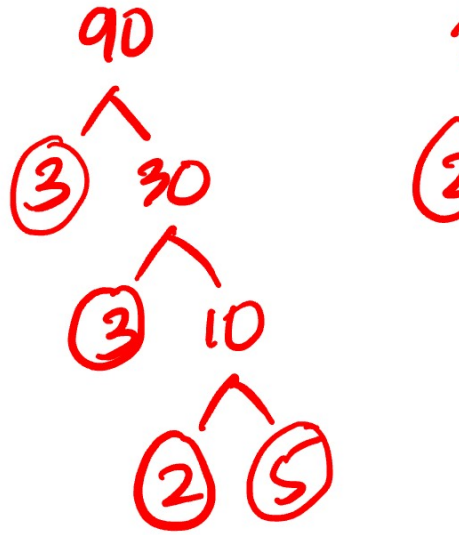
Find the highest common factor of 90 and 252.

05:00

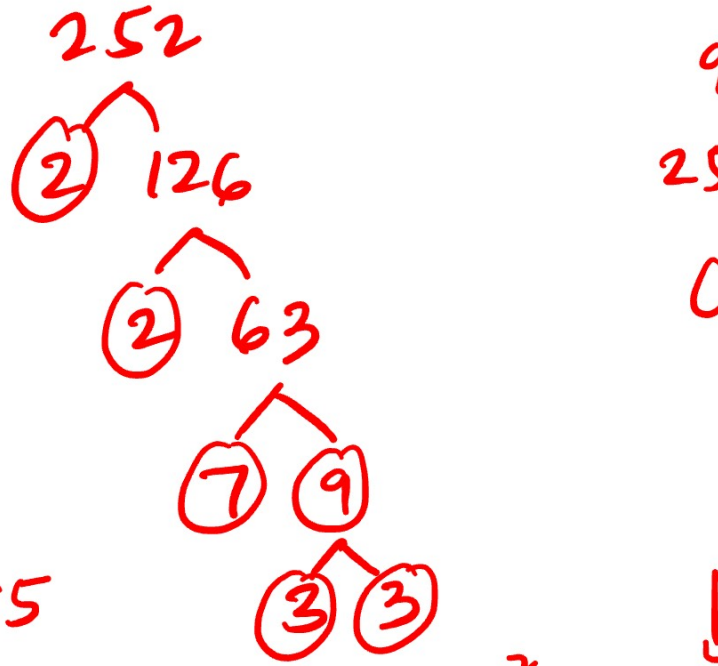
Highest Common Factor

LO: Find the highest common factor using prime factorisation.

Find the highest common factor of 90 and 252.



$90 = 2 \times 3^2 \times 5$



$252 = 2^2 \times 3^2 \times 7 \times 9$

$90 = 2 \times 3^2 \times 5$

$252 = 2^2 \times 3^2 \times 7 \times 9$

Common : 2×3^2

HCF = 2×3^2

$= 2 \times 9$

HCF = 18

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use the terms 'odd', 'even', 'prime numbers', 'factors' and 'multiples'	
H identify prime factors, common factors and common multiples	**F** find highest common factors (HCF) and lowest common multiples (LCM)

Core Task

LO: Find the highest common factor using prime factorisation.

10:00

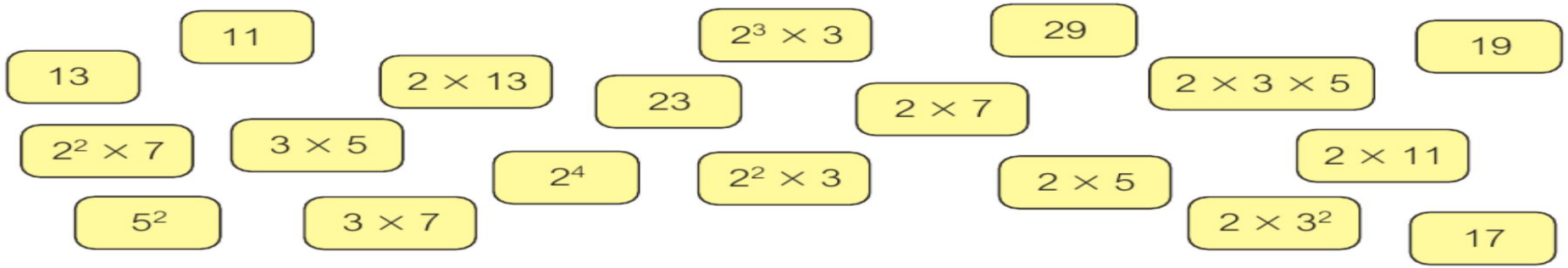
TASK 1

Use prime factor decomposition to find the HCF of each pair of numbers.

a 60 and 84
b 90 and 210
c 42 and 105
d 99 and 165

TASK - 2

Problem-solving Here are some prime factor decomposition cards.



The cards represent the numbers from 10 to 30.
Two of the cards are missing.
What is the prime factor decomposition on the missing cards?

TASK 3

Problem-solving Kyle works out that the HCF of two numbers is $2^2 \times 3^2 = 36$.
What two numbers might Kyle have been using?
Discussion What method did you use to solve this problem?

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Extension

Olivia thinks of two numbers.
The lowest common multiple (LCM) of the two numbers is 36.
The highest common factor (HCF) of the two numbers is 3.
Both numbers are less than 15.
Write down two possible numbers that Olivia could be thinking of.

Niamh thinks of two numbers.
The highest common factor (HCF) of the two numbers is 8.
The lowest common multiple (LCM) of the two numbers is a multiple of 5.
Write down two possible numbers that Niamh could be thinking of.

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Plenary

Bottles of Transum Tonic Water come in packs of 6, 9, and 20.

(a) Which packs would you buy to get a total of 21 bottles?

(b) Which packs would you buy to get a total of 35 bottles?

(c) Is it possible to buy a total of 13 bottles?

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HOW CONFIDENT ARE YOU ABOUT TODAY's TOPIC?

S- secure

M- Met

W- Working towards