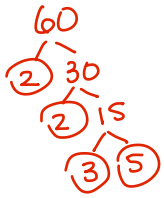
HCF & LCM

Task 1

1) Write 36 as a product of its prime factors.

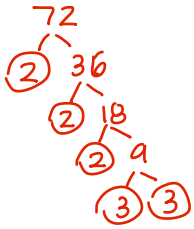
$2^2 \times 3^2$

2) Write 60 as a product of its prime factors.



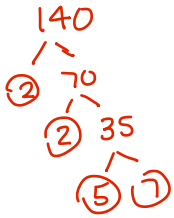
$2^2 \times 3 \times 5$

3) Write 72 as a product of its prime factors.



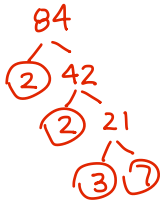
$2^3 \times 3^2$

4) Write 140 as a product of its prime factors.



$2^2 \times 5 \times 7$

5) Write 84 as a product of its prime factors.



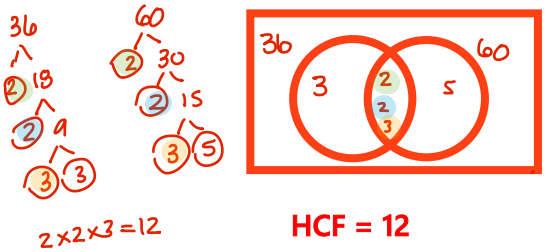
$2^2 \times 3 \times 7$

6) Write 66 as a product of its prime factors.

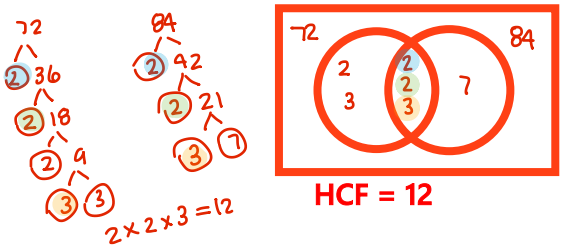
$2 \times 3 \times 11$

Task 2

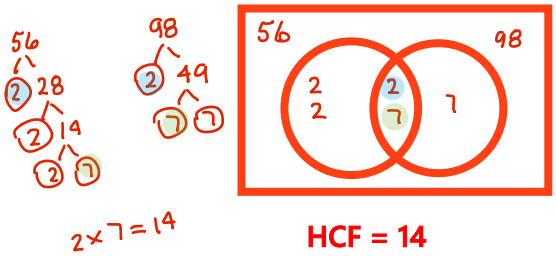
7) Find the HCF of 36 and 60.



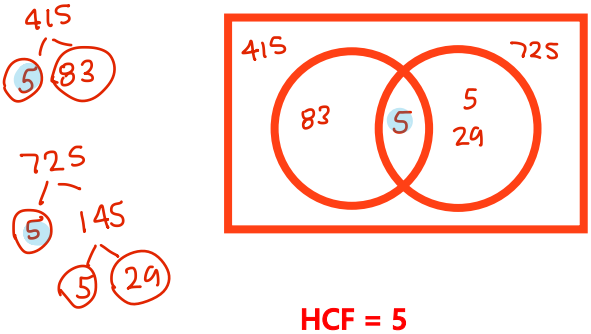
8) Find the HCF of 72 and 84.



9) Find the HCF of 56 and 98.

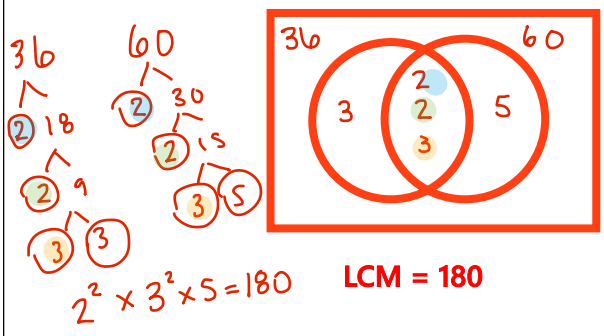


10) Find the HCF of 415 and 725.



Task 3

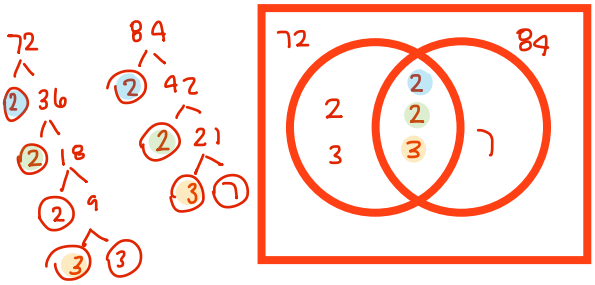
11) Find the LCM of 36 and 60.



$2^2 \times 3^2 \times 5 = 180$

LCM = 180

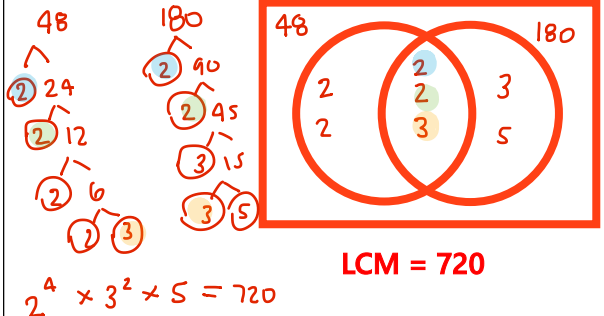
12) Find the LCM of 72 and 84.



$2^3 \times 3^2 \times 7 = 504$

LCM = 504

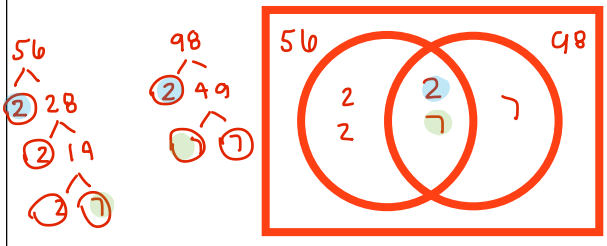
13) Find the LCM of 48 and 180.



$2^4 \times 3^2 \times 5 = 720$

LCM = 720

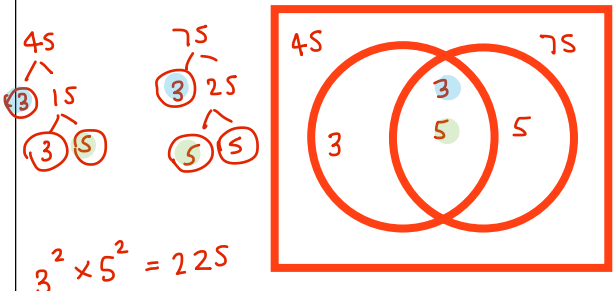
14) Find the LCM of 56 and 98.



$2^3 \times 7^2 = 392$

LCM = 392

15) Find the LCM of 45 and 75.

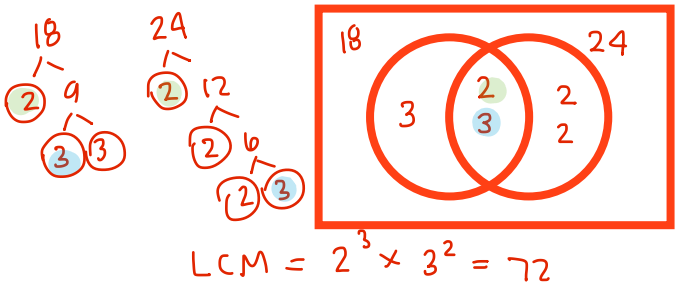


$3^2 \times 5^2 = 225$

LCM = 225

Task 4

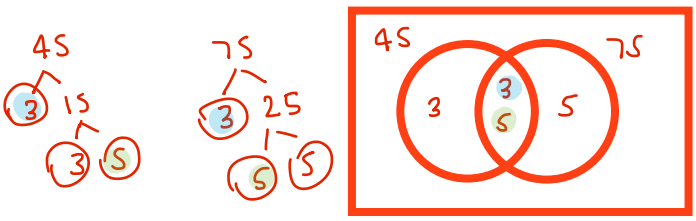
16) Two workers, Alice and Bob, work on a construction site. Alice completes one task every 18 minutes, and Bob completes one task every 24 minutes. After how many minutes will they both complete a task at the same time?



$LCM = 2^3 \times 3^2 = 72$

They will both complete a task at the same time after 72 minutes.

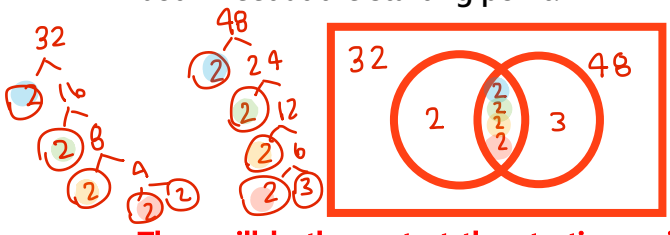
17) A teacher has two sets of textbooks. One set contains 45 books, and the other contains 75 books. She wants to place the books in piles, where each pile contains the same number of books. What is the greatest number of books that can be in each pile?



$HCF = 3 \times 5 = 15$

The greatest number of books in each pile is 15.

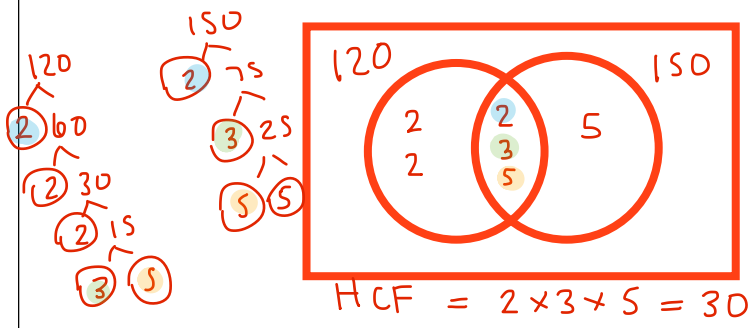
18) Sarah and John are running around a track. Sarah completes one lap every 32 seconds, and John completes one lap every 48 seconds. After how many seconds will they both meet at the starting point?



$2^5 \times 3 = 96$

They will both meet at the starting point after 96 seconds.

19) A school organizes a sports event. The participants are divided into two groups. The first group has 120 participants, and the second group has 150 participants. The school wants to create teams so that each team has the same number of participants. What is the greatest number of participants that can be in each team?



The greatest number of participants in each team is 30.

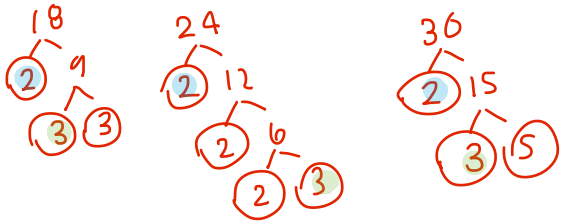
Challenge Questions

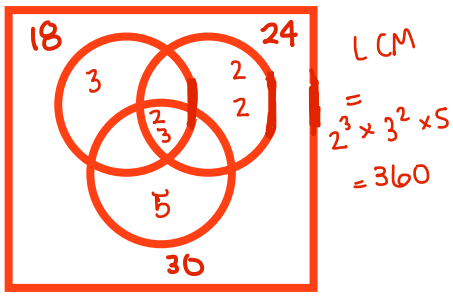
20) Find the LCM of 6, 8, and 12.

6: 6, 12, 18, 24, 36, ——
8: 8, 16, 24, 32, 40, ——
12: 12, 24, 36, 48, — —

LCM = 24

21) Find the LCM of 18, 24, 30.





LCM = 360

22) $A = 2^2 \times 3^4 \times 5^7$
$B = 2^4 \times 3 \times 7 \times 11$

Work out the LCM of $8A$ and $5B$. Give your answer as a product of prime factors.

$$8A = 2^2 \times 3^4 \times 5^7 \times 8$$
$$= 2^2 \times 3^4 \times 5^7 \times 2^3$$
$$= 2^5 \times 3^4 \times 5^7$$

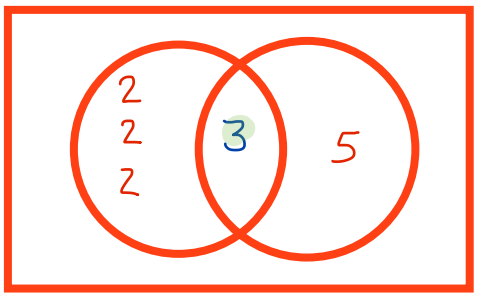
$$5B = 2^4 \times 3 \times 7 \times 11 \times 5$$
$$= 2^4 \times 3 \times 5 \times 7 \times 11$$

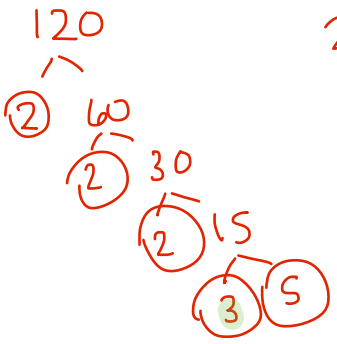
$$\boldsymbol{LCM = 2^5 \times 3^4 \times 5^7 \times 7 \times 11}$$

23) Bob is thinking of two numbers.

The HCF of the two numbers is 3.
The LCM of the two numbers if 120.

What are the two numbers Bob is thinking of?





The two numbers are 15 and 24.