Lowest Common Multiple & Highest Common Factor – Part I

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Prerequisites: You should understand the terms 'multiple' and 'factor'.

Key Definitions:
The Highest Common Factor of two numbers is the largest number which is a factor of both these numbers.
Similarly the **Lowest Common Multiple** of two numbers is the smallest number which is a multiple of both numbers.

Why is it useful? Common multiples allow us for example to determine when buses will arrive together if the arrive at different intervals.

K4: 9:00, 9:10, 9:20, 9:30, 9:40, …
K5: 9:00, 9.15, 9:30, 9.45, …

Worked Example:
Determine the (a) Highest Common Factor and (b) Lowest Common Multiple of 18 and 24.

Factors of 18:
1, 2, 3, 6, 9, 18
Factors of 24:
1, 2, 3, 4, 6, 8, 12, 24
HCF = 6

List out the factors of each number.

Choose the highest number that is common to both lists.

Multiples of 24:
24, 48, 72
LCM = 72

For the LCM, list out multiples of the larger number until you see a multiple of the smaller number.

72 is a multiple of 18, so we can stop listing.

Core Questions

1 Determine the Lowest Common Multiple and Highest Common Factor of the following numbers:
(a) 30 and 40
(b) 6 and 2
(c) 16 and 20
(d) 12 and 15
(e) 8 and 11

2 Determine the Lowest Common Multiple and Highest Common Factor of the following numbers:
(a) 36 and 54
(b) 35 and 45
(c) 125 and 80
(d) 26 and 65
(e) 40 and 44
(f) 84 and 120

Solutions:
1 (a) HCF = 10, LCM = 120 (b) HCF = 2, LCM = 12
(c) HCF = 4, LCM = 80 (d) HCF = 3, LCM = 60
(e) HCF = 1, LCM = 88
2 (a) HCF = 18, LCM = 108 (b) HCF = 5, LCM = 315
(c) HCF = 5, LCM = 2000 (d) HCF = 13, LCM = 130
(e) HCF = 4, LCM = 440 (f) HCF = 24, LCM = 840
3 (a) 56 (b) 7 packs of bread, 4 packs of ham
4. 14 5 (a) 60 (b) Wednesday

Problem Solving

3 I want to make some ham sandwiches. Slices of bread come in packs of 8 and slices of ham come in packs of 14. I use one slice of bread and one slice of ham for each sandwich. If I don't want to have any ham or bread left over,
(a) what is the minimum number of sandwiches I can make?
(b) how many packs of each will I need?

4 A PE teacher has to organise two year groups into netball teams, each separately. Year 7 has 70 students and Year 8 has 98 students. If each year group must be split up equally into teams all of the same size, what is the largest team size she can use?

5 My friend Bob visits me every 2 days. Similarly, Dipika visits me every 3 days, Francesca every 4 days and Pedro every 5 days. If today is a Saturday and they all visit together,
(a) When will they all simultaneously visit together next?
(b) On what day will this be?