HCF and LCM – www.m4ths.com – Steve B! ©

Section 1 – Listing Factors and Multiples to find the HCF and LCM

(1) (a) List the factors of 8.
(b) List the factors of 12.
(c) Hence, find the HCF of 8 and 12.

(2) (a) List the first 5 multiples of 8.
(b) List the first 5 multiples of 12.
(c) Hence, find the LCM of 8 and 12.

(3) For each pair of numbers below find (a) The HCF and (b) The LCM:

(a) 4 and 6	(b) 5 and 15	(c) 6 and 8
(d) 8 and 10	(e) 10 and 4	(f) 7 and 14
(g) 20 and 7	(h) 13 and 5	(i) 4 and 12
(j) 30 and 20	(k) 3 and 18	(l) 16 and 24
(m) 21 and 28	(n) 80 and 200	(o) 8 and 90

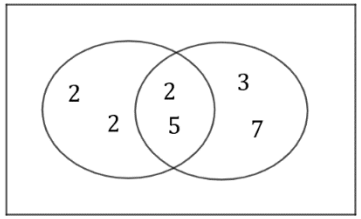
(4) Find (a) the HCF and (b) the LCM of each:
(a) 10, 15 and 20 (b) 3, 4 and 6
(c) 1, 3 and 5 (d) 20, 30 and 60

(5) A and B are two different prime numbers. The LCM of A and B is 21. Given that A is larger than B
(a) Find the values of A and B
(b) Find the HCF of A and B

(6) C, D and E are three different prime numbers. The LCM of C, D and E is 66.
Find the possible values of C, D and E.

(7) Fred, Bob and Jim are running around a track. The track is 400 metres. It takes Fred 45 seconds to do a lap, Bob takes 1 minute to do a lap and Jim takes 1 and a half minutes. All 3 men start at the same time.
(a) Find how far Bob has run when they all cross the finish line at the same time for the first time.
(b) Find the ratio of the time Fred takes to do a lap to the time Bob takes to do a lap. Give your answer in its simplest form.

(8) The Venn Diagram below shows the prime factors of two different numbers.



(a) Write down the two numbers shown.
(b) Use the Venn Diagram to find the HCF of the numbers.
(c) Use the Venn Diagram to find the LCM of the numbers.

(9) Which two numbers have a HCF of 2 and LCM of 36?

(10)* (a) Find the HCF of $8a$ and $12a$
(b) Find the HCF of $24x$ and $6x^2$
(c) Find the LCM of $3y^3$ and $9y^2$

Section 2 – Using the Product of Prime Factors to find the HCF and LCM (non-calc)

(1) (a) Express both 24 and 36 as a product of prime factors without using a calculator
(b) Use your answer to part (a) to show the HCF of 24 and 36 is 12.
(c) Use your answer to part (a) to show that the LCM of 24 and 36 is 72.

(2) Using the product of prime factors, find the HCF and LCM of the following pairs of numbers:
(a) 24 and 39 (b) 42 and 18 (c) 60 and 82
(d) 38 and 26 (e) 14 and 58 (f) 52 and 36

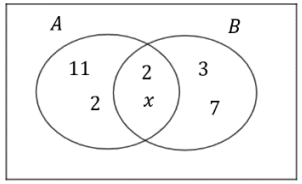
(3) One machine makes a sound every 84 minutes after it starts. A second machine makes the same sound every 72 minutes after it starts. If the machines both start at 12:00
(a) What is the first time after 12:00 when both machines make a sound at the same time?
(b) How many times will this happen before 12:00 the following day?

Section 3 – Using a Calculator to find the HCF and LCM.

(1) (a) Express (i) 520 and (ii) 680 as a product of their prime factors.
(b) Hence, show that the HCF is 40.
(c) Hence, show that the LCM is 8840

(2) Use your calculator to find the HCF and LCM of each pair of numbers:
(a) 420 and 64 (b) 58 and 176 (c) 232 and 88

(3) The Venn Diagram below shows the prime factors of the numbers A and B.



Given that the LCM of A and B is 2772, find A & B.