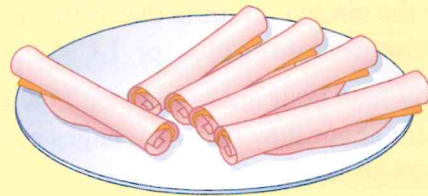


### Example 3: Using common multiples

Yuki plans to make roll-ups for a party. She rolls a slice of meat with a slice of cheese. Each meat package has 10 slices. Each cheese package has 12 slices. How many packages of each should she buy so that there are no leftovers?



#### Yuki's Solution

10, 20, 30, 40, 50, **60**, 70, 80, 90, 100, 110, **120**, 130, ...  
12, 24, 36, 48, **60**, 72, 84, 96, 108, **120**, ...

$$60 \div 10 \text{ slices of meat} = 6 \text{ packages}$$

$$60 \div 12 \text{ slices of cheese} = 5 \text{ packages}$$

$$120 \div 10 \text{ slices of meat} = 12 \text{ packages}$$

$$120 \div 12 \text{ slices of cheese} = 10 \text{ packages}$$

The least amount I should buy is 6 packages of meat and 5 packages of cheese.

I listed multiples of 10 and 12.

I circled the common multiples. 60 is the LCM.

I could buy 60 slices of meat and 60 slices of cheese to make 60 roll-ups. That's 6 packages of meat and 5 packages of cheese.

Or, I could buy 120 slices of each to make 120 roll-ups. That's 12 packages of meat and 10 packages of cheese.



### A Checking

3. List the first five multiples of each number.

- a) 2      b) 5      c) 6

4. Continue the patterns started in question 3 to determine the LCM of 2, 5, and 6.

5. Make lists of multiples and write three common multiples for each pair of numbers. What is the LCM?

- a) 4 and 8    b) 3 and 5    c) 12 and 18

### B Practising

6. Find the LCM of each set of numbers.

- a) 7 and 9  
b) 3, 4, and 6  
c) 2, 3, 5, and 20

7. Which numbers are multiples of 5? Justify each answer by dividing.

- a) 15    b) 10 000    c) 137    d) 1001

8. Use the information below to solve this problem:

How many packages of hamburger buns and meat patties should you buy to sell at a baseball tournament?

- Buns are sold in packages of 6.
- Meat patties are sold in packages of 8.
- You expect to sell between 80 and 100 hamburgers at the tournament.
- You do not want leftovers.



9. Which numbers are common multiples of 3 and 5? Show the steps you used.

- a) 15                      c) 100  
b) 135                    d) 50

10. The number 7 is a factor of 1001.

- a) Explain how you know that 1001 is a multiple of 7.  
b) How does knowing that 7 is a factor of 1001 help you to get another factor of 1001?

11. Which numbers in the box are multiples of each number below?

5	15	180
300	12	50
100	60	

- a) 3    b) 4    c) 25    d) 10    e) 30

12. The number 108 is the LCM of 36 and 54. List the next multiple of 36 and 54. Explain your reasoning.

13. Is a multiple of a number always greater than the number? Use an example to support your answer.

14. Suppose that the Grade 7 students expect to sell between 100 and 150 hot dogs.

- a) How many packages of 12 wieners and 8 buns should the students buy if they don't want any leftovers? Justify your answer.  
b) How many packages of each should they buy if they expect to sell more than 300 hot dogs?

15. In the opening hour of a new store, a bell rang every 2 min and lights flashed every 3 min. If the store opened at 10 o'clock, at what times did both events happen at the same time? Explain or sketch a diagram to show the strategy you used.



16. On an automobile assembly line, every third car is green. Every fourth car is a convertible.

- a) How many cars out of the first 100 will be green convertibles?  
b) Which number of car is the first green convertible?  
c) Show how writing common multiples helped you solve this problem.

### C Extending

17. What is the LCM of 1 and any other number greater than 1?

18. The number 12 is a factor of 156. How can you use this information to determine the LCM of 12 and 156?

19. A number is divisible by 6 if it is divisible by both 2 and 3. List the numbers that are divisible by 6 and are between the numbers given below. Show the steps you used.

- a) 40 and 50  
b) 120 and 130  
c) 6000 and 6020

20. You add three multiples of a number together. Will the sum be a multiple of the number? Explain why or why not. (*Hint:* Make up some examples to help you see how to answer this question.)