Section 5.2

TERMINOLOGY 5.2

For each of the following terms, provide 1) a definition in your own words, 2) the formal definition (as provided by your text or instructor), and 3) an example of the term using a drawing or problem. A sample filled-out form is available in the Introduction.

Multiple

Your definition	
Formal definition	
Example	

Common Multiple

Your definition	
Formal definition	
Example	

Least Common Multiple

Your definition	
Formal definition	
Example	

READING AND SELF-DISCOVERY QUESTIONS 5.2

1. In mathematics, *LCM* is an abbreviation for what? **Least Common Multiple**

2. What process do you use for finding the LCM?
   Factor the set of numbers and pull out the common factors. Then multiply the set of common factors with all the factors that are not shared in common.

3. How does the process you use for finding the LCM change when there are variables with exponents involved?
   The process is the same, except that the variables become factors as well.

CRITICAL THINKING QUESTIONS 5.2

1. In finding the LCM, what happens if you don't factor each number into a product of prime factors?
   You may not see a common factor. If there are three numbers that you are finding the multiples of (let's say 9, 12, and 24) and you find the common factor 12 in the last two numbers, this would be incorrect, because 12 is not a factor of 9. In this case, 3 would be the common factor, and 4 and 8 would be uncommon factors. 4 • 8 • 3 = 96, which is the LCM.
2. What is a real-world situation in which you would need to find an LCM?
   Student answers will vary; a popular example is hot dogs (which come in packs of 8) and buns (which come in packs of 10 or 12).

DEMONSTRATE YOUR UNDERSTANDING 5.2

1. What are the first 4 multiples shared by the numbers 4 and 5? **20** **40** **60** **80**

IDENTIFY AND CORRECT THE ERRORS 5.2

In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
Find the LCM of each group of expressions: $5n, 8n^2, 2n$ **Worked Solution** *(What is wrong here?)* $5n = 5 \cdot n$ $8n^2 = 2 \cdot 2 \cdot 2 \cdot n \cdot n$ $2n = 2 \cdot n$ $LCM = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 5\ n \cdot n$ $= 16 \cdot 5\ n^2 = \mathbf{80}\boldsymbol{n^2}$	**The student has failed to spot that both factors of 2n are already included as factors of $8n^2$. This means that while the student has found a common multiple, it is not the LEAST common multiple.**	**$5n = 5 \cdot n$** **$8n^2 = 2 \cdot 2 \cdot 2 \cdot n \cdot n$** **$2n = 2 \cdot n$** **$LCM = 2 \cdot 2 \cdot 2 \cdot 5 \cdot n \cdot n$** **$= 8 \cdot 5n^2 = 40n^2$**