REVIEW: Least Common Multiple

Name ______________________________

Key Concept and Vocabulary

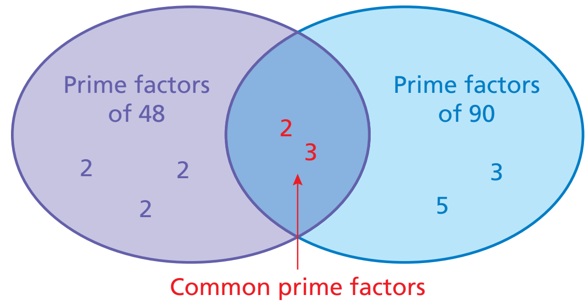
The **least common multiple (LCM)** of two or more positive monomials is the product of their factors, using each common prime factor only once.

Prime factorization:

$30 = 2 \cdot 3 \cdot 5$
$42 = 2 \cdot 3 \cdot 7$

The LCM of 30 and 42 is $2 \cdot 3 \cdot 5 \cdot 7 = 210$.

Visual Model



$\text{LCM} = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 = 720$

Skill Examples

1. $15 = 3 \cdot 5$
$30 = 2 \cdot 3 \cdot 5$
$\text{LCM} = 2 \cdot 3 \cdot 5 = 30$

2. $20 = 2 \cdot 2 \cdot 5$
$28 = 2 \cdot 2 \cdot 7$
$\text{LCM} = 2 \cdot 2 \cdot 5 \cdot 7 = 140$

3. $48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
$90 = 2 \cdot 3 \cdot 3 \cdot 5$
$\text{LCM} = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 = 720$

4. $18x^3 = 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x$
$21x^2 = 3 \cdot 7 \cdot x \cdot x$
$\text{LCM} = 2 \cdot 3 \cdot 3 \cdot 7 \cdot x \cdot x \cdot x = 126x^3$

Application Example

5. Hot dogs come in packages of 10 and hot dog buns come in packages of 8. What is the least number of packages of each that you need to buy to have the same number of hot dogs and hot dog buns?

$$\left.\begin{array}{l} 10 = 2 \cdot 5 \\ 8 = 2 \cdot 2 \cdot 2 \end{array}\right\} \quad \text{LCM} = 2 \cdot 2 \cdot 2 \cdot 5 = 40$$

$40 \div 10 = 4$ packages of hot dogs
$40 \div 8 = 5$ packages of hot dog buns

You must buy 4 packages of hot dogs and 5 packages of hot dog buns.

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Check your answers at BigIdeasMath.com.

Find the least common multiple.

6. $36 =$ ______________ LCM = ______
$45 =$ ______________

7. $70 =$ ______________ LCM = ______
$98 =$ ______________

8. $42 =$ ______________ LCM = ______
$105 =$ ______________

9. $154 =$ ______________ LCM = ______
$231 =$ ______________

10. $27y =$ ______________ LCM = ______
$54y^3 =$ ______________

11. $56m^5 =$ ______________ LCM = ______
$68m^4 =$ ______________

12. **BOXES** Boxes that are 12 inches tall are being stacked next to boxes that are 18 inches tall. What is the shortest height at which the two stacks will be the same height? height = ____________