Greatest Common Factor and Least Common Multiple

Greatest common factor and least common multiple: Mistakes and missing information

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

The GCF is the greatest factor shared by two numbers; the LCM is their first shared positive multiple. For $10, 14$, the GCF is 2 because $10 = 2 \times 5$ and $14 = 2 \times 7$. Their LCM is $(10 \times 14)/2 = 70$. Use GCF for the greatest number of identical groups, and LCM for repeating schedules that start together.

Worked example

Find the GCF of 16 and 24.

1. Factor out 8: $16 = 8 \times 2$ and $24 = 8 \times 3$.

2. The remaining factors 2 and 3 have GCF 1, so the greatest shared factor is 8.

Answer: 8.

Practice Problems

Show your thinking.

1. A student says the GCF of $20, 32$ is 2. Find the greatest shared factor.

2. A student calls 5 the LCM of $10, 15$. Correct it.

3. What is the largest number of identical kits using all 18 pens and 24 pads?

4. Correct the claim that LCM$(4, 10) = 40$ because the LCM always equals the product.

5. Recover the largest side length for square tiles that cover a 27 by 36 rectangle.

6. Explain when multiplying both numbers does give the LCM, using $7, 9$.

Answer Key

1. 4.
2. 30.
3. 6 identical kits.
4. 20.
5. 9 units per side.
6. The product is the LCM when the GCF is 1. For 7 and 9, the LCM is 63.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Factor out 4: $20 = 4 \times 5$ and $32 = 4 \times 8$.

2. The remaining factors 5 and 8 have GCF 1, so the greatest shared factor is 4.

Problem 2

1. GCF $= 5$, so LCM $= (10 \times 15)/5 = 30$.

2. Check $30/10 = 3$ and $30/15 = 2$ are whole; no smaller positive common multiple occurs.

Problem 3

1. Factor out 6: $18 = 6 \times 3$ and $24 = 6 \times 4$.

2. The remaining factors 3 and 4 have GCF 1, so the greatest shared factor is 6.

Problem 4

1. GCF $= 2$, so LCM $= (4 \times 10)/2 = 20$.

2. Check $20/4 = 5$ and $20/10 = 2$ are whole; no smaller positive common multiple occurs.

Problem 5

1. Factor out 9: $27 = 9 \times 3$ and $36 = 9 \times 4$.

2. The remaining factors 3 and 4 have GCF 1, so the greatest shared factor is 9.

Problem 6

1. Factors of 7 are $1, 7$; factors of 9 are $1, 3, 9$. The GCF is 1.

2. LCM $= ab/\mathrm{GCF}(a, b)$. When the GCF is 1, the LCM equals ab.

3. Here $7 \times 9 = 63$.

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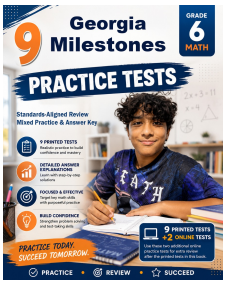

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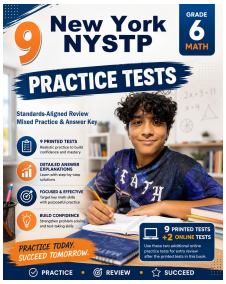

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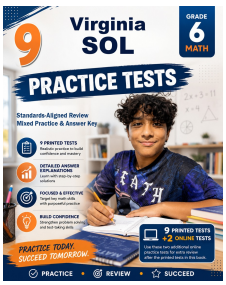

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