Greatest Common Factor and Least Common Multiple

Greatest common factor and least common multiple: Models and calculations

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. Find GCF$(18, 30)$.

2. Find LCM$(8, 12)$.

3. Use all 24 red and 36 blue beads to make the greatest number of identical groups. Find the number of groups. Draw or list the bead counts in one group.

4. Two bells ring together now. One rings every 6 minutes and the other every 15 minutes. How many minutes until they next ring together?

5. Explain why 7 is the GCF of 14 and 21.

6. Find the smallest positive number divisible by 9 and 12.

Answer Key

1. 6.
2. 24.
3. 12 groups: 2 red and 3 blue in each.
4. 30 minutes.
5. 7.
6. 36.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Factor out 6: $18 = 6 \times 3$ and $30 = 6 \times 5$.

2. The remaining factors 3 and 5 have GCF 1, so the greatest shared factor is 6.

Problem 2

1. GCF $= 4$, so LCM $= (8 \times 12)/4 = 24$.

2. Check $24/8 = 3$ and $24/12 = 2$ are whole; no smaller positive common multiple occurs.

Problem 3

1. Factor out 12: $24 = 12 \times 2$ and $36 = 12 \times 3$.

2. The remaining factors 2 and 3 have GCF 1, so the greatest shared factor is 12.

3. One group has $24/12 = 2$ red and $36/12 = 3$ blue beads. Twelve copies use all the beads.

Problem 4

1. GCF $= 3$, so LCM $= (6 \times 15)/3 = 30$.

2. Check $30/6 = 5$ and $30/15 = 2$ are whole; no smaller positive common multiple occurs.

3. The bells meet again 30 minutes after their shared start: 5 six-minute intervals and 2 fifteen-minute intervals.

Problem 5

1. Factor out 7: $14 = 7 \times 2$ and $21 = 7 \times 3$.

2. The remaining factors 2 and 3 have GCF 1, so the greatest shared factor is 7.

Problem 6

1. GCF $= 3$, so LCM $= (9 \times 12)/3 = 36$.

2. Check $36/9 = 4$ and $36/12 = 3$ are whole; no smaller positive common multiple occurs.

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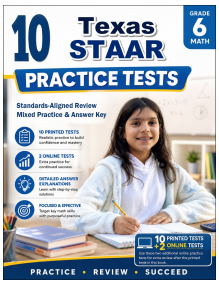

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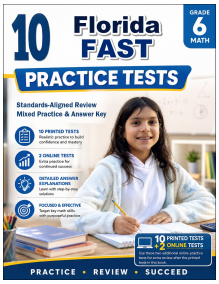

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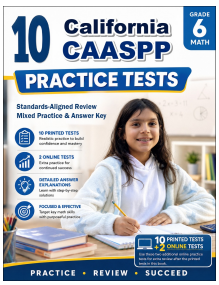

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