

Factors, Multiples and Common Ones: GCF and LCM

Grade 6 math · Test Answer Key · Standards: 6.NS.B.4

Use this answer key to score the test. Each solution shows full work, and the scoring notes say how the points are awarded. Give partial credit when the reasoning is sound but a small slip appears.

Standards: 6.NS.B.4 · **Level:** Grade 6

Question 1 Factors and multiples (2 points)

(a) $1 \times 36, 2 \times 18, 3 \times 12, 4 \times 9, 6 \times 6$: **1, 2, 3, 4, 6, 9, 12, 18, 36.**

(b) **7, 14, 21, 28, 35.**

Scoring: 1 point per part; deduct for a missing factor.

Question 2 Prime factorization (2 points)

(a) $150 = 2 \times 75 = 2 \times 3 \times 25 = 2 \times 3 \times 5^2.$

(b) $168 = 2 \times 84 = 2 \times 2 \times 42 = 2 \times 2 \times 2 \times 21 = 2^3 \times 3 \times 7.$

Scoring: 1 point per part.

Question 3 Finding GCFs (2 points)

(a) $54 = 2 \times 3^3, 90 = 2 \times 3^2 \times 5.$ Shared: $2 \times 3 \times 3 =$ **18.**

(b) $63 = 3^2 \times 7, 98 = 2 \times 7^2.$ Shared: **7.**

Scoring: 1 point per part.

Question 4 Finding LCMs (2 points)

(a) 11 and 4 share no factor, so $LCM = 11 \times 4 =$ **44.**

(b) Multiples of 10: 10, 20, 30. 30 is a multiple of 6. **30.**

Scoring: 1 point per part.

Question 5 Factoring a sum (2 points)

(a) $32 = 2^5$ and $56 = 2^3 \times 7$. The GCF is $2^3 = 8$.

(b) $32 \div 8 = 4$ and $56 \div 8 = 7$, so **$32 + 56 = 8(4 + 7)$** . Check: $8 \times 11 = 88$.



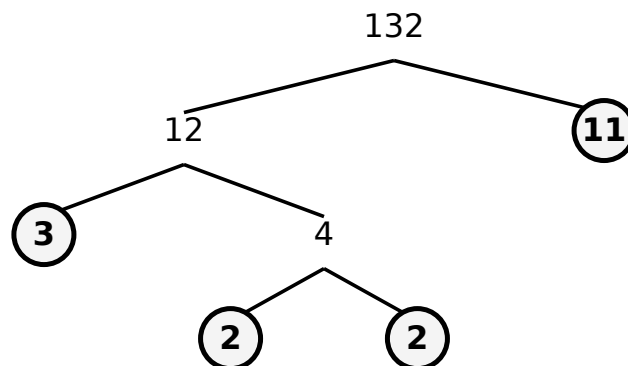
$$32 + 56 = 8(4 + 7)$$

Common factor 8.

Scoring: 1 point per part.

Question 6 Factor tree for 132 (2 points)

$4 = 2 \times 2$, so the primes are 3, 2, 2 and 11.



Finished: $132 = 2 \times 2 \times 3 \times 11$.

$132 = 2^2 \times 3 \times 11$.

Scoring: 1 point for finishing the tree, 1 point for the product.

Question 7 Packing fruit baskets (2 points)

(a) $\text{GCF}(64, 96) = 32$ ($64 = 2^6$, $96 = 2^5 \times 3$). **32 baskets.**

(b) $64 \div 32 = 2$ and $96 \div 32 = 3$: **2 oranges and 3 apples.**

Scoring: 1 point per part.

Question 8 Runners on a track (3 points)

(a) LCM(8, 10): multiples of 10 are 10, 20, 30, 40; $40 = 8 \times 5$. **40 minutes.**

(b) Jin: $40 \div 8 = 5$ **laps**. Carla: $40 \div 10 = 4$ **laps**.

Scoring: 1 point for (a); 1 point for each lap count in (b).

Question 9 Two mystery numbers (3 points)

$\text{GCF} \times \text{LCM} = \text{product of the numbers}$: $9 \times 54 = 486$. $486 \div 18 = 27$.

Check: $18 = 2 \times 3^2$ and $27 = 3^3$, so $\text{GCF} = 3^2 = 9$ and $\text{LCM} = 2 \times 3^3 = 54$. **The other number is 27.**

Scoring: 1 point for the product 486, 1 point for 27, 1 point for the check.