MATHEMATICS · GRADES 4-6

Factors and multiples

Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you see how numbers are built from smaller numbers and how they repeat in steps. Pack sizes that share fairly and buses that arrive together both come down to factors and multiples. Factors tell you what divides a number, multiples tell you where its steps land. Together they explain the patterns behind sharing, scheduling, and simplifying fractions.



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Rule

Factors and multiples: a factor divides a number exactly, with nothing left over. A multiple is a number in the times table for that number.

A prime number has only two factors: 1 and itself. A composite number has more than two factors. The prime factorization of a number is the number written as a product of prime numbers. The GCF of two numbers is the greatest factor they share. The LCM of two numbers is the smallest multiple they share.

To list factors, try pairs that multiply to the number: 1 × 12, 2 × 6, and 3 × 4 give the factors of 12. To list multiples, count up by the number: 6, 12, 18, 24, 30 are the first five multiples of 6.

Worked examples

EXAMPLE 1

Q List the factors of 12.

SOLUTION

A factor divides the number exactly, so try pairs that multiply to 12.

1 × 12, 2 × 6, and 3 × 4

So the factors of 12 are 1, 2, 3, 4, 6, and 12

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EXAMPLE 2

Q Write the first five multiples of 6.

SOLUTION

Multiples are the numbers you hit when you count in sixes.

6, 12, 18, 24, 30

Practice questions

1 List the factors of 18

A 1, 2, 3, 6, 18

B 1, 2, 3, 9, 18

C 1, 2, 3, 6, 9, 18

D 1, 3, 6, 9, 18

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2 Write the first five multiples of 8

- A 8, 16, 24, 32, 40
- B 8, 16, 24, 32, 48
- C 8, 16, 24, 40, 48
- D 4, 8, 16, 24, 32

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3 Is 23 prime or composite?

- A Composite
- B Prime

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4 Which number is prime?

- A 27
- B 33
- C 29
- D 49

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5 Write the prime factorization of 12

- A 2 × 3 × 3
- B 2 × 2 × 3
- C 2 × 2 × 2 × 3
- D 3 × 3

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6 Find the GCF of 12 and 18

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7 Find the LCM of 4 and 6

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8 Which number is a multiple of both 6 and 8?

A 16

B 24

C 32

D 40

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9 Two buses leave together. One leaves every 12 minutes and the other every 18 minutes. After how many minutes do they leave together again?

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10 A baker has 24 buns to pack into equal boxes. Which box sizes would fill the boxes exactly?

A. 1, 2, 3, 4, 6, 8, 12, 24

B. 1, 2, 3, 4, 6, 12, 24

C. 1, 2, 4, 6, 8, 12, 24

D. 1, 2, 3, 6, 8, 12, 24

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ANSWER KEY

1. 1, 2, 3, 6, 9, 18

2. 8, 16, 24, 32, 40

3. Prime

4. 29

5. 2 × 2 × 3

6. 6

7. 12

8. 24

9. 36 minutes

10. 1, 2, 3, 4, 6, 8, 12, 24

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