

# Prime and Composite Numbers

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 24

## Q Quick Review

A **prime number** has exactly two factors: 1 and itself. For example, 7 is prime because only  $1 \times 7$  makes 7. A **composite number** has *more* than two factors — it can be split into equal groups in more than one way, like 12, which has factors 1, 2, 3, 4, 6, and 12. The number 1 is **special**: it is neither prime nor composite, because it has only one factor. To test a number, try to find a factor other than 1 and itself — if you can, it is composite.

◇ **Example:** Is 21 prime or composite?

⇒ Check whether 21 has any factors besides 1 and 21. Is it even? No. Does 3 divide it? Yes —  $3 \times 7 = 21$ . Since 21 has the extra factors 3 and 7, it has more than two factors. That means 21 is **composite**.

**Answer:** Composite

## PRACTICE

Tell whether each number is prime or composite.

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| 1. Is 2 prime or composite? _____   | 11. Is 23 prime or composite? _____ |
| 2. Is 9 prime or composite? _____   | 12. Is 33 prime or composite? _____ |
| 3. Is 11 prime or composite? _____  | 13. Is 29 prime or composite? _____ |
| 4. Is 15 prime or composite? _____  | 14. Is 39 prime or composite? _____ |
| 5. Is 13 prime or composite? _____  | 15. Is 31 prime or composite? _____ |
| 6. Is 21 prime or composite? _____  | 16. Is 49 prime or composite? _____ |
| 7. Is 17 prime or composite? _____  | 17. Is 37 prime or composite? _____ |
| 8. Is 25 prime or composite? _____  | 18. Is 51 prime or composite? _____ |
| 9. Is 19 prime or composite? _____  | 19. Is 41 prime or composite? _____ |
| 10. Is 27 prime or composite? _____ | 20. Is 57 prime or composite? _____ |

## ◆ Word Problems

21. Jamal has 7 marbles and wants to share them into equal groups bigger than one marble each. Can he? Explain using prime or composite. \_\_\_\_\_
22. A coach has 18 players. Is 18 prime or composite, and what does that mean for making equal teams? \_\_\_\_\_
23. Mia says every even number is composite. Is she correct? Use the number 2 to explain. \_\_\_\_\_
24. A teacher writes the numbers 11, 12, 13, and 14 on the board. Which of these numbers are prime? \_\_\_\_\_



## Answer Keys

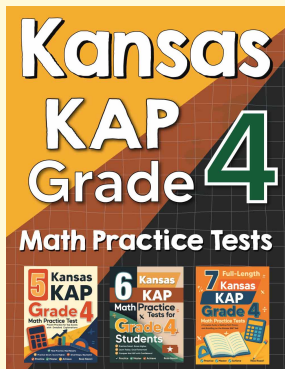
- |               |                                         |
|---------------|-----------------------------------------|
| 1. Prime      | 13. Prime                               |
| 2. Composite  | 14. Composite                           |
| 3. Prime      | 15. Prime                               |
| 4. Composite  | 16. Composite                           |
| 5. Prime      | 17. Prime                               |
| 6. Composite  | 18. Composite                           |
| 7. Prime      | 19. Prime                               |
| 8. Composite  | 20. Composite                           |
| 9. Prime      | 21. No, because 7 is prime              |
| 10. Composite | 22. Composite; equal teams are possible |
| 11. Prime     | 23. No; 2 is even but prime             |
| 12. Composite | 24. 11 and 13                           |

### Step-by-Step Explanations

- |                                                                                 |                                                                                                                                         |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1. 2 has only the factors 1 and 2, so it is prime — the only even prime number. | 15. 31 has only the factors 1 and 31, so it is prime.                                                                                   |
| 2. 9 has the extra factor 3 ( $3 \times 3 = 9$ ), so it is composite.           | 16. 49 has the extra factor 7 ( $7 \times 7 = 49$ ), so it is composite.                                                                |
| 3. 11 has only the factors 1 and 11, so it is prime.                            | 17. 37 has only the factors 1 and 37, so it is prime.                                                                                   |
| 4. 15 has the extra factors 3 and 5 ( $3 \times 5 = 15$ ), so it is composite.  | 18. 51 has the extra factors 3 and 17, so it is composite.                                                                              |
| 5. 13 has only the factors 1 and 13, so it is prime.                            | 19. 41 has only the factors 1 and 41, so it is prime.                                                                                   |
| 6. 21 has the extra factors 3 and 7, so it is composite.                        | 20. 57 has the extra factors 3 and 19, so it is composite.                                                                              |
| 7. 17 has only the factors 1 and 17, so it is prime.                            | 21. 7 is prime — its only factors are 1 and 7 — so it cannot be split into equal groups other than one group of 7 or seven groups of 1. |
| 8. 25 has the extra factor 5 ( $5 \times 5 = 25$ ), so it is composite.         | 22. 18 is composite with factors 1, 2, 3, 6, 9, 18, so the coach can make equal teams, such as 2 teams of 9 or 3 teams of 6.            |
| 9. 19 has only the factors 1 and 19, so it is prime.                            | 23. 2 is even, but its only factors are 1 and 2, so it is prime. That one example shows Mia is not correct.                             |
| 10. 27 has the extra factors 3 and 9, so it is composite.                       | 24. 11 and 13 each have only two factors, so they are prime. 12 and 14 have more than two factors, so they are composite.               |
| 11. 23 has only the factors 1 and 23, so it is prime.                           |                                                                                                                                         |
| 12. 33 has the extra factors 3 and 11, so it is composite.                      |                                                                                                                                         |
| 13. 29 has only the factors 1 and 29, so it is prime.                           |                                                                                                                                         |
| 14. 39 has the extra factors 3 and 13, so it is composite.                      |                                                                                                                                         |



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