

# 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

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Prime</li> <li>2. Composite</li> <li>3. Prime</li> <li>4. Composite</li> <li>5. Prime</li> <li>6. Composite</li> <li>7. Prime</li> <li>8. Composite</li> <li>9. Prime</li> <li>10. Composite</li> <li>11. Prime</li> <li>12. Composite</li> </ol> | <ol style="list-style-type: none"> <li>13. Prime</li> <li>14. Composite</li> <li>15. Prime</li> <li>16. Composite</li> <li>17. Prime</li> <li>18. Composite</li> <li>19. Prime</li> <li>20. Composite</li> <li>21. No, because 7 is prime</li> <li>22. Composite; equal teams are possible</li> <li>23. No; 2 is even but prime</li> <li>24. 11 and 13</li> </ol> |
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### Step-by-Step Explanations

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. 2 has only the factors 1 and 2, so it is prime — the only even prime number.</li> <li>2. 9 has the extra factor 3 (<math>3 \times 3 = 9</math>), so it is composite.</li> <li>3. 11 has only the factors 1 and 11, so it is prime.</li> <li>4. 15 has the extra factors 3 and 5 (<math>3 \times 5 = 15</math>), so it is composite.</li> <li>5. 13 has only the factors 1 and 13, so it is prime.</li> <li>6. 21 has the extra factors 3 and 7, so it is composite.</li> <li>7. 17 has only the factors 1 and 17, so it is prime.</li> <li>8. 25 has the extra factor 5 (<math>5 \times 5 = 25</math>), so it is composite.</li> <li>9. 19 has only the factors 1 and 19, so it is prime.</li> <li>10. 27 has the extra factors 3 and 9, so it is composite.</li> <li>11. 23 has only the factors 1 and 23, so it is prime.</li> <li>12. 33 has the extra factors 3 and 11, so it is composite.</li> <li>13. 29 has only the factors 1 and 29, so it is prime.</li> <li>14. 39 has the extra factors 3 and 13, so it is composite.</li> </ol> | <ol style="list-style-type: none"> <li>15. 31 has only the factors 1 and 31, so it is prime.</li> <li>16. 49 has the extra factor 7 (<math>7 \times 7 = 49</math>), so it is composite.</li> <li>17. 37 has only the factors 1 and 37, so it is prime.</li> <li>18. 51 has the extra factors 3 and 17, so it is composite.</li> <li>19. 41 has only the factors 1 and 41, so it is prime.</li> <li>20. 57 has the extra factors 3 and 19, so it is composite.</li> <li>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.</li> <li>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.</li> <li>23. 2 is even, but its only factors are 1 and 2, so it is prime. That one example shows Mia is not correct.</li> <li>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.</li> </ol> |
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