

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 1×7 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.

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|-------------------------------------|-------------------------------------|
| 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

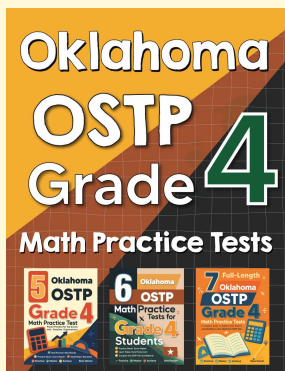
- | | |
|---------------|---|
| 1. Prime | 13. Prime |
| 2. Composite | 14. Composite |
| 3. Prime | 15. Prime |
| 4. Composite | 16. Composite |
| 5. Prime | 17. Prime |
| 6. Composite | 18. Composite |
| 7. Prime | 19. Prime |
| 8. Composite | 20. Composite |
| 9. Prime | 21. No, because 7 is prime |
| 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

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| <p>1. 2 has only the factors 1 and 2, so it is prime — the only even prime number.</p> <p>2. 9 has the extra factor 3 ($3 \times 3 = 9$), so it is composite.</p> <p>3. 11 has only the factors 1 and 11, so it is prime.</p> <p>4. 15 has the extra factors 3 and 5 ($3 \times 5 = 15$), so it is composite.</p> <p>5. 13 has only the factors 1 and 13, so it is prime.</p> <p>6. 21 has the extra factors 3 and 7, so it is composite.</p> <p>7. 17 has only the factors 1 and 17, so it is prime.</p> <p>8. 25 has the extra factor 5 ($5 \times 5 = 25$), so it is composite.</p> <p>9. 19 has only the factors 1 and 19, so it is prime.</p> <p>10. 27 has the extra factors 3 and 9, so it is composite.</p> <p>11. 23 has only the factors 1 and 23, so it is prime.</p> <p>12. 33 has the extra factors 3 and 11, so it is composite.</p> <p>13. 29 has only the factors 1 and 29, so it is prime.</p> <p>14. 39 has the extra factors 3 and 13, so it is composite.</p> | <p>15. 31 has only the factors 1 and 31, so it is prime.</p> <p>16. 49 has the extra factor 7 ($7 \times 7 = 49$), so it is composite.</p> <p>17. 37 has only the factors 1 and 37, so it is prime.</p> <p>18. 51 has the extra factors 3 and 17, so it is composite.</p> <p>19. 41 has only the factors 1 and 41, so it is prime.</p> <p>20. 57 has the extra factors 3 and 19, so it is composite.</p> <p>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.</p> <p>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.</p> <p>23. 2 is even, but its only factors are 1 and 2, so it is prime. That one example shows Mia is not correct.</p> <p>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.</p> |
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