

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.

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

Step-by-Step Explanations

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