

Boost Free Lessons - Year 6 Maths

Lesson 1: Prime and Composite Numbers

Name: _____ Grade: _____ Date: _____

Worked Example 1

Is 21 prime or composite?

1. A **prime** number has exactly two factors: 1 and itself.
2. A **composite** number has more than two factors.
3. Test 21: does 2 divide it? No, it is odd. Does 3? Yes, $21 \div 3 = 7$.
4. So the factors are 1, 3, 7 and 21. Four factors means it is composite.

21 is composite

Worked Example 2

Is 29 prime or composite?

1. Test the small primes in order: 2, 3, 5 and 7.
2. 29 is odd, so 2 does not divide it. The digits add to 11, so 3 does not.
3. It does not end in 0 or 5, so 5 does not. $7 \times 4 = 28$, so 7 does not.
4. You can stop at 7, because $7 \times 7 = 49$ is already bigger than 29.

29 is prime

Remember: A **prime** has exactly two factors. A **composite** has more than two. Test the small primes in order (2, 3, 5, 7) and stop once the prime squared passes your number.



Question 1: Write whether each number is **prime** or **composite**.

1. 11

2. 15

3. 23

4. 27

5. 31

6. 33

7. 37

8. 39



Question 2: Answer the following.

1. List all the prime numbers between 1 and 20.

2. List all the prime numbers between 20 and 40.

3. Why is 1 not a prime number?

4. Why is 2 the only even prime number?

5. Find the two prime numbers that multiply to give 35.

6. Find the two prime numbers that multiply to give 91.



Question 3: Answer the following questions.

1. A number has exactly two factors. What kind of number is it?
2. Ana says all odd numbers are prime. Give an example that shows she is wrong.
3. A rectangle has an area of 13 squares. How many different rectangles are possible? What does this tell you about 13?
4. Write 30 as a product of prime numbers.
5. Explain how you would test whether 51 is prime.



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Answers: Prime and Composite Numbers**Question 1**

1. Prime
2. Composite
3. Prime
4. Composite
5. Prime
6. Composite
7. Prime
8. Composite

Question 2

1. 2, 3, 5, 7, 11, 13, 17, 19
2. 23, 29, 31, 37
3. It has only one factor, itself, and a prime needs exactly two.
4. Every other even number can be divided by 2 as well as by 1 and itself.
5. 5×7
6. 7×13

Question 3

1. A prime number
2. 9 is odd but has factors 1, 3 and 9 (15, 21 and 25 also work)
3. Only one (1×13), which shows 13 is prime
4. $2 \times 3 \times 5$
5. Test the small primes in order. 51 is odd so 2 fails, but the digits add to 6 which divides by 3, so $51 = 3 \times 17$ and is composite.

