

Factors & Prime Numbers

Numbers & Patterns · Grade 4

Score: _____ / 10

★ Hard · 10 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

- Find three consecutive numbers whose product is divisible by 6.
Explain why this is always true.

Answer: _____

- List all factors of 48.

Answer: _____

3. Find the common factors of 12 and 18.

Answer: _____

4. Which number is prime: 21, 23, 25, 27?

Answer: _____

5. Find all factors of 50.

Answer: _____

6. Is 100 prime or composite? How many factors?

Answer: _____

7. Find the largest factor of 45 that is less than 45.

Answer: _____

8. Is 1 prime, composite, or neither?

Answer: _____

- 9.** Find a prime number between 50 and 60.

Answer: _____

- 10.** List all factors of 72.

Answer: _____

Answer Key

Factors & Prime Numbers — Hard

1. **Any three consecutive integers include a multiple of 2 and a multiple of 3, so the product is always divisible by 6. Example: $4 \times 5 \times 6 = 120$, and $120 \div 6 = 20$.**

Among any 3 consecutive integers, at least one is even ($\div 2$) and one is divisible by 3. So the product is always divisible by $2 \times 3 = 6$.

2. **1, 2, 3, 4, 6, 8, 12, 16, 24, 48**

Pairs: 1×48 , 2×24 , 3×16 , 4×12 , 6×8 .

3. **1, 2, 3, 6**

Factors of 12: 1, 2, 3, 4, 6, 12. Factors of 18: 1, 2, 3, 6, 9, 18. Common: 1, 2, 3, 6.

4. **23**

$21 = 3 \times 7$, $25 = 5^2$, $27 = 3^3$. Only 23 is prime.

5. **1, 2, 5, 10, 25, 50**

Pairs: 1×50 , 2×25 , 5×10 .

6. **Composite. 9 factors: 1, 2, 4, 5, 10, 20, 25, 50, 100.**

Pairs: 1×100 , 2×50 , 4×25 , 5×20 , 10×10 . 9 factors total.

7. **15**

Factors of 45: 1, 3, 5, 9, 15, 45. Largest less than 45 is 15.

8. **Neither**

1 has only one factor (itself). Primes have 2 factors. 1 is neither prime nor composite.

9. **53 (or 59)**

$51 = 3 \times 17$, $52 = 2^2 \times 13$, 53 prime, $54 = 2 \times 27$, $55 = 5 \times 11$, $56 = 2^3 \times 7$, $57 = 3 \times 19$, $58 = 2 \times 29$, 59 prime.

10. 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

Pairs: 1×72 , 2×36 , 3×24 , 4×18 , 6×12 , 8×9 .
