

Factor Detectives

Sort numbers by their factor clues.

5.4.A "identify prime and composite numbers;"

NAME _____

DATE _____

PRIME NUMBERS

A prime number is a whole number greater than 1 with exactly two factors, 1 and itself.

17 is prime because its only factors are 1 and 17.

COMPOSITE NUMBERS

A composite number is a whole number greater than 1 with more than two factors.

18 is composite because it has factors besides 1 and 18.

1 SORT _____ 8 items

Circle the category for each number, then choose two numbers and explain how you knew by listing their factors.

1. 12

PRIMES

COMPOSITES

2. 29

PRIMES

COMPOSITES

3. 31

PRIMES

COMPOSITES

4. 21

PRIMES

COMPOSITES

5. 27

PRIMES

COMPOSITES

6. 35

PRIMES

COMPOSITES

7. 19

PRIMES

COMPOSITES

8. 23

PRIMES

COMPOSITES

2

PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ HOW I KNEW _____

ITEM # _____ HOW I KNEW _____

3

MAKE YOUR OWN

One of each

Write one new prime number and one new composite number. List the factors that prove each choice.

PRIMES _____

COMPOSITES _____

CHALLENGE

Write two consecutive composite numbers. List all factor pairs for each number.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	12	COMPOSITES	Factors are 1, 2, 3, 4, 6, and 12.
2	29	PRIMES	Its only factors are 1 and 29.
3	31	PRIMES	Its only factors are 1 and 31.
4	21	COMPOSITES	It has factor pairs 1×21 and 3×7 .
5	27	COMPOSITES	It has factor pairs 1×27 and 3×9 .
6	35	COMPOSITES	It has factor pairs 1×35 and 5×7 .
7	19	PRIMES	Its only factors are 1 and 19.
8	23	PRIMES	Its only factors are 1 and 23.

PART 2 • PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 • MAKE YOUR OWN (SAMPLE ANSWERS)

- **PRIMES:** Prime: 37, because its only factors are 1 and 37.
- **COMPOSITES:** Composite: 24, because its factors are 1, 2, 3, 4, 6, 8, 12, and 24.

Challenge: 14: 1×14 and 2×7 ; 15: 1×15 and 3×5 .

For Part 2, accept explanations that correctly list factors or factor pairs and show why the number has exactly two factors or more than two factors. Part 3 answers will vary, but each number must be greater than 1 and correctly classified.