Elementary Number Theory and Methods of Proof · Partner Check 1

A

Name: _____ Partner's name: _____ Date: _____

Directions: Work alone on your own problems. Partner B has different problems with the same answers. After each problem, compare answers; if they differ, find the mistake together.
Answer conventions: sets in roster form with elements in increasing order, ∅ for the empty set; truth columns as T/F strings in standard row order (TT, TF, FT, FF; with r: TTT, TTF, …, FFF); fractions in lowest terms; ordered pairs as (x, y).

1 Find gcd(6, 30).

Answer: _____ Match? ☐ Yes ☐ No

2 Write 1.2 as a fraction in lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

3 Find the remainder r when 92 = 9·q + r, 0 ≤ r < 9.

Answer: _____ Match? ☐ Yes ☐ No

4 Find gcd(60, 24).

Answer: _____ Match? ☐ Yes ☐ No

5 How many positive divisors does 10 have?

Answer: _____ Match? ☐ Yes ☐ No

6 Find the smallest positive integer n that is a counterexample to "for all n ≥ 1, $2^n + 1$ is prime".

Answer: _____ Match? ☐ Yes ☐ No

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B

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1

Find gcd(48, 54).

Answer: _____ Match? ☐ Yes ☐ No

2

Simplify 18/15 to lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when -38 = 5·q + r, 0 ≤ r < 5.

Answer: _____ Match? ☐ Yes ☐ No

4

Find gcd(12, 12).

Answer: _____ Match? ☐ Yes ☐ No

5

How many positive divisors does 34 have?

Answer: _____ Match? ☐ Yes ☐ No

6

Find the smallest positive integer n that is a counterexample to "for all n ≥ 1, 2n + 3 is prime".

Answer: _____ Match? ☐ Yes ☐ No

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1 Find gcd(40, 16).

Answer: _____ Match? ☐ Yes ☐ No

2 Write 0.5 as a fraction in lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

3 Find the remainder r when $36 = 7 \cdot q + r$, $0 \le r < 7$.

Answer: _____ Match? ☐ Yes ☐ No

4 Find gcd(44, 18).

Answer: _____ Match? ☐ Yes ☐ No

5 How many positive divisors does 86 have?

Answer: _____ Match? ☐ Yes ☐ No

6 Find the smallest positive integer n that is a counterexample to "for all $n \ge 1$, $2^n + 1$ is prime".

Answer: _____ Match? ☐ Yes ☐ No

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B

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1

Find gcd(8, 48).

Answer: _____ Match? ☐ Yes ☐ No

2

Simplify 3/6 to lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when -56 = 3·q + r, 0 ≤ r < 3.

Answer: _____ Match? ☐ Yes ☐ No

4

Find gcd(36, 14).

Answer: _____ Match? ☐ Yes ☐ No

5

How many positive divisors does 35 have?

Answer: _____ Match? ☐ Yes ☐ No

6

Find the smallest positive integer n that is a counterexample to "for all n ≥ 1, $n^2 + 1$ is prime".

Answer: _____ Match? ☐ Yes ☐ No

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1

Find the smallest positive integer n that is a counterexample to "for all $n \geq 1$, $2^n + 1$ is prime".

Answer: _____ Match? ☐ Yes ☐ No

2

Find gcd(45, 36).

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when $276 = 5 \cdot q + r$, $0 \leq r < 5$.

Answer: _____ Match? ☐ Yes ☐ No

4

Write 0.5 as a fraction in lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

5

How many positive divisors does 105 have?

Answer: _____ Match? ☐ Yes ☐ No

6

Find gcd(20, 18).

Answer: _____ Match? ☐ Yes ☐ No

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Answer conventions: sets in roster form with elements in increasing order, ∅ for the empty set; truth columns as T/F strings in standard row order (TT, TF, FT, FF; with r: TTT, TTF, …, FFF); fractions in lowest terms; ordered pairs as (x, y).

1

Find the smallest positive integer n that is a counterexample to "for all $n \geq 1$, $n^2 + 1$ is prime".

Answer: _____ Match? ☐ Yes ☐ No

2

Find gcd(36, 9).

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when $-29 = 3 \cdot q + r$, $0 \leq r < 3$.

Answer: _____ Match? ☐ Yes ☐ No

4

Simplify 3/6 to lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

5

How many positive divisors does 104 have?

Answer: _____ Match? ☐ Yes ☐ No

6

Find gcd(24, 14).

Answer: _____ Match? ☐ Yes ☐ No