Elementary Number Theory and Methods of Proof · Partner Check 2

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

How many positive divisors does 7 have?

Answer: _____ Match? ☐ Yes ☐ No

2

Find gcd(44, 21).

Answer: _____ Match? ☐ Yes ☐ No

3

Write 1.6 as a fraction in lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

4

Find the remainder r when $119 = 7 \cdot q + r$, $0 \le r < 7$.

Answer: _____ Match? ☐ Yes ☐ No

5

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

6

Find the remainder r when $52 = 8 \cdot q + r$, $0 \le r < 8$.

Answer: _____ Match? ☐ Yes ☐ No

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B

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1

How many positive divisors does 29 have?

Answer: _____ Match? ☐ Yes ☐ No

2

Find gcd(36, 35).

Answer: _____ Match? ☐ Yes ☐ No

3

Simplify 24/15 to lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

4

Find the remainder r when -12 = 4·q + r, 0 ≤ r < 4.

Answer: _____ Match? ☐ Yes ☐ No

5

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

Answer: _____ Match? ☐ Yes ☐ No

6

Find the remainder r when -41 = 5·q + r, 0 ≤ r < 5.

Answer: _____ Match? ☐ Yes ☐ No

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1

Write 0.5 as a fraction in lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

2

Find gcd(55, 60).

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when $240 = 3 \cdot q + r$, $0 \le r < 3$.

Answer: _____ Match? ☐ Yes ☐ No

4

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

5

How many positive divisors does 106 have?

Answer: _____ Match? ☐ Yes ☐ No

6

Find the remainder r when $187 = 6 \cdot q + r$, $0 \le r < 6$.

Answer: _____ Match? ☐ Yes ☐ No

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1

Simplify 3/6 to lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

2

Find gcd(55, 40).

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when -42 = 6·q + r, 0 ≤ r < 6.

Answer: _____ Match? ☐ Yes ☐ No

4

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

Answer: _____ Match? ☐ Yes ☐ No

5

How many positive divisors does 39 have?

Answer: _____ Match? ☐ Yes ☐ No

6

Find the remainder r when -44 = 9·q + r, 0 ≤ r < 9.

Answer: _____ Match? ☐ Yes ☐ No

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1

Find the remainder r when 134 = 7·q + r, 0 ≤ r < 7.

Answer: _____ Match? ☐ Yes ☐ No

2

Write 0.625 as a fraction in lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when 342 = 9·q + r, 0 ≤ r < 9.

Answer: _____ Match? ☐ Yes ☐ No

4

How many positive divisors does 140 have?

Answer: _____ Match? ☐ Yes ☐ No

5

Find gcd(16, 8).

Answer: _____ Match? ☐ Yes ☐ No

6

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

Answer: _____ Match? ☐ Yes ☐ No

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1

Find the remainder r when -8 = 3·q + r, 0 ≤ r < 3.

Answer: _____ Match? ☐ Yes ☐ No

2

Simplify 15/24 to lowest terms.

Answer: _____ Match? ☐ Yes ☐ No

3

Find the remainder r when -42 = 6·q + r, 0 ≤ r < 6.

Answer: _____ Match? ☐ Yes ☐ No

4

How many positive divisors does 72 have?

Answer: _____ Match? ☐ Yes ☐ No

5

Find gcd(8, 48).

Answer: _____ Match? ☐ Yes ☐ No

6

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

Answer: _____ Match? ☐ Yes ☐ No