

Name: _____

MATH 101

Spring 2024

HW 1: Due 01/24

“When I was young I observed that nine out of every ten things I did were fails, so I did ten times more work.”

— George Bernard Shaw

Problem 1. (10pts) Complete the following:

- (a) List all the divisors of 64.
- (b) List all the nonnegative multiples of 14 less than 130.

Problem 2. (10pts) Showing all your work, find the prime factorizations of the following:

(a) 30

(b) 52

(c) 61

(d) 110

(e) 315

Problem 3. (10pts) Using divisibility criterion, answer the following:

- (a) Does 2 divide 1749? Explain.
- (b) Does 3 divide 444444? Explain.
- (c) Does 4 divide 793621? Explain.
- (d) Does 5 divide 202122? Explain.
- (e) Does 9 divide 444444? Explain.

Problem 4. (10pts) Showing all your work, compute the following:

(a) $\gcd(12, 66)$

(b) $\text{lcm}(12, 66)$

(c) $\gcd(2^{30} \cdot 3^{15} \cdot 7^{10} \cdot 11^3, 2^{60} \cdot 3^5 \cdot 5^{14} \cdot 13^2)$

(d) $\text{lcm}(2^{30} \cdot 3^{15} \cdot 7^{10} \cdot 11^3, 2^{60} \cdot 3^5 \cdot 5^{14} \cdot 13^2)$