

Name: _____

MATH 101

Fall 2022

HW 1: Due 09/014

*"Blackmail is such an ugly word. I prefer
'extortion.' The 'x' makes it sound cool."*

–Bender Rodriguez, Futurama

Problem 1. (10pt) Showing all your work, find the prime factorizations of the following:

(a) 45

(b) 30

(c) 17

(d) 44

(e) 220

Problem 2. (10pt) Without using a calculator, answer the following:

- (a) Does 2 divide 6701? Explain.
- (b) Does 3 divide 3801437? Explain.
- (c) Does 4 divide 19154300? Explain.
- (d) Does 5 divide 648520? Explain.
- (e) Does 9 divide 94321836? Explain.

Problem 3. (10pt) Showing all your work, compute the following:

(a) $\gcd(10, 14)$

(b) $\text{lcm}(10, 14)$

(c) $\gcd(2^{100} \cdot 3^{40} \cdot 7^{11} \cdot 11^{30}, 2^{20} \cdot 5^{80} \cdot 7^{60} \cdot 11^{10})$

(d) $\text{lcm}(2^{100} \cdot 3^{40} \cdot 7^{11} \cdot 11^{30}, 2^{20} \cdot 5^{80} \cdot 7^{60} \cdot 11^{10})$

Problem 4. (10pt) Showing all your work and being sure to simplify as much as possible, compute the following:

(a) $\frac{5}{12} - \frac{7}{22}$

(b) $\frac{3}{4} + \frac{7}{8} - \frac{1}{6}$

(c) $\frac{3}{4} \cdot \frac{16}{27} \cdot \frac{9}{4}$

(d) $\frac{\frac{15}{21}}{\frac{5}{2}}$

(e) $\frac{\frac{13}{15}}{\frac{39}{40}}$

Problem 5. (10pt) For each of the following, either convert the given improper fraction to a mixed number or the given mixed number to an improper fraction:

(a) $5\frac{7}{8}$

(b) $\frac{90}{7}$

(c) $\frac{27}{5}$

(d) $-6\frac{3}{4}$

Problem 6. (10pt) For each of the following, either convert the given fraction to a decimal or the given decimal to a fraction:

(a) $\frac{3}{8}$

(b) 0.35

(c) $\frac{30}{7}$

(d) $0.\overline{75}$