

Math 2303  
Fall 2010  
Test 2 Practice

1. Find the greatest common factor of each set of numbers.

- (a). 60 and 90
- (b). 50, 75 and 80
- (c). 504 and 405
- (d). 49 and 25

2. Find the least common multiple of each set of numbers.

- (a). 5, 6, and 7
- (b). 8, 9 and 10
- (c). 30, 28 and 35
- (d). 36 and 48

3. Write the prime factorization of each number.

- (a). 24
- (b). 144
- (c). 2310
- (d). 539
- (e). 5040

4. Which of the following numbers are prime?

23, 39, 43, 51, 69, 71, 79, 91, 207, 176, 153

5. Simplify

- (a).  $-6 + (-12)$
- (b).  $7 - (-123)$
- (c).  $(-4)(7)$
- (d).  $-6 - 4(-5)$
- (e).  $160 \div (-32)$

6. Write the following fractions in decimal form. Do not round, if the answer is a repeating decimal, use the overbar notation.

- (a).  $\frac{13}{4}$
- (b).  $-\frac{456}{48}$
- (c).  $\frac{1}{250}$

(d).  $\frac{8}{9}$

(e).  $\frac{7}{15}$

(f).  $\frac{13}{18}$

7. Write the following numbers as fractions in simplest form.

(a).  $-1.42$

(b).  $0.006$

(c).  $0.00055$

(d).  $0.\bar{1}$

(e).  $0.\overline{63}$

(f).  $1.\overline{16}$

(g).  $-2.\overline{45}$

8. Simplify. Express your answers as fractions in simplest form.

(a).  $\frac{2}{3} - \frac{3}{7}$

(b).  $5\frac{3}{5} + 2\frac{1}{2}$

(c).  $\frac{9}{16} \times \frac{20}{21}$

(d).  $\frac{7}{12} \times 8$

(e).  $\left(\frac{-12}{15}\right) \div \left(\frac{9}{-5}\right)$

(f).  $\frac{1}{2} \left(\frac{3}{5} - \frac{2}{15}\right)$

9. If a square has area 12 square meters, find the length of one side.

10. If a square has sides of length  $\sqrt{129}$  cm, find the area of the square in square centimeters.

11. Which of the following numbers are irrational?

(a).  $\sqrt{50}$

(b).  $\sqrt{81}$

(c).  $\sqrt{0.04}$

(d).  $\sqrt{\frac{49}{25}}$

(e).  $\sqrt{\frac{3}{4}}$

12. Simplify the following. There should be no square roots in the denominator of a fraction, and the number inside each square root should have no perfect square factors.

(a).  $\sqrt{15} \cdot \sqrt{15}$

(b).  $\sqrt[4]{1234} \cdot \sqrt[4]{1234} \cdot \sqrt[4]{1234} \cdot \sqrt[4]{1234}$

(c).  $\sqrt{160}$

(d).  $2\sqrt{18} + 4\sqrt{3}$

(e).  $\sqrt{18} + \sqrt{12}$

(f).  $\frac{3(12)^{\frac{1}{2}}}{3^{\frac{1}{2}}}$

(g).  $\frac{8\sqrt{20}}{\sqrt{80}}$

(h).  $\sqrt{15}(\sqrt{3})$

13. Write the following numbers in scientific notation.

(a). 43,000,000,000,000,000

(b). 845.4

(c). 23

(d). 0.1234

(e). 0.0000046001

(f). 0.000792

14. Given the following numbers in scientific notation, write them as base ten numerals.

(a).  $4.2 \times 10^6$

(b).  $3.208 \times 10^2$

(c).  $9.892 \times 10^{-1}$

(d).  $7.6856 \times 10^{-4}$

15. Simplify the following. Your answer should contain no negative exponents.

(a).  $2^3 \times 2^{-5}$

(b).  $\frac{3^2 7^{-1} 8^2}{3^3 7^{-3} 8}$

(c).  $\left(\frac{3}{5}\right)^2$

(d).  $\left(\frac{2^2}{3^{-1}}\right)^{-1}$

16. Fill out the following chart by placing a "Yes" in the corresponding box if the number belongs to the given set of numbers, and a "No" if the given number is not a member of that set.

Number	Natural?	Whole?	Integer?	Rational?	Irrational?	Real?
-15						
$\frac{0}{2}$						
$\frac{40}{24}$						
1.495						
$3.9\overline{43}$						
$\sqrt{2}$						
$\sqrt{16}$						
$6 \times 10^2$						

17. Place the following numbers in order from smallest to largest.

$$-5, 5^{-1}, 0.5, 0.\overline{5}, 5^2, -5^{-1}, 5, 5^{-3}$$

18. Which of the following statements are true?

(a).  $\frac{2}{3} > \frac{5}{8}$

(b).  $-\frac{4}{5} < -\frac{1}{2}$

(c).  $\sqrt{34} < 6$

(d).  $\sqrt{50} < 7$

(e).  $-1.3384 \geq -1.3386$

(f).  $3^{-2} > -3$

19. Answer the following questions:

(a). The additive inverse of -3 is \_\_\_\_\_.

(b). What is the multiplicative inverse of -5?

(c). What is the identity for multiplication?

(d). What is the additive inverse of  $\sqrt{2}$  ?

(e). Is the product of two rational numbers always a rational number?

(f). (Careful!) Is the product of any two irrational numbers always an irrational number?

20. In the following arithmetic problem, state the property of real number operations that is used to simplify at that step.

Step	Reason
$-36 + 3(10 + 2) + 4$	
$= -36 + (3 \times 10) + (3 \times 2) + 4$	(a). ?
$= -36 + (30 + 6) + 4$	<b>Multiply</b>
$= (-36 + 30) + 6 + 4$	(b). ?
$= -6 + 6 + 4$	<b>Add</b>
$= (-6 + 6) + 4$	(c). ?
$= 0 + 4$	(d). ?
$= 4 + 0$	(e). ?
$= 4$	(f). ?

21. Simplify.

(a).  $9 \cdot 2 \div 6 \cdot 4 \cdot 3 \div 9 \cdot 5$

(b).  $\frac{1}{2}(6 + 10) - 4(3^2 - 2^3)$

(c).  $\frac{3(3 - 5^2) + 6^2(1 - 3)}{\sqrt{16}(1 - 4)^2}$

22. State whether the following value or set of values is a solution to the given equation.

(a).  $-9x - 5 = 13; x = -2$

(b).  $10x^2 + 13x - 3 = 0; x = 1$

(c).  $x^2y^2 - 2x + 4y = 4, x = 0, y = 4$

23. Which of the following points (x, y) is a solution to the inequality  $-2x + 5y \leq 0$ ?

(a).  $(-3, -6)$

(b).  $(-4, -1)$

(c).  $(0, 0)$

(d).  $(3, 2)$

(e).  $(5, 1)$

24. Solve the following equations.

(a).  $4(3x + 4) = 2(5x - 1)$

(b).  $\frac{1}{2}x + 5 = 12$

(c).  $\frac{1}{2}(x - 2) + \frac{2}{3}(5x + 6) = \frac{5}{6}$

(d).  $0.25x + 1.78 = 0.57x - 3.59$