Name: _____ Start Time: _____ End Time: _____

These instructions apply to all question. Answer each question, and simplify all answers. Show all necessary work. All fractional answers should be written in their simplest form. Do not convert fractions to decimals. No credit is given unless work is shown.

Solve the following problems. Be sure to simplify all fractions.

1. $-\frac{4}{7} \div \frac{24}{6}$ 1. _____

2. $\frac{7}{10} - \left(-\frac{2}{7}\right)$ 2. _____

3. $\frac{6}{9} \times \frac{7}{15}$ 3. _____

4. $-\frac{4}{7} + \frac{3}{5}$ 4. _____

5. $\frac{3}{10} + \frac{7}{16} =$ 5. _____

6. $\frac{5}{2} \div \frac{15}{7} =$ 6. _____

7. $\frac{1}{6} - \frac{3}{8} =$ 7. _____

8. $\left(-\frac{9}{14}\right)\left(-\frac{28}{27}\right) =$ 8. _____

9. Simplify the following expressions:

(a) $+-(-5)$ 9(a) _____

(b) $--|-2|$ 9(b) _____

(c) $|-3|$ 9(c) _____

(d) $-|4|$ 9(d) _____

(e) $-(-(-8))$ 9(e) _____

Evalute both sides of the expressions below. Then complete the following statements using: greater than, less than, or equal too or the symbols: $>, <, =$.

10. (a) 12 _____ -15 10(a) _____

(b) -15 _____ -20 10(b) _____

(c) 4 _____ $|4|$ 10(c) _____

(d) the opposite of the opposite of 3 _____ -3 10(d) _____

(e) the absolute value of the opposite of 9 _____ -9 10(e) _____

11. Simplify the following expressions:

(a) $3 - 5$ 11(a) _____

(b) $7(-6)$ 11(b) _____

(c) $-9(-2)$ 11(c) _____

(d) $-8 + (-4)$ 11(d) _____

(e) $-3 - 9$ 11(e) _____

(f) $-2 - (-7)$ 11(f) _____

(g) $3(8)$ 11(g) _____

(h) $-3(10)$ 11(h) _____

(i) $(-3) - (+10)$ 11(i) _____

(j) $-(-6)(7)$ 11(j) _____

(k) $-(-6)(-7)$ 11(k) _____

(l) $\frac{0}{3}$ 11(l) _____

(m) $\frac{3}{0}$ 11(m) _____

(n) $\frac{-8}{32}$ 11(n) _____

(o) $\frac{-36}{-9}$ 11(o) _____

12. Simplify the following expressions:

(a) 3^3 12(a) _____

(b) $(-5)^2$ 12(b) _____

(c) $(-2)^3$ 12(c) _____

(d) -4^2 12(d) _____

(e) $-2^2 \cdot (-3)^2$ 12(e) _____

(f) $\left(\frac{2}{3}\right)^2$ 12(f) _____

(g) $\sqrt{81}$ 12(g) _____

(h) $2\sqrt{50}$ 12(h) _____

(i) $-3\sqrt{48}$ 12(i) _____

(j) $\sqrt{63}$ 12(j) _____

Evaluate the following expressions. Simplify any fractions.

13. $5(-3) - (4 - 7)$ 13. _____

14. $18 - 4(-5)$ 14. _____

15. $(-2)(-5)(0)(10)$ 15. _____

16. $\dfrac{(-10 + 4)}{(-8)(-3)}$ 16. _____

17. $36 \div 3 \cdot 2$ 17. _____

18. $-2(3^2 - 5)^3$ 18. _____

19. $-3(7 - 3^3)$ 19. _____

20. $-3 \cdot (-2)^3 - 12 \div 2$ 20. _____

21. $-(-2)(5) - (-8) + 13$ 21. _____

22. $2 \cdot [(-3 + 5)^2 - 15] + 12 \div 3 \times 4$ 22. _____

Evaluate the expressions below using x = -2 y = 3, z = -5

23. $x(y - z)$ 23. _____

24. $3x + 2y$ 24. _____

25. $x^2 - 4xy$ 25. _____

26. $-(x)^3 - x^2$ 26. _____

27. $4(z - 2)$ 27. _____

28. $2(3x - 2y)$ 28. _____

29. $\dfrac{x + 2y}{2x - 2y}$ 29. _____

30. $(2y + 4x)^3$ 30. _____

31. $x^2 - \dfrac{yz}{30}$ 31. _____

32. $y^2 - (x - z)^2$ 32. _____

33. Simplify the following variable expressions.

(a) $-2x + 3(2x - 8)$ 33(a) _____

(b) $7ab - 8ab + 1ba$ 33(b) _____

(c) $-8 + 3(-4x + 8)$ 33(c) _____

(d) $2(-3x+4)-2(5-4x)$ 33(d) _____

(e) $3x(-4)$ 33(e) _____

(f) $8x(-4)(3y)$ 33(f) _____

(g) $2[3 - 4(2x + 3)]$ 33(g) _____

(h) $\frac{1}{2}x + \frac{3}{4}x \times \frac{2}{3}$ 33(h) _____

(i) $9 - (3y + 8)$ 33(i) _____

(j) $-3\left(\frac{6}{15}x\right)$ 33(j) _____

34. Circle all of the following symbols that indicate the end numbers are included in the solution set? (), [], ∘, •, $<$ and $>$, $\geq$ and $\leq$ 34. _____

Use set-builder notation to write the following sets.

35. All real numbers less than 4. 35. _____

36. All real numbers greater than 9 and less than or equal too 12. 36. _____

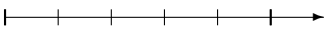
Use interval notation to write the following sets.

37. The real numbers from -10 to 20 inclusive 37. _____

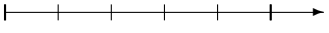
38. All real numbers less than 100 38. _____

Plot the elements of each set on the number line. Use either the ∘, • notation or the bracket notation (), [].

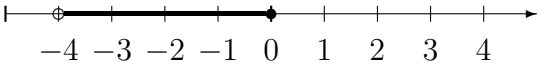
39. $\{x \mid 5 \geq x\}$



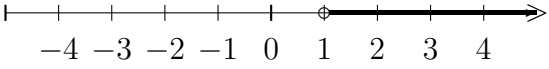
40. $\{x \mid 1 \leq x < 5\}$



Use the set-builder notation to describe each set:

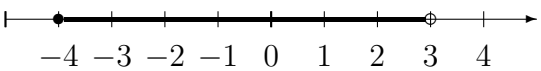
41. 

41. _____

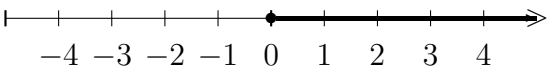
42. 

42. _____

Use interval notation to describe

43. 

43. _____

44. 

44. _____