MAT 090 - Practice Exam 2

Name: _____   Class: _____   Date: _____

Answer each question carefully. Show work to receive full credit for problems.

Trial and error, or guessing answers will receive minimal credit. No work equals no credit.

1. List (in proper order) the 5 steps used to solve Equivalent Equations. Which step is different when solving inequalities?

Give the **solution set** for the following linear equations.

2. $4 = x + 7$

2. _____

3. $3x = 4x - 6$

3. _____

4. $5x + 6 = 3x - 9$

4. _____

5. $2(x + 3) = 15 + 5x$

5. _____

6. $\dfrac{3}{4}x + 9 = 15$

6. _____

7. $\dfrac{5x}{9} - \dfrac{2}{3} = \dfrac{5}{18}$

7. _____

8. $2x + 5 - 3x - 9 = 7x + 13$

8. _____

9. $5x - 2(x - 3) = 3(-5x - 4) - 8$

9. _____

10. The difference between five and twice a number is one. Find the number.   10. _____

11. Three times the difference between four times a number and and seven is fifteen. Find the number.   11. _____

12. The difference of three times an odd number and 7 is equal to the sum of two times the next consecutive odd number and 2. What are the two integers?

    12. _____

13. Find three consecutive odd integers such that three times the middle integer is one more than the sum of the first and third. Find the three integers.   13. _____

14. The sum of two numbers is twenty. Three times the smaller is equal to two times the larger. Find the two numbers.   14. _____

15. The sum of two numbers is fourteen. The difference between two times the smaller and the larger is one. Find the two numbers.

    15. _____

16. An isosceles triangle has two sides of equal length. The length of one of the equal sides is two more than three times the length of the third side. If the perimeter is 46 feet. Find the length of each side.

    16. _____

17. A 12 foot board is cut into two pieces. Twice the length of the shorter piece is three feet less than the length of the longer piece. Find the length of each piece.

    17. _____

18. Ten cups of a restaurant's house salad dressing are made by blending olive oil costing $1.50 a cup with winegar that costs $0.25 a cup. How many cups of each are used if the cost of the blend is $0.50 a cup?

    18. _____

19. A gardner has 20 lbs of a lawn fertilizer that costs $0.80 a pound. How many pounds of horse manure that costs $0.55 a pound should be mixed with the lawn fertilizer to make a mixture that costs $0.75 a pound?

19. _____

20. At 8 am. a sail boat leaves the harbor traveling at 9 mph. Two hours later a motor boat leaves the same harbor traveling at 18 mph. At what time will the motor boat catch the sail boat?

20. _____

21. A car leaves a city and goes north at a rate of 25 mi/hr at 2 p.m. three hours later a second car leaves traveling south at a rate of 40 mi/hr. At what time will the two cars be 335 miles apart?

21. _____

22. The concession stand you manage for the Denver Broncos sells beer for $3 each
and hamburgers for $5. If the total receipts from 250 sales was $900,
how many beers and how many hamburgers were sold.

22. _____

23. Which symbols (plural) indicate that the end numbers are included
in the solution set? (), [], ∘, •, < and >, ≥ and ≤

23. _____

24. Which symbols (plural) indicate that the end numbers are **NOT**
included in the solution set? (), [], ∘, •, < and >, ≥ and ≤

24. _____

Solve each inequality. Write the answer using **INTERVAL NOTATION** in the answer blank. Graph
the solution set on the number line provided.

25. $-2x < -4$
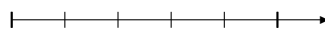
25. _____

26. $5(-2x - 7) > -15$
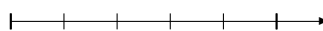
26. _____

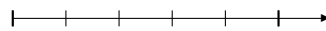27. $\dfrac{3}{5}x - 2 \leq \dfrac{3}{10} - x$
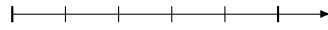
27. _____

28. $\dfrac{2}{3}x - \dfrac{3}{2} \leq \dfrac{7}{6} - \dfrac{1}{3}x$
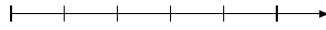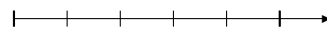
28. _____

29. $-3 \leq -2x - 3$ and $-2x - 3 \leq 5$

29. _____

30. $3x + 4 < -5$ or $4 < 3x + 4$

30. _____

Solve each equality.

31. $|2x - 3| = 0$

31. _____

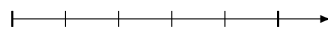32. $|x - 2| - 2 = 3$ 32. _____

33. $|2x - 3| + 4 = -4$ 33. _____
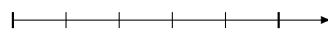
34. $|3 - 4x| = 9$ 34. _____

Solve each inequality. Write the answer using **SET BUILDER NOTATION** in the answer blank. Graph the solution set on the number line provided.
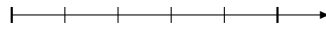
35. $|2 - x| \geq 3$ 35. _____

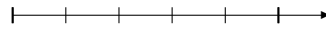36. $|2x + 1| < 5$ 36. _____

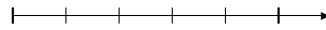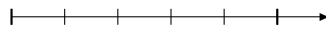37. $|3x - 4| \leq -5$

37. _____

38. $|-4 + 2x| > -3$

38. _____

39. $|2 - 5x| - 4 > -2$

39. _____

40. $|5 - 4x| \leq 15$

40. _____