UNIT 1 TEST REVIEW   **Name:** _____
Dimensional Analysis, Polynomials, Square Roots and Rational and Irrational Numbers

Part 1: Use conversions from the table above to answer the following questions:

1. A mass of 0.15 ounces is equal to how many grams?

- **Converting Metric to English and English to Metric**

		Conversion Factor
fl oz ⟷ mL		29.58
gal ⟷ L		3.79
in ⟷ cm		2.54
m ⟷ ft		3.28
mi ⟷ km		1.61
oz ⟷ g		28.35
kg ⟷ lb		2.20

2. 21 gallons is equal to how many ounces?

3. A 10. Km race is how many miles?

4. In 1976 an airplane was flown at a speed of 2,193 miles per hour. What was the speed in feet per second?

Part 2: Classify each as either a **M** (monomial), **B** (binomial), or **T** (trinomial).
          Classify each as either a constant, linear, or quadratic.

5._____ -130 6._____ $4a^2 + 7a - 10$ 7._____ 10x - 2

Part 3: <u>Add</u> these polynomials.

8. $(19x^2 + 12x + 12) + (7x^2 + 10x + 13)$

9. $(4x^2 - 6x + 7) + (-19x^2 - 15x - 18)$

10. $(20x^2 + 15x + 13) + (-19x^2 + 17x + 5)$

11. $(9x^6 - 4x^5) + (10x^5 - 15x^4 + 14)$

Part 4: <u>Subtract</u> these polynomials.

12. $(6x + 14) - (9x + 5)$

13. $(19x^2 + 9x + 16) - (5x^2 + 12x + 7)$

14. $(17x^2 + 7x - 14) - (-6x^2 - 5x - 18)$

15. $(-18x^2 + 4x - 16) - (15x^2 + 4x - 1)$

Part 5: Multiply the following monomials and polynomials.

16. $6(x^2 + 2x + 7)$

17. $4x(1 - x)$

18. $-x^2(x + 5)$

19. $3x^2(4x^3 - 5x + 10)$

20. $3x(-x^2 + 2x - 12)$

Part 6: Multiply the following binomials.

21. $(x - 3)(x + 4)$

22. $(2x - 4)^2$

23. $(x - 7)(x - 6)$

24. $(3x - 1)(x + 5)$

Part 7: Multiply the following binomials and trinomials.

25. $(x + 5)(x^2 - 6x + 3)$

26. $(2x - 3)(4x^2 + 8x - 2)$

Part 8: Simplify each square root.

27. $\sqrt{18}$

28. $\sqrt{125}$

29. $3\sqrt{72}$

30. $2\sqrt{729}$

31. $4\sqrt{180}$

32. $\sqrt{x^{10}}$

33. $\sqrt{y^{17}}$

34. $x\ y^2 \sqrt{x^4 y^3}$

35. $2\sqrt{8x^5}$

Part 9: Simplify each square root expression.

36. $2\sqrt{11} + 7\sqrt{11} - 4\sqrt{11}$

37. $7\sqrt{6} + 4\sqrt{3} - 3\sqrt{6} + 2\sqrt{2}$

38. $14\sqrt{8} - 5\sqrt{8}$

39. $\left(\sqrt{2}\right)\left(\sqrt{5}\right)$

40. $\left(2\sqrt{15}\right)\left(3\sqrt{30}\right)$

41. $\sqrt{27} + \sqrt{48} - 2\sqrt{3}$

42. $\left(6\sqrt{2}\right)\left(6\sqrt{18}\right)$

Part 10: Identify whether the following statements are true ALWAYS, NEVER, or SOMETIMES.

- 43. The sum of a rational number and a rational number is rational.

- 44. The sum of a rational number and an irrational number is irrational.

- 45. The sum of an irrational number and an irrational number is rational.

- 46. The product of a rational number and a rational number is rational.

- 47. The product of a rational number and an irrational number is irrational.

- 48. The product of an irrational number and an irrational number is irrational.