Unit 1 Test Study Guide **ALGEBRA I**

Directions: Label the following algebraic expressions as Rational or Irrational.

1) $4\sqrt{50}$ 2) $\frac{2}{3}$ 3) $0.\overline{66}$ 4) $5\pi - 3$

Directions: Determine if the following statement is ALWAYS true, SOMETIMES true, or NEVER true.

5) The sum of two rational numbers is irrational.

6) The product of two irrational numbers is rational.

Directions: Simplify completely.

7) $\sqrt{63}$

8) $2\sqrt{8k^7}$

9) $\sqrt{18a^6b^2}$

10) $\sqrt{256x^3y^8}$

Directions: Simplify completely.

11) $7\sqrt{81x} - \sqrt{27x}$

12) $2\sqrt{80} + 4\sqrt{5}$

13) $\sqrt{2} \bullet 2\sqrt{3} \bullet 5\sqrt{6}$

14) $4\sqrt{5}\,(\sqrt{5} - 2\sqrt{6})$

15) $\frac{5}{\sqrt{8}}$

16) $\frac{5\sqrt{24}}{3\sqrt{6}}$

Directions: Solve.

17) What is the area of a rectangle if the length of the sides are $6\sqrt{3}$ and $2\sqrt{27}$?

18) If a square has a perimeter of $20\sqrt{3}$ meters, what is the area of the square?

19) How many terms are in the expression $-12x^3 + 7x^2 - 4x - 19$?

20) What are the variables, coefficients, and constants in the expression $20x^4 - 11x + 3$?

Directions: Simplify Completely.

21) $(3x^2 - 6x + 2) - (4x^2 - 2x + 9)$

22) $(-10x - 4y + 2) + (4x^2 + 4y - 12)$

23) $(x+4)(x - 3)$

24) $2x^2(4x^2 - 5x + 3)$

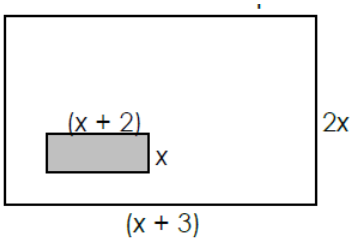
25) $(2m - 3)^2$

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

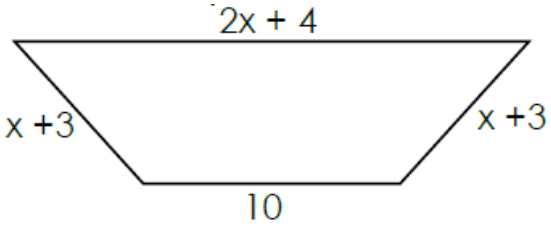
Directions: Simplify Completely.

27) Rachel is building a rectangular garden that is $(3x - 8)$ units long and $(2x + 3)$ units wide. What algebraic expression would represent the AREA of this garden?

28) Find the area of the unshaded region.



29) Find the perimeter of the trapezoid.



30) Find the volume of the cube.