Algebra Unit 1 Test Review Name: key

Listed below in bolded font is all topics on the test and at least one example for each topic. Remember to also go back in your notes to study for this test!

Simplifying Radicals

1. $\sqrt{50}$ = $5\sqrt{2}$

10 → 5, 2, 5

2. $3\sqrt{98}$ = $3 \cdot 7\sqrt{7}$ = $21\sqrt{7}$

49 → 7, 7

Simplifying Radicals with Variables

3. $\sqrt{16x^4y}$ = $4x \cdot x\sqrt{y}$ = $4x^2\sqrt{y}$

16 → 4, 4; x^4 → x, x, x, x; y

4. $-3\sqrt{24ab^9c^{12}}$ = $-3 \cdot 2 \cdot b \cdot b \cdot b \cdot b \cdot c \cdot c \cdot c \cdot c \cdot c \cdot c \sqrt{2 \cdot 3 \cdot b}$

8 → 4, 2; 4 → 2, 2

= $-6b^4c^6\sqrt{6ab}$

Adding and Subtracting Radical

5. $7\sqrt{5} - 4\sqrt{5}$

$3\sqrt{5}$

6. $\sqrt{54} + 2\sqrt{27} - 5\sqrt{18}$

$3\sqrt{6} + 2 \cdot 3\sqrt{3} - 5 \cdot 3\sqrt{2}$

$3\sqrt{6} + 6\sqrt{3} - 15\sqrt{2}$

Multiplying Radicals

7. $\sqrt{5} \cdot \sqrt{2}$ = $\sqrt{10}$

8. $3\sqrt{10} \cdot 4\sqrt{2}$ = $12\sqrt{20}$

20 → 5, 4; 4 → 2, 2

= $12 \cdot 2\sqrt{5}$ = $24\sqrt{5}$

Irrational vs. Irrational (including whole, natural, integers)

9. Circle all rational numbers: $\sqrt{16}$, $\sqrt{12}$, 4.2, 4.33, 4.257..., π, $\frac{1}{2}$, 6

10. Determine if the statement is always, sometimes, or never true.

a.) The sum of two rational numbers is always rational. ALWAYS

b.) The product of 2 irrational numbers is always rational. SOMETIMES

c.) The product of a rational and irrational number is rational. NEVER

1 mile = 5,280 feet
1 fl. oz = 29.6 mL
1 pt = 0.473 L
1 L = 1000 mL

Dimensional Analysis

11. Convert 2 miles to inches

$\frac{2 \text{ miles}}{1} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} \cdot \frac{12 \text{ in}}{1 \text{ ft}}$ = 126,720 inches

12. Convert 1,000 feet/second to miles/hour

$\frac{1000 \text{ ft}}{1 \text{ sec}} \cdot \frac{1 \text{ mi}}{5280 \text{ ft}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$ = 681.82 mph

13. How many pints are in 104 fluid ounces?

$\frac{104 \text{ oz}}{1} \cdot \frac{29.6 \text{ mL}}{1 \text{ oz}} \cdot \frac{1 \text{ L}}{1000 \text{ mL}} \cdot \frac{1 \text{ pt}}{0.473 \text{ L}}$ = $\frac{3,078.4 \text{ pt}}{473}$ = 6.51 pt

Appropriate Units

14. What is best unit to measure the area of the classroom? (multiple choice)

a. cubic inches b. cubic feet c. square inches d. square feet

Interpreting Expressions (verbally and algebraically)

multiple answers

~~15.~~ At Sam's you can buy 10 bags of meatballs at a 25% discount. *simplify*

16. A number cubed increased (add) by four. $x^3 + 4$

17. The difference (subtract) between five times a number squared and eight. $5x^2 - 8$

18. Nine from (turn around) a number. $x - 9$

19. Four times the sum (parenthesis) of a number and 2. $4(x + 2)$

20. Write the verbal expression: $6 + x^2$ six plus a number squared

21. Write the verbal expression: $5(4 - x)$ five times the difference of four and a number

Terms, Factors, Coefficients, Constants

22. $6x^3 + 8x^2 - 4x + 12$

Terms $6x^3$, $8x^2$, $-4x$, 12 Factors $6 \cdot x \cdot x \cdot x$, $2 \cdot 2 \cdot 2 \cdot x \cdot x$, $2 \cdot -2 \cdot x$, $2 \cdot 2 \cdot 3$ Coefficients 6, 8, -4 Constants 12

Classifying Polynomials

23. How many terms does the following polynomial have? $-9x^4 - 9x^3 + 7x^2 + 3x + 8$ 5

24. Classify the following by the number of terms:

a. -4x: 1 term - monomial

b. $8p^2q + 3p$: 2 terms - binomial

Polynomial Operations

25. $(5x^2 + 4) + (16x - 3x^2 - 1)$

$8x^2 + 16x + 3$

26. $(5x^2 + 4) - (16x - 3x^2 - 1)$ $= 5x^2 + 4 - 16x + 3x^2 + 1$

$8x^2 - 16x + 5$

27. $4x(3x - 2) + 8x(2x^2 - 3x + 7)$

$= 12x^2 - 8x + 16x^3 - 24x^2 + 56x$

$16x^3 - 12x^2 + 486x$

28. $-2x^2(-3x^3 + x) - 3x(4x^2 - 2x + 1)$

$= 6x^5 - 2x^3 - 12x^3 + 6x^2 - 3x$

$= 6x^5 - 14x^3 + 6x^2 - 3x$

29. $4v(v^2 + 6v - 5)$

$4v^3 + 24v^2 - 20v$

30. $(x - 4)(3x + 5)$ FOIL

$3x^2 + 5x - 12x - 20$

$3x^2 - 7x - 20$

31. $(x - 1)(x^3 + 2x + 2)$

$x^4 + 2x^2 + 2x - x^3 - 2x - 2$

$x^4 - x^3 + 2x^2 - 2$

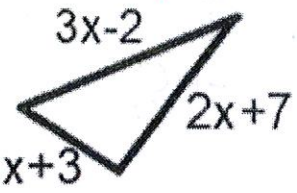
32. $(m + 7)^2 = (m+7)(m+7)$ FOIL

$m^2 + 7m + 7m + 49$

$m^2 + 14m + 49$

33. Find the **perimeter** of the triangle.

add together



$(3x - 2) + (x + 3) + (2x + 7)$

$6x + 8$

34. Find the **area** of the rectangle.

multiply together

$(3x+1)(2x^2 + 7x)$ FOIL

$6x^3 + 21x^2 + 2x^2 + 7x$

$6x^3 + 23x^2 + 7x$

Accuracy vs. Precision

35. Circle the most precise measurement of each pair:

A. 3.2 feet or 30 inches

B. 16.01 miles or 16.2 miles

MORE DETAIL IN DECIMALS

36. Circle the most accurate scale when weighing a 5 pound weight:

Scale 1 = 4.85 pounds

.15 off

Scale 2 = 5.1 pounds

.1 off