Basic Algebra

Name: _____

Period: _____ Date: _____

Use the divisibility tests for 2, 3, 5, 9, and 10 to answer the following questions.

1. **Which number is divisible by 3?**

   a. 3887   b. 845   c. 7475   d. 5850   e. none

2. **Which number is divisible by 9?**

   a. 227   b. 3087   c. 8330   d. 1748   e. none

3. **Identify the list below in which all numbers are divisible by 2.**

   a. 78, 22, 77, 25, 10   b. 88, 42, 20, 60, 50, 101

   c. 10, 46, 98, 26, 202   d. 71, 52, 21, 80, 40, 10

4. **Identify the list below in which all numbers are divisible by 5.**

   a. 128, 122, 175, 25, 100   b. 180, 45, 200, 610, 505

   c. 175, 406, 980, 265, 202   d. 711, 502, 205, 805, 405

5. **Identify the list below in which all numbers are divisible by 10.**

   a. 100, 120, 170, 250, 4700   b. 181, 55, 253, 613, 505

   c. 175, 405, 980, 265, 2000   d. 10, 20, 30, 40, 55

ANSWERS
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Write using exponents.

6. $-5 \cdot x \cdot x \cdot 4 \cdot y \cdot y \cdot x$

7. $c \cdot d \cdot c \cdot 4 \cdot c \cdot d \cdot 10 \cdot d$

Simplify each expression (find the <u>answer</u>) using order of operations.

8. $(15 - 13)^3 \div 2$

9. $10 + (10 - 7)^2 \cdot 2$

10. $10^2 \div 2^2 + (10 - 5)$ **11.** $2^2 \div 2 + 2 \cdot 2 + (-2)^2$

ANSWERS
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

Use a Factor Tree or the Cake Method to find each number's Prime Factorization. If the number is prime, write prime.

12) $150 = $ _____   **13)** $45 = $ _____

Find the GCF (Greatest Common Factor) of the following numbers.

14) $12 = $ _____

  $20 = $ _____

  GCF = _____

15) $80 = $ _____

  $240 = $ _____

  GCF = _____

16) $12x^4y^3 = $ _____

  $27x^3y^2 = $ _____

  GCF = _____

Write each fraction in simplest form.

17. $\dfrac{8}{16}$

18. $\dfrac{35}{40}$

Evaluate. Write answer in Simplest Form.

19. $\dfrac{2a+b}{21}$ for a = 2 and b = 10

20. $\dfrac{a+b}{4b}$ for a = –5 and b = –2

ANSWERS
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____
26. _____

Simplify using the rules for exponents.

21. $2^5 \cdot 2^3$

22. $7a^4 \cdot 3a^2$

23. $y^5 \cdot x^2 \cdot y^3 \cdot x^4$

24. $(x^3)^5$

25. $(2x^5 y^3)^5$

26. $\dfrac{x^8}{x^2}$

27. 8^0

28. $\dfrac{b^7}{b^{10}}$

29. $\dfrac{x^4 y^5}{x^2 y^2}$

30. $\dfrac{20x^7 y^6}{5x^4 y^6}$

31. $\dfrac{3x^3 y^4}{6x^7 y^2}$

32. $(2x^5 y^3)(5x^3 y^4)$

ANSWERS

27. _____

28. _____

29. _____

30. _____

31. _____

32. _____

33. _____

34. _____

33. A hoagie shop serves 5 kinds of hoagies: Italian, Steak and Cheese, Meatball, Turkey, and Veggie. You have any hoagie using white, wheat, or rye bread. Suppose you eat there every day. For how many days can you order a hoagie that is different from any you have ordered before?

34. Eight people are at a party. Everyone shakes hands once with everyone else. How many handshakes are there all together?