{Notes}

[6·1A] Exponents; Adding & Subtracting Polynomials

2^3 ← Exponent, ← Base

$2^3 = 2 \cdot 2 \cdot 2 = \boxed{8}$

Simplify.

① $x \cdot x \cdot x \cdot x = \boxed{x^4}$

(cubed) $4x = x + x + x + x$

② $c \cdot c \cdot 3 \cdot d \cdot c \cdot d \cdot 2 = \boxed{6c^3d^2}$ — (squared)

③ $y \cdot y \cdot (-2) \cdot x \cdot (-4) = \boxed{8xy^2}$

For #4-7, $x = -2$, $y = 3$, $z = -1$.

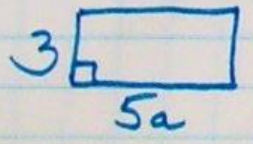
④ x^2 → $(-2)^2$ → $\boxed{4}$; -2^2 → $\boxed{-4}$

⑤ z^4 → $(-1)^4$ → $\boxed{1}$

⑥ z^{15} → $(-1)^{15}$ → $\boxed{-1}$

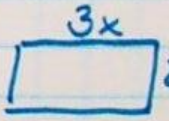
⑦ $-2y^2$ → $-2(3)^2$ → $-2 \cdot 9$ → $\boxed{-18}$

Find the area.

⑧ 

$A = 3 \cdot 5a$

$\boxed{15a}$

⑨ 

$A = 3x \cdot 2x$

$A = \boxed{6x^2}$

Simplify: $(-4)^2 = 16$ means "$-4 \cdot -4$"

$-4^2 = -16$ means "the opposite of $4 \cdot 4$"

* Term: Expression separated by addition or subtraction.

ie: $a + b$ 2 terms

$3a^2 - 2ab - b^2$ 3 terms

Monomial: One Term Ie: a, 3, $4ab^2e^3$, $\frac{x}{5}$

Binomial: Two Terms Ie: $2x+5$, $m-n$, a^2+b^2

Trinomial: Three Terms Ie: $2x^2 + 3x + 5$

Polynomial: Many Terms $\frac{3}{\text{coefficient}}a^6 + a^5 - a^4 + \frac{x^2y - x + y}{10}$ (constant)

Simplify.

① $3x + 5x + 2x^2$: $\boxed{2x^2 + 8x}$ binomial

② $2y^2 + ^-8 + ^-6y + 2y + 9$: $\boxed{2y^2 + ^-4y + 1}$ trinomial

③ $(6x^2 + ^-2y + 4) + ^-1(-3x^2 + ^-4y + 3)$

$6x^2 + ^-2y + 4 + 3x^2 + 4y + ^-3$

$\boxed{9x^2 + 2y + 1}$ trinomial

④ $(5a^2 + 3a) + ^-2a(a + ^-4)$ $\quad -2a \cdot a = -2a^2$

$5a^2 + 3a + ^-2a^2 + 8a$

$\boxed{3a^2 + 11a}$ binomial

Solve.

⑤ $(2y^2 + ^-y + 6) + ^-2(y^2 + ^-3y + 5) = 11$

$2y^2 + ^-y + 6 + ^-2y^2 + 6y + ^-10 = 11$

$5y + ^-4 = 11$

$5y = 15$

$\boxed{y = 3}$

⑥ Find two consecutive odd integers whose sum is the square of 8.

S: smallest #

S + 2

$S + (S+2) = 8^2$

$2S + 2 = 64$

$2S = 62$

$S = 31$

$\boxed{31 \text{ and } 33}$

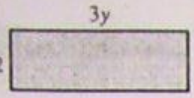
[6-1A] Exponents and Adding / Subtracting Polynomials

Practice. (#2-48) x 2

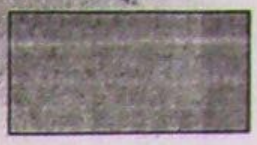
No calculator.

Show work for #24-48

Find the area of each rectangle.

A 1. 

2. 

3. 

Write each expression in exponential form.

4. $x \cdot x \cdot x \cdot x \cdot x$
5. $m \cdot m \cdot m$
6. $4 \cdot t \cdot t \cdot t$
7. $c \cdot c \cdot 3 \cdot c$
8. $-6 \cdot z \cdot z$
9. $y \cdot y \cdot (-5)$
10. $-3 \cdot x \cdot 2 \cdot x$
11. $7 \cdot n \cdot (-2) \cdot n$

Write each expression in exponential form.

12. $a \cdot a \cdot b \cdot b \cdot b$
13. $c \cdot d \cdot c \cdot c$
14. $m \cdot 8 \cdot m \cdot n \cdot n$
15. $u \cdot v \cdot u \cdot u \cdot 9$
16. $-3 \cdot x \cdot y \cdot x$
17. $r \cdot (-4) \cdot s \cdot s$
18. $e \cdot f \cdot e \cdot g \cdot g$
19. $p \cdot p \cdot q \cdot q \cdot r \cdot s$

Match each phrase with the corresponding algebraic expression.

20. The square of a plus the square of b
21. The square of the sum of a and b
22. The cube of the quantity a plus b
23. The sum of the cube of a and the cube of b

a. $(a + b)^3$
b. $a^2 + b^2$
c. $a^3 + b^3$
d. $(a + b)^2$

Simplify.

24. a. -6^2
    b. $(-6)^2$
26. a. $2 \cdot 5^2$
    b. $(2 \cdot 5)^2$
28. a. $5 - 3^4$
    b. $(5 - 3)^4$
30. a. $2 \cdot 3 - 5^2$
    b. $2 \cdot (3 - 5)^2$

B 32. $(1 \cdot 10^3) + (4 \cdot 10^2) + (9 \cdot 10) + 2$

34. $[2^3 + 3^3] \div [2^3 + (-1)^2]$

36. $[3^3 + (-2)^3 + (-1)^3] \div 3^2$

38. $3^2 \div (2^2 - 1) - (5^2 - 3^2) \div (-2)^3$

Evaluate if $a = 3$ and $b = -2$.

40. a. $ab - a^2$
    b. $a(b - a)^2$
42. a. $(2a - b)^3$
    b. $2a - b^3$
44. $\dfrac{(2a + b)^2}{2a + b}$
46. $\dfrac{a^4 + b^4}{a + b}$

Evaluate each expression for the given value of x.

C 48. $(x^2 + 4x + 5)(x^2 + x - 2)$, $x = -3$

(#2-8, 32-56) x 2

Simplify.

2. $6m - 6n - 4m + n$
4. $n^2 - 4n - 3n^2 + 7n + 5n^2$
6. $p^2q - q^3 - 3p^2q + 4q^3$
8. $-3x^2 + 7x^2y - x^3 + xy^2 + 4x^3 - 3x^2y$

32. $(2p - 7q - 4) + (3q + 2p - 1)$
34. $(3m + 5) - (-2m + 3)$
36. $(a - 3b + 5) - (-a + 2b + 3)$
38. $(y^2 + 6y - 5) + (-y^2 - 3y - 1)$
40. $(y^2 - 3y - 5) - (-y^2 - 7y + 4)$
42. $(2x^2y - 3xy^2 - y^3) + (2x^2y - xy^2)$
44. $(2p^2q - 3pq^2 + q^3) - (-p^2q + q^3)$

Solve.

46. $z - (4z - 5) = 8$
48. $(2x + 3) - (5x - 7) = 1$
50. $3(n - 2) - 2(3 - n) = 4(n - 3)$
52. $3(4u - 6) = 2(4u - 3) - (u - 8)$
54. $y(2 - y) = 6 - (y^2 + 3y - 4)$
56. $3 - 2x(x - 1) = x(3 - 2x) - (x - 3)$

#46-56 and #5-14 Need work shown on notebook paper

Solve.

5. Find two consecutive integers whose sum is the square of 7.
6. Find three consecutive integers whose sum is the square of 6.
7. Find four consecutive integers whose sum is twice the cube of 5.
8. Find two consecutive odd integers whose sum is the cube of 4.
9. The greater of two consecutive integers is 10 less than twice the smaller. Find the integers.
10. The greater of two consecutive even integers is 10 less than twice the smaller. Find the integers.

B
11. Find three consecutive odd integers such that twice the smallest is 3 more than the greatest integer.
12. Find four consecutive integers such that the sum of the two greatest is 17 less than twice the sum of the two smallest.
13. Find four consecutive even integers such that the fourth is the sum of the first and second.
14. Find four consecutive odd integers such that the sum of the two greatest is four times the smallest.