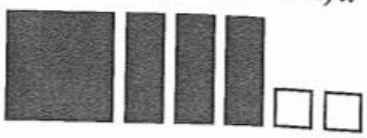
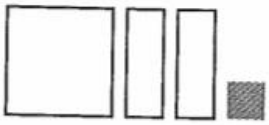
5.1 The Language of Mathematics

1. symbols, variables
2. polynomial, monomial, binomial, trinomial
3. exponents, highest
4. **a)** 2; binomial **b)** 1; monomial **c)** 3; trinomial **d)** 4; polynomial
5. **a)** 2; 2 **b)** 2; 2 **c)** 1; 0 **d)** 2; 3
6. **a)** $4c^2 - 3c + 2$, $g + h + j$
   b) $4c^2 - 3c + 2$, $5p^2 - r$, $4ab$ **c)** -12
   d) $4ab$, -12 **e)** $4c^2 - 3c + 2$, $4ab$
7. **a)** $x^2 + x - 4$ **b)** $-2x^2 - 3$ **c)** $x^2 - 3x$
8. **a)**



b)



9. **a)** $x^2 + 7$ **b)** $3x - 9$ **c)** $4x$
10. **a)** $5n$ **b)** $w(w + 5)$ or $w^2 + 5w$ **c)** $0.8x + 40$

5.2 Equivalent Expressions

1. **a)** a, b **b)** -7; 1 for w, 2 for x **c)** No
2. x^2 should be circled in each term; $-2x^2$
3. No. They are not like terms because either the variables differ or the exponents of the variables differ.
4. **a)** 1; 1 **b)** -3; 1 **c)** 6; 2 **d)** no value; 0 **e)** -1; 2 **f)** 1; 2
5. **a)** $-cd$, $-xy$ **b)** $-cd$, $-xy$, $-3jk$ **c)** k^2 **d)** $9r$, $4x$
6. **a)** $3r$, $-r$ **b)** $-4y$, $0.3y$, $\frac{y}{2}$ **c)** cd, $6cd$
7. Examples:
   a) $5c^2 - c^2 - 5c + c + 9 - 8$
   b) $3m^2 + 2m^2 + 8m - 6m - 9 + 6$
   c) $6d^2 - 5d^2 - 8d + 3d + 7 - 2$
8. The order of the terms may vary.
   a) $-b^2 + 5b^2 + 6 - 8 + 9$; $4b^2 + 7$
   b) $4t^2 - 3t^2 + 7t + 6t - 5 + 14$; $t^2 + 13t + 9$
   c) $-2n^2 - 3n^2 + 9n + 5n + 3 - 7$; $-5n^2 + 14n - 4$
   d) $3y^2 - 6y^2 + 3y + 2y + 4 - 6 - 5$; $-3y^2 + 5y - 7$

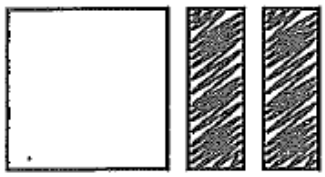
5.3 Adding and Subtracting Polynomials

1. A **2.** opposite

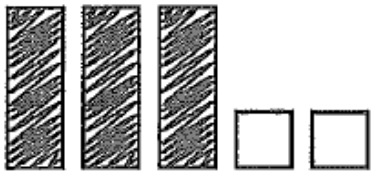
3. a) $8y - 2$ **b)** $-b^2 + 2$ **c)** $-4s^2 + 7s - 6$

4. a) $4d - 1$ **b)** $-6m^2 - 5$ **c)** $-r^2 + r - 9$

5. B

6. a) 

$-x^2 + 2x$

b) 

$3x - 2$

7. a) $3y^2$ **b)** $-6g + 3$ **c)** $-2b^2 + 4b - 7$

d) $4d^2 + 3d + 6$ **e)** $k^2 + 8k - \frac{1}{2}$

8. a) $(3r - 5) + (-5r - 2)$; $-2r - 7$

b) $(6 - 3f) + (-4 + 5f)$; $2 + 2f$

c) $(-4n^2 + 5) + (n^2 + 9)$; $-3n^2 + 14$

d) $(6a^2 + 2a - 5) + (-4a^2 - 5a - 7)$;
$2a^2 - 3a - 12$

9. a) $(x + 3) + (2x + 2) + (2x)$

b) $5x + 5$ **c)** $x = 4$; Verify: $5(4) + 5 = 25$

10. a) $x + 2x + (x - 10)$ **b)** $4x - 10$