Section 1.1
Turning Plain English into Algebra

In algebra, simple words can be turned into algebraic expressions. Expressions that define mathematical relationships between variables.

Examples:

PLAIN ENGLISH	ALGEBRA
1. The **product** of five and six is thirty.	$5 \times 6 = 30$ (product is the result of multiplication)
2. The **quotient** of thirty and five is six.	$\frac{30}{5} = 6$ (quotient is the result of division)
3. The **sum** of three and four is seven.	$3 + 4 = 7$ (sum is the result of addition)
4. The **difference** of twelve and four is eight.	$12 - 4 = 8$ (difference is the result of subtraction)
5. A number	any letter will do ($a, b, c, d,.....w, x, y, z$)
6. Twice a number	$2x$
7. Four times a number	$4a$
8. Three consecutive numbers	$x, (x+1), (x+2)$
9. If seven is added to a number...	$x + 7$ *or* $7 + x$
10. If ten is subtracted from a number...	$n - 10$ (backwards has a different meaning)
11. Eight less than twice a number	$2a - 8$
12. Five more than three times a number	$3y + 5$
13. A number to the fifth power plus three	$x^5 + 3$
14. Ten increased by half a number.	$10 + \frac{x}{2}$
15. The product of two numbers	xy
16. The square root of a number decreased by four.	$\sqrt{n} - 4$
17. Pete **is** three years older than twice the age of Nick.	$P = 2N + 3$ ("is" stands for equal)
18. Twice the sum of two numbers	$2(a + b)$
19. Seven times the difference of two numbers	$7(c - d)$
20. Three-fourth a number reduced by six.	$\frac{3x}{4} - 6$

21. Five is to six as ten is to twelve (*proportion*).	$\frac{5}{6} = \frac{10}{12}$
22. The sum of two numbers, squared.	$(a + b)^2$
23. The sum of two numbers squared.	$a^2 + b^2$
24. Mount Everest is higher than Pico Aconcagua.	$E>A$
25. David's score is at least as high as Pedro's.	$David \geq Pedro$
26. Sandra earns less than Francis.	$Sandra < Francis$

Practice:
Write the equivalent algebraic expression.

1. Lesly is fourteen inches taller than Jim.
2. The product of a number and the same number.
3. Half a number, increased by twelve.
4. The difference between two numbers.
5. The difference of two squares.
6. Three times a number, reduced by six.
7. Jerry is three times Ralph's age.
8. The sum of two consecutive numbers.
9. Half a number, increased by seven.
10. The addition of two squared numbers.
11. Felix is five years younger than Mimi.
12. In three years, Juan will be three times as old as Elaine.
13. The boy has quarters and dimes.
14. The difference between A and B is 500.
15. Twice a number, plus three times another number.
16. The girl is half her mother's age.
17. Petra is 30 yards ahead of Jim.
18. The difference between C and D is fifteen.
19. The combined ages of Ed and Al is fifty six.
20. Four times a number reduced by eight.
21. Twice the sum of two numbers.
22. Half the area of a circle.
23. Three times the difference of two numbers.
24. Twice a number, less the number increased by two.
25. Three times a number increased by one-third the number.
26. One third a number, increased by nine.
27. His grandmother is four times his age.
28. A centimeter is larger than a millimeter.
29. Half a number is larger than one-third a number.
30. Jack is at least as tall as Holly.
31. Fred earns twice as much as Jordi.
32. The quotient of two numbers is five.
33. Twice a number, increased by seven, is five.
34. The product of a number and its square root is nine.
35. The ratio of two numbers is ten.
36. The square of a number increased by the number.
37. The cube of a number reduced by the square of the number.
38. Laura is shorter than David and David is shorter than Mack.
39. The baby is at least twenty-one inches long.
40. Three times the sum of three numbers.
41. Four times a number plus the product of the number and five.
42. The difference of two numbers, squared.
43. The square root of the sum of two numbers squared.
44. The product of two consecutive numbers.
45. Twice a number, increased by six.
46. The square root of a number, increased by the cube of the number.
47. The square root of twice the number.

Write the equivalent English sentence.

1. $x + y + z$
2. $a - b$
3. $2x - 7$
4. $\frac{c}{2} - 10$
5. $t > s$
6. $Mary + 3 = Susan$
7. $a - b = 8$
8. $2(x + y)$
9. $x + (x + 2) + (x + 4)$
10. $3x + 2x$
11. $4(a - b)$
12. $n + 8$
13. abc
14. $6x + 5$
15. $33 + 34 + 35 = 102$
16. $\sqrt{x} + 5$
17. $x^2 + y^2$
18. $(a^2 - b^2)$
19. $4g$
20. $\frac{x}{3} + 6$
21. $5 + d$
22. $a \geq b$
23. $c \leq d$
24. $3x + 4y - 7z$
25. $x(x - 4)$
26. $5N + 13D + 10Q = \$4.05$
27. $\angle A = \angle B$
28. $\frac{x + y}{2}$
29. $David > John > Carlos$
30. $x^3 - 17$
31. $8 - y$
32. $a + b - c$
33. $x - 5$
34. $4y + 4$
35. $\frac{b}{3} + 12$
36. $m < n$
37. $Pete = Joan + 10$
38. $a + b + c$
39. $x - y$
40. $4x - 8$
41. $\frac{x}{6} - 5$
42. $c > b$
43. $Carlos + 14 = Mark$
44. $m + n = 6$
45. $5(x - y)$
46. $x + (x + 1) + (x + 2)$
47. $4x - 6x$
48. $5(x - y)$
49. $n - 12$
50. xyz
51. $2x + 15$
52. $21 + 22 + 23$
53. $\sqrt{b} + 7$
54. $x^3 + y^3$
55. $(a^3 - b^3)$
56. $7f$
57. $\frac{x}{4} + 8$
58. $15 - p$
59. $a \leq -9$
60. $12 \geq j$
61. $5x + 3y + 8z$
62. $(y - 12)y$
63. $15N + D + 20Q = \$5.85$
64. $\angle 2F = \angle T$
65. $\frac{a - b}{4}$
66. $David < John < Carlos$
67. $x^5 + 34$
68. $\frac{c}{4} + 8$
69. $c > d$
70. $Jerry + Paco = 40$