

What Do You Get When You Cross...

1. A thief with a cement truck? A H A R D E N E D C R I M I N A L
5 14 5 12 9 2 13 2 9 11 12 15 7 15 13 5 10

2. A supermarket with a jungle? C H E C K O U T L I O N S
11 14 2 11 4 1 8 3 10 15 1 13 6

Express each product below in simplest form. Find your answer and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it. Keep working and you will discover the result of each "double cross."

- $(5 - \sqrt{2})(5 + \sqrt{2}) = 25 + 5\sqrt{2} - 5\sqrt{2} - 2 = 23$
~~(K)~~ 4
~~(O)~~ 23
- $(7 + \sqrt{3})(7 - \sqrt{3}) = 49 + 7\sqrt{3} - 7\sqrt{3} - 3 = 46$
~~(G)~~ -14
~~(T)~~ -26
- $(\sqrt{10} - 6)(\sqrt{10} + 6) = 10 + 6\sqrt{10} - 6\sqrt{10} - 36 = -26$
~~(E)~~ 46
- $(\sqrt{10} - \sqrt{6})(\sqrt{10} + \sqrt{6}) = 10 + \sqrt{60} - \sqrt{60} - 6 = 4$
~~(A)~~ $26 + 11\sqrt{2}$
- $(\sqrt{2} + 8)(\sqrt{2} + 3) = 2 + 3\sqrt{2} + 8\sqrt{2} + 24 = 26 + 11\sqrt{2}$
~~(P)~~ $30 + 9\sqrt{2}$



- $(\sqrt{13} + 1)(\sqrt{13} - 5) = 13 - 5\sqrt{13} + \sqrt{13} - 5 = 8 - 4\sqrt{13}$
~~(D)~~ $6\sqrt{3} + 6$
~~(V)~~ $7\sqrt{15}$
- $(6 - \sqrt{15})(3 - \sqrt{15}) = 18 - 6\sqrt{15} - 3\sqrt{15} + 15 = 33 - 9\sqrt{15}$
~~(S)~~ $8 - 4\sqrt{13}$
~~(B)~~ $9\sqrt{3}$
- $(9 + \sqrt{7})(9 + \sqrt{7}) = 81 + 9\sqrt{7} + 9\sqrt{7} + 7 = 88 + 18\sqrt{7}$
~~(J)~~ $88 + 18\sqrt{7}$
- $3\sqrt{2}(\sqrt{6} + \sqrt{2}) = 3\sqrt{12} + 3\sqrt{4} = 6\sqrt{3} + 6$
~~(L)~~ $14\sqrt{15} - 10\sqrt{2}$
- $2\sqrt{5}(7\sqrt{3} - \sqrt{10}) = 14\sqrt{15} - 2\sqrt{50} = 14\sqrt{15} - 10\sqrt{2}$
~~(M)~~ $33 - 9\sqrt{15}$



- $5\sqrt{3}(2\sqrt{15} + \sqrt{8}) = 10\sqrt{45} + 5\sqrt{24} = 30\sqrt{5} + 10\sqrt{6}$
~~(Y)~~ $8 + 6\sqrt{7}$
~~(I)~~ $16\sqrt{5}$
- $3\sqrt{6}(4\sqrt{3} - 2\sqrt{15}) = 12\sqrt{18} - 6\sqrt{90} = 36\sqrt{2} - 18\sqrt{10}$
~~(H)~~ $26 - 2\sqrt{7}$
~~(F)~~ $11\sqrt{5}$
- $(8 + 3\sqrt{5})(1 + 2\sqrt{5}) = 8 + 16\sqrt{5} + 3\sqrt{5} + 6 \cdot 5 = 38 + 19\sqrt{5}$
~~(N)~~ $38 + 19\sqrt{5}$
- $(2\sqrt{7} + 4)(5\sqrt{7} - 11) = 10 \cdot 7 - 22\sqrt{7} + 20\sqrt{7} - 44 = -26$
~~(C)~~ $30\sqrt{5} + 10\sqrt{6}$
- $(3\sqrt{10} - 5\sqrt{2})(2\sqrt{10} + 6\sqrt{2})$

$$= 6 \cdot 10 + 18\sqrt{20} - 10\sqrt{20} - 30 \cdot 2 = 60 + 8\sqrt{20} - 60 = 16\sqrt{5}$$
~~(R)~~ $36\sqrt{2} - 18\sqrt{10}$