Example 4: Color Genetics Probability

black bull that carries red and dun (E^D/e B/b) x dun cow that carries red (E^D/e b/b)

This bull produces 4 different kinds of sperm: E^D B, E^D b, e B, e b
(each kind of E with each kind of B)

This cow produces 2 different kinds of eggs: E^D b, e b
(each kind of E with b)

4 x 2 = 8, so we need eight boxes: 4 columns with 2 rows

	E^D B	E^D b	e B	e b
E^D b	E^D/E^D B/b black	E^D/E^D b/b dun	E^D/e B/b black	E^D/e b/b dun
e b	E^D/e B/b black	E^D/e b/b dun	e/e B/b red	e/e b/b red*

*See #5 of "Basic Concepts of Dexter Color Genetics"

You can see from this diagram that 3/8 of the calves are black, 3/8 are dun, and 2/8 are red. Remember that a Dexter that contains two red genes and two dun genes is red in appearance.

Example 5: Color Genetics Probability

black bull that carries red and dun (E^D/e B/b) x black cow that carries red and dun (E^D/e B/b)

This bull produces 4 different kinds of sperm: E^D B, E^D b, e B, e b
(each kind of E with each kind of B)

This cow produces 4 different kinds of eggs: E^D B, E^D b, e B, e b
(each kind of E with each kind of B)

4 x 4 = 16, so we need sixteen boxes: 4 columns with 4 rows

	E^D B	E^D b	e B	e b
E^D B	E^D/E^D B/B black	E^D/E^D B/b black	E^D/e B/B black	E^D/e B/b black
E^D b	E^D/E^D B/b black	E^D/E^D b/b dun	E^D/e B/b black	E^D/e b/b dun
e B	E^D/e B/B black	E^D/e B/b black	e/e B/B red	e/e B/b red
e b	E^D/e B/b black	E^D/e b/b dun	e/e B/b red	e/e b/b red*

*See #5 of "Basic Concepts of Dexter Color Genetics"

You can see from this diagram that 9/16 of the calves are black, 4/16 are red, and 3/16 are dun. Remember that a Dexter that contains two red genes and two dun genes is red in appearance.

John Potter, August 10, 2003