

Name:

Teacher:

Period:

School:

ZIP:

Date:

# Penny Diffusion Lab Data Recording Sheet

1. As you identify each of your pennies, place a hash mark (|) to record the its date and mint mark below. When you get to your fifth hashmark, use a horizontal line (++++).
2. When you are done identifying and recording all your pennies, count the hashmarks in each cell and write down that number in the cell.

San Francisco (S)		Denver (D)		Philadelphia	
2004	1979	2004	1979	2004	1979
2003	1978	2003	1978	2003	1978
2002	1977	2002	1977	2002	1977
2001	1976	2001	1976	2001	1976
2000	1975	2000	1975	2000	1975
1999	1974	1999	1974	1999	1974
1998	1973	1998	1973	1998	1973
1997	1972	1997	1972	1997	1972
1996	1971	1996	1971	1996	1971
1995	1970	1995	1970	1995	1970
1994	1969	1994	1969	1994	1969
1993	1968	1993	1968	1993	1968
1992	1967	1992	1967	1992	1967
1991	1966	1991	1966	1991	1966
1990	1965	1990	1965	1990	1965
1989	1964	1989	1964	1989	1964
1988	1963	1988	1963	1988	1963
1987	1962	1987	1962	1987	1962
1986	1961	1986	1961	1986	1961
1985	1960	1985	1960	1985	1960
1984	1950s	1984	1950s	1984	1950s
1983	1940s	1983	1940s	1983	1940s
1982	1930s	1982	1930s	1982	1930s
1981	1920s	1981	1920s	1981	1920s
1980	<1920	1980	<1920	1980	<1920

# Penny Diffusion Lab Notes

Mints:

Pennies have been minted in three mints in the US: Philadelphia, Denver, and San Francisco. To distinguish where the coins are minted, letters (“mint marks”) are placed on them. On pennies, S=San Francisco, D=Denver, and Philadelphia has no mint mark. The San Francisco mint is no longer operational, and didn’t produce them every year even when it was open.

The distribution of pennies around the US approximates the diffusion of gases, but is only that. Gases diffuse due to the kinetic energy of the atoms/molecules of the gases as they bump into each other. Since pennies don’t have this type of energy (at least in the same magnitude as the gases), we have to rely on the external energy of people to move them around.

Some things to think about as we analyze the data:

- The production and distribution of pennies is not completely random. Mints may produce more pennies in one year than another, or they may produce the same amount every year. Mints may have a standard distribution method where they always distribute to the same banks every year, or they may change as “supply and demand” mandate.
- How do pennies move around the country? How do these methods match those of gases? Do they better match those of diseases or other “things that spread?”
- 

Mint notes:

1980-83, San Francisco: No mint mark, so will be perceived as Philadelphia

1965-67: No mint marks anywhere, so all will be perceived as Philadelphia

1955-67 and 1984 on: No pennies produced in San Francisco

[http://www.usmint.gov/about\\_the\\_mint/collectors\\_corner/index.cfm?action=Mint\\_marks](http://www.usmint.gov/about_the_mint/collectors_corner/index.cfm?action=Mint_marks)