

Dairy Foods Career Development Event

(Mark the best answer in the proper blank on the Scantron form.)

Promotion and Marketing

1. Millions of Americans are not getting enough _____. That's why the National Dairy Council (NDC) and MilkPEP united to raise awareness of this issue. Dairy products are a strong source of this nutrient.
 - a. fat
 - b. calcium
 - c. zinc
 - d. fiber

2. What does the acronym "MilkPEP" represent?
 - a. Milk Processor Education Program
 - b. Milk Producer Entrepreneurship Project
 - c. Milk Processor's Enterprise Program
 - d. Milk Protein Enhancement Program

3. Marketing is essential to increasing product sales. A fully integrated dairy producer/processor milk marketing program helped increase fluid milk consumption by nearly _____ % from 1998 to 1999.
 - a. ½
 - b. 1
 - c. 2
 - d. 3

4. The NDC and MilkPEP have targeted specific groups of people in an effort to increase fluid milk consumption. Advertising and promotions in grocery store dairy aisles were designed to target which demographic group?
 - a. women with school-age children
 - b. men from age 25-44
 - c. teenagers
 - d. women from age 60-72

5. Nationally cheese accounts for _____ % of total U.S. milk production.
 - a. 25
 - b. 45
 - c. 65
 - d. 90

6. In 1999, a food service partnership with _____ resulted in additional cheese sales of 2.25 million pounds during the 6-week promotion period.
(Hint: Cheddar Lover's Bacon Cheeseburger)
 - a. McDonald's
 - b. Hardees
 - c. Perkins
 - d. Wendy's

7. In 1999, DMI's (Dairy Management, Inc.) greatest single expense was _____ marketing.
 - a. cheese
 - b. dry milk
 - c. whey
 - d. ice cream

Milk Products and Processing

8. Pastuerization is a process named for Louis Pasteur, scientist, by which every particle of milk is heated to not lower than 145 degrees F for 30 minutes and promptly cooled to destroy _____ without affecting flavor and food value.
- a. pathogens b. mold spores c. off-colors d. off-flavors
9. _____ is the form of sugar found in milk which causes digestibility problems in some people.
- a. casein b. sucrose c. lactase d. lactose
10. A layer of protein known as _____ surrounds the lipid (fat) globules in milk. This protein is important because it contains all essential amino acids.
- a. casein b. sucrose c. glycerol d. lactose
11. A unique property of colloidal dispersions is that some can be made more stable by reducing the size of the dispersed phase. In milk, the dispersed phase, fat surrounded by protein, is broken into smaller globules by a filter. Because the globules are smaller they stay in suspension longer without separating. This process is known as _____.
- a. heterogenization b. pasteurization c. collodialization d. homogenization
12. Which of the following countries has the highest average milk production per cow?
- a. United States b. Japan c. Canada d. Mexico
13. In 1999, the top milk producing state was _____.
- a. Iowa b. Wisconsin c. California d. New York
14. Because milk flavor will influence the flavor of all products in which it is an ingredient, milk must have good flavor when it comes from the cow. Which of the following milk defects is not one that is attributed to the cow?
- a. feed b. foreign c. salty d. flat
15. Which one of the following is not a source of unpleasant odors and flavors that get into milk even when the milk is not exposed openly to such odors?
- a. Cows with mastitis
b. Cows inhale foul smelling air
c. Certain odors such as fly spray is absorbed through the cow's hide and gets into blood stream
d. Careless use of detergents and sanitizers in cleaning equipment

16. Cows, late in lactation, may give milk that has a salty flavor. It is recommended that cows not be milked longer than:
- a. 6 weeks before freshening, as this is the only time that milk flavor is affected.
 - b. 10 to 12 months
 - c. 12 to 14 months
 - d. 14 to 16 months
17. Lipolyzed flavor is caused by a chemical breakdown of milk fat. This flavor can be described as a combination of bitter, soapy, and unclean. Which of the following causes the chemical breakdown of milk fat?
- a. the enzyme lipase
 - b. pasteurization
 - c. exposure to sunlight
 - d. bacteria
18. Which of the following statements is not true about the pasteurization of milk:
- a. Pasteurization kills bacteria that may be present in milk.
 - b. The process improves the flavor of milk, but reduces the food value, particularly the vitamin content.
 - c. A process named after Louis Pasteur
 - d. Process involves heating milk to not lower than 161 degrees F for 15 seconds and promptly cooling, or the process can be accomplished by raising temperature following by rapid cooling
19. In the production of cheese, one of the first steps is to cause the milk to coagulate or clot. The coagulum is called:
- a. butter
 - b. whey
 - c. buttermilk
 - d. curd
20. Cheese generally possesses its most distinctive flavor when served at room temperature. The one exception is _____ which should be served chilled.
- a. American pasteurized processed cheese
 - b. Blue cheese
 - c. Cheddar cheese
 - d. Cottage cheese
21. There are over 2000 cheese varieties and names, and several ways in which cheeses are classified. Under which of the following classification methods would "hard grating" cheese fall?
- a. manufacturing
 - b. country of origin
 - c. general appearance
 - d. consistency

22. A recipe calls for one-half cup of shredded cheddar cheese to make six servings. If one cup of shredded cheese equals four ounces of cheese, how many servings can be made from one pound of cheddar cheese?
- a. 48 b. 24 c. 12 d. 6
23. Sour Half-and-Half is the product resulting from the addition of lactic acid-producing bacteria to pasteurized half-and-half. "Souring" increases shelf life by decreasing _____.
- a. pH b. viscosity c. homogenization d. odor
24. Which three cheeses were found to reduce tooth decay in laboratory rats?
- a. Brie, Camembert, Brick c. Cheddar, Swiss, Monterey Jack
b. Cottage, Cream, Neufchatel d. Blue, Limburger, Roquefort
25. Specific gravity of milk is 1.032 at 60 degrees F. This means that a certain volume of milk weighs more than an equal volume of water. Water weighs 8.34 pounds per gallon. How much does a gallon of milk weigh?
- a. 9.16 lbs. b. 8.96 lbs. c. 8.60 lbs. d. 8.26 lbs.
26. What are the objectives to a Federal Milk Marketing Order?
- a. To assure customers at all times of adequate supplies of pure and wholesome milk
b. To regulate the price of milk so that consumers are always assured of a "cheap" food source
c. To assist farmers in developing a steady, dependable, market by providing prices for their milk
d. Both a and c are correct
27. Several faulty milk handling practices can cause the development of lipolyzed flavor in milk. One of the following is not a cause:
- a. foaming of milk by any cause
b. pasteurization process
c. processing mistakes such as adding small amount of raw milk to pasteurized, homogenized milk
d. warming raw cold milk to 70-90 degrees F and cooling it back to 40 degrees F. This can happen by adding warm milk rapidly to a small amount of cool milk in a cooler

28. Oxidized flavor in raw milk can be the result of copper. The likely cause is:
- a. natural occurrences of copper in milk during first two months of lactation
 - b. copper ions that are in the air cows breathe
 - c. milk coming in contact with metal parts of the milking equipment that contains copper
 - d. both a and c
29. The recommended daily consumption of milk for teenagers is:
- a. 2 cups
 - b. 3 cups
 - c. 4 cups
 - d. 5 cups
30. Approximately how many pounds of whole milk does it take to make a pound of butter?
- a. 21.2 pounds
 - b. 12.2 pounds
 - c. 6.4 pounds
 - d. 2.12 pounds

Analyze & Interpret Information

(Source: Milk Facts - 1999 Edition)

Utilize the attached statistical information to answer the following questions.

31. Since 1980, U.S. milk production per cow has increased by nearly _____ pounds.
a. 5300 b. 6000 c. 2000 d. 7000
32. Which state produces the lowest percentage of its milk in the form of Grade A milk?
a. Texas b. South Dakota c. Hawaii d. California
33. As a percentage of total sales, which of the following dairy products showed the greatest increase in sales from 1997-98?
a. flavored milks b. chip dip c. whole milk d. buttermilk
34. Which of the following products utilizes the greatest quantity of the total U.S. milk supply?
a. fluid milk and cream b. frozen dairy products c. flavored milks d. cheese
35. The total number of milk cows, in the U.S., has decreased by _____ % since 1960.
a. nearly 52 % b. nearly 191 % c. nearly 70 % d. nearly 48 %
36. What has happened to food expenditures, as a share of disposable income, since 1970?
a. decreased to 11 % of total disposable income
b. decreased by 2.2 %
c. increased by 2.2 %
d. decreased by a rate roughly equivalent to inflation
37. In 1970, 26.2 % of the total dollars spent on food were spent 'away from home'. When comparing 1970 to 1998, the percentage of total dollars spent on food 'away from home' has increased by _____
a. nearly 17 %
b. nearly 26 %
c. nearly 43 %
d. nearly 84 %

38. Assume you are trying to decide how to best allocate your company's advertising dollars. Advertising focused at _____ would appear to be the best use of your company's money.
- a. specialty food stores
 - b. convenience stores
 - c. wholesale clubs
 - d. supermarkets
39. If you desired a drink which was lowest in fat and highest in calcium you would probably choose _____.
- a. evaporated whole milk
 - b. lowfat (2%) milk
 - c. skim milk
 - d. buttermilk
40. Pasteurization of milk was first introduced in an effort to decrease the spread of _____.
- a. brucellosis
 - b. cancer
 - c. tuberculosis
 - d. chicken pox

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PRODUCTION OF MANUFACTURED DAIRY PRODUCTS BY STATE¹; 1998

State and Region	Butter (1,000 Lbs.)	Cheese ² (1,000 Lbs.)	Ice Cream ³ (1,000 Gal.)	Frozen Yogurt (1,000 Gal.)	Creamed Cottage Cheese (1,000 Lbs.)	Lowfat Cottage Cheese (1,000 Lbs.)	NFDM ⁴ (Human Food) (1,000 Lbs.)
Alabama							
Arizona			5,758				
Arkansas							
California	226,560	1,242,889	159,171	8,336	33,247	65,691	507,135
Colorado							
Connecticut							
Delaware							
Florida			44,417				
Georgia							
Idaho		514,953	11,505				
Illinois		112,307			35,559	23,524	
Indiana			89,351		20,343		
Iowa		245,566			11,388	8,023	
Kansas							
Kentucky					17,835	9,130	
Louisiana			3,156				
Maine							
Maryland and D.C.			5,738				
Massachusetts		1,059					
Michigan			42,781		16,375	4,451	
Minnesota	65,956	616,933	42,521				
Mississippi							
Missouri		154,700	38,316		6,517		
Montana			1,489				
North Carolina			34,632	401			
North Dakota	4,443	19,184	2,521		301	1,466	289
Nebraska		100,394					
Nevada							
New Hampshire							
New Jersey							
New Mexico			4,695				39,135
New York	21,217	630,865	41,817	1,518	55,360	87,291	
Ohio		120,448	63,584		20,113		
Oklahoma							
Oregon	22,697		16,467		6,591	1,963	
Pennsylvania	88,618	360,562	63,055	5,522	14,225	7,547	75,426
Rhode Island							
South Carolina			10,837				
South Dakota		136,889					
Tennessee			24,178	754	8,318	6,108	
Texas			59,168		7,307	5,208	
Utah		63,282	18,631				
Vermont							
Virginia							
West Virginia							
Washington	71,902	173,365	20,137				140,161
Wisconsin	303,011	2,116,456	21,649		17,839	19,183	
Wyoming							
OTHER STATES	277,475	892,051	564,334	71,244	95,443	115,771	373,237
U.S.	1,081,879	7,501,903	1,389,908	87,777	366,761	361,876	1,135,383

¹State figures not shown when less than 3 plants reported or individual operations might be disclosed; included in total for Other States. ²All types of cheese except cottage cheese and lowfat cottage cheese. ³Data includes regular and lowfat ice cream. ⁴Nonfat Dry Milk. State data reflects only those products reported by USDA
Source: USDA

MILESTONES OF MILK HISTORY IN THE U.S.

- 1611 Cows arrive for Jamestown Colony.
- 1624 Cows reach Plymouth Colony.
- 1841 First regular shipment of milk by rail—Orange County to New York City.
- 1856 Pasteur experiments start.
- 1856 Gail Borden received first patent on condensed milk from both U.S. and England.
- 1857 First successful condenser built by Gail Borden at Burrville, Connecticut.
- 1878 Continuous centrifugal cream separator invented by Dr. Gustav De Laval.
- 1884 Milk bottle invented by Dr. Hervey D. Thatcher, Potsdam, New York.
- 1886 Automatic bottle filler and capper patented.
- 1890 Tuberculin testing of dairy herds introduced. Test for fat content of milk and cream perfected by Dr. S.M. Babcock.
- 1892 Certified milk originated by Dr. Henry L. Coit in Essex County, New Jersey.
- 1895 Commercial pasteurizing machines introduced.
- 1908 First compulsory pasteurization law (Chicago) applying to all milk except that from tuberculin tested cows.
- 1911 Automatic rotary bottle filler and capper perfected.
- 1914 Tank trucks first used for transporting milk.
- 1919 Homogenized milk sold successfully in Torrington, Connecticut.
- 1932 Ways of increasing Vitamin D in milk made practicable.
- 1932 First plastic coated paper milk cartons introduced commercially.
- 1933 Fluid milk included in Army ration.
- 1938 First farm bulk tanks for milk began to replace milk cans.
- 1942 Every-other-day milk delivery started (initially as a war conservation measure).
- 1946 Vacuum pasteurization method perfected.
- 1948 Ultra-high temperature pasteurization is introduced.
- 1950 Milk vending machines win place in distribution.
- 1955 Flavor control equipment for milk is introduced commercially.
- 1954 Plastic milk container introduced commercially.
- 1957 Nondairy milk substitute introduced in several markets.
- 1968 Electronic testing for milk is introduced commercially marking the official acceptance of process.
- 1974 Nutrition labeling of fluid milk products begins.
- 1975 Metric measurement equivalent introduced.
- 1980 American Dairy Association launches the national introduction of the "REAL" (R) Seal dairy symbol.
- 1981 UHT (ultra high temperature) milks gain national recognition.
- 1983 Creation of National Dairy Promotion and Research Board.
- 1988 Lower fat dairy products gain widespread acceptance. Lowfat and skim milk sales combined exceed whole milk sales for first time.
- 1993 Mandatory animal drug residue testing program established.
- 1994 Bovine somatotropin approved for commercial use in U.S.
- 1994 Nutrition Labeling and Education Act requires mandatory nutrition labeling.
- 1995 Launch of processor-funded milk mustache advertising campaign.

THE IMPORTANCE OF MILK IN THE DIET

Although milk from the cow is processed, it is not an engineered or fabricated food. It is about 87 percent water and 13 percent solids. The fat portion of the milk contains fat soluble vitamins. The solids other than fat include proteins, carbohydrates, water soluble vitamins, and minerals. These nutrients in milk help make it nature's most nearly perfect food.

Milk products contain high quality proteins. The whey proteins constitute about 18 percent of the protein content of milk. Casein, a protein found only in milk, contains all of the essential amino acids. It accounts for 82 percent of the total proteins in milk and is used as a standard for evaluating protein of other foods. Protein is needed to build and repair body tissues and to form antibodies which circulate in the blood and help fight infection.

Milk contains the following nutrients: calcium, phosphorus, magnesium, and potassium. The calcium found in milk is readily absorbed by the body. Phosphorus plays a role in calcium absorption and utilization. Phosphorus is needed in the proper ratio to calcium to form bone. Milk provides these two minerals in approximately the same ratio as found in bone. Milk is also a significant source of riboflavin (vitamin B2) which helps promote healthy skin and eyes, as well as vitamins A and D.

In adults, a calcium deficiency, along with other factors, may result in bone deterioration called osteoporosis. The recommendations for calcium is 1,000 milligrams for adults, 1,300 milligrams per day for adolescents, 500-800 milligrams per day for young children and 1,200 milligrams per day for adults over 51 years of age. It is difficult to obtain adequate calcium without milk and milk products in the diet. About 76 percent of the calcium available in the food supply is provided by milk and milk products. The following daily consumption of milk is suggested:

- Children, 3 cups
- Teenagers, 4 cups
- Adults, 3 cups
- Adults over 51, 4 cups
- Pregnant and Lactating Women, 3 cups

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CALCIUM CONTENT OF MILK, MILK PRODUCTS, AND MILK-BASED FOODS

Food	Serving Size	Calcium (mg)
MILK		
Whole	1 cup	291
Lowfat (2%)	1 cup	297
Skim (nonfat)	1 cup	302
Buttermilk	1 cup	285
Dry, nonfat, reconstituted	1 cup	285
Evaporated, whole, diluted	1 cup	331
Evaporated, skim, diluted	1 cup	371
MILK PRODUCTS		
Half-and-Half	2 tbsp.	32
Cream, Table (light)	1 tbsp.	14
Sour Cream	2 tbsp.	32
Cottage Cheese	1/2 cup	68
Lowfat Cottage Cheese (1%)	1/2 cup	69
Lowfat Yogurt, plain ¹	8 oz.	415
Lowfat Yogurt, fruit ¹	8 oz.	345
Ice Cream	1/2 cup	88
Ice Milk	1/2 cup	88
Swiss Cheese, natural	1 oz.	272
Cheddar Cheese, natural	1 oz.	204
Mozzarella Cheese, low moisture, part skim	1 oz.	207
American Cheese, processed	1 slice	129
Parmesan Cheese, grated	1 tbsp.	69
Ricotta Cheese ²	1/4 cup	169
Blue Cheese, natural	1 oz.	150
Cream Cheese	1 oz.	23
MILK-BASED FOODS²		
Canned soups: (Chicken, Mushroom, etc.)	1 cup	171
Custard from mix	1/2 cup	194
Pudding from mix	1/2 cup	157

¹Nonfat milk solids added. ²Prepared with whole milk. ³Prepared with part skim milk.
Source: USDA, Agriculture Handbook No. 8.

DEFINITIONS: FLUID MILKS AND FLUID MILK PRODUCTS

Milk is approximately 87 percent water and 13 percent solids. As it comes from the cow, the solids portion of milk contains approximately 3.7 percent fat and 9 percent solids-not-fat.

Milkfat carries the fat soluble vitamins A, D, E, and K. The solids-not-fat portion consists of protein (primarily casein and lactalbumin), carbohydrates (primarily lactose), and minerals (including calcium and phosphorus). Milk also contains significant amounts of riboflavin and other water soluble vitamins.

Federal Definitions and Standards of Identity specify the minimum levels of milkfat and solids-not-fat for the various milks shipped in interstate commerce:

Whole Milk - contains not less than 3.25 percent milkfat and 8.25 percent solids-not-fat. Addition of vitamins A and D is optional, but if added, vitamin A must be present at a level of not less than 2,000 International Units (I.U.) Per quart, vitamin D is optional, but must be present at a level of 400 I.U., if added. Characterizing flavoring ingredients may also be added.

Lowfat Milk - contains 0.5, 1.5, or 2.0 percent milkfat and not less than 8.25 percent solids-not-fat. Lowfat milk must contain 2,000 I.U. of vitamin A per quart. Addition of vitamin D is optional, but must be present at a level of 400 I.U., if added. Characterizing flavoring ingredients may also be added.

Nonfat Milk - contains less than 0.5 percent milkfat and not less than 8.25 percent solids-not-fat. Nonfat milk must contain 2,000 I.U. of vitamin A per quart. Addition of vitamin D is optional, but must be present at a level of 400 I.U., if added. Characterizing flavoring ingredients may be added.

Cultured Milks - are produced by culturing any of the milks listed above with appropriate characterizing bacteria. The addition of certain characterizing ingredients and lactic-acid producing bacteria may permit, for example, the product to be labeled "cultured buttermilk," "cultured lowfat buttermilk," or "cultured nonfat milk buttermilk" depending upon the level of milkfat in the finished product.

Half-and-Half - consists of a mixture of milk and cream containing not less than 10.5 percent milkfat, but less than 18 percent milkfat.

Light Cream - contains not less than 18 percent milkfat, but less than 30 percent. Light cream may also be called "coffee cream" or "table cream."

MILK COWS, MILK PRODUCTION AND INCOME BY STATE; 1998

	Number of Milk Cows ¹	Milk Per Cow	Milk Production	Sold to Plants and Dealers			Farm Cash Receipts from Milk and Cream	
				All Milk	Percent Grade A ²	Average Price	Percent of Value ³	Total Rec. ⁴
	(Thousand)	(Lbs.)	(Million Lb)	(Million Lb)	(%)	(Per Cwt.)	(Million \$)	(%)
Alabama	28	13786	386	382	100	16.50	63.0	1.9
Alaska	0.9	15922	14.33	13.23	100	20.30	2.7	8.2
Arizona	131	20458	2680	2668	100	14.60	389.5	16.5
Arkansas	49	13041	639	626	100	15.60	97.7	1.8
California	1420	19442	27607	27169	99	15.01	4078.1	16.5
Colorado	83	20349	1689	1610	100	15.00	241.5	5.5
Connecticut	30	17633	529	510	100	16.00	81.6	16.9
Delaware	11	14827	163.1	162.1	100	15.70	25.4	3.3
Florida	160	14588	2334	2329	100	18.20	423.9	6.3
Georgia	93	15452	1437	1425	100	16.60	236.6	4.2
Hawaii	8.9	14494	129	126.3	100	26.36	33.3	6.6
Idaho	292	19743	5765	5718	97	14.50	829.1	24.8
Illinois	128	16570	2121	2100	96	15.10	317.1	4.1
Indiana	136	16154	2197	2157	94	14.80	319.2	6.4
Iowa	223	17188	3833	3796	94	15.40	584.6	5.3
Kansas	82	15915	1305	1292	98	14.70	189.9	2.4
Kentucky	140	12214	1710	1669	98	15.50	258.7	6.6
Louisiana	63	11921	751	738	100	16.20	119.6	6.2
Maine	41	16585	680	663	100	15.80	104.8	21.2
Maryland	86	15581	1340	1331	100	15.70	209.0	13.9
Massachusetts	26	16846	438	415	100	16.40	68.1	13.5
Michigan	300	17970	5391	5330	99	15.30	815.5	23.5
Minnesota	551	16833	9275	9170	93	15.55	1425.9	18.6
Mississippi	42	13786	579	575	100	16.20	93.2	2.7
Missouri	170	13924	2367	2337	95	15.60	364.6	7.8
Montana	18	16167	291	280	100	15.00	42.0	2.3
Nebraska	70	15000	1050	1025	94	15.10	154.8	1.7
Nevada	25	18640	466	460	100	13.80	63.5	17.3
New Hampshire	20	16700	334	328	100	16.30	53.5	34.9
New Jersey	19	15368	292	288	100	15.60	44.9	6.0
New Mexico	217	20065	4354	4290	100	14.80	634.9	33.2
New York	701	16748	11740	11581	100	15.40	1783.5	57.2
North Carolina	75	16800	1260	1238	99	16.90	209.2	2.9
North Dakota	51	13843	706	690	65	14.30	98.7	3.3
Ohio	264	16629	4390	4356	94	15.20	662.1	13.3
Oklahoma	92	13435	1236	1220	100	15.60	190.3	4.9
Oregon	89	17787	1583	1493	99	15.50	231.4	7.5
Pennsylvania	623	17411	10847	10506	99	15.80	1659.9	39.6
Rhode Island	2.1	15714	33	32.3	100	16.30	5.3	8.1
South Carolina	25	14960	374	369	100	16.40	60.5	4.0
South Dakota	102	14069	1435	1421	61	15.50	220.3	6.2
Tennessee	105	14295	1501	1490	98	15.90	236.9	10.8
Texas	352	15923	5605	5583	100	15.70	876.5	6.7
Utah	90	16811	1513	1446	92	14.60	211.1	21.6
Vermont	161	16801	2705	2668	100	16.00	426.9	76.5
Virginia	124	14847	1841	1828	99	16.20	296.1	12.5
Washington	248	21476	5326	5109	100	15.40	786.8	15.4
West Virginia	18	15444	278	275	99	15.40	42.4	10.4
Wisconsin	1369	16685	22842	22558	93	15.50	3496.5	56.3
Wyoming	6.1	13082	79.8	77.9	80	13.70	10.7	1.3
United States	9158	17192	157441	154924	97	15.41	23871.0	12.1

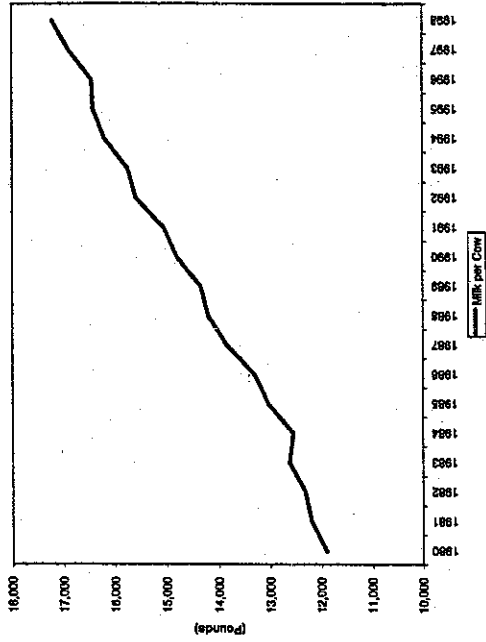
¹Average number on farms during year, including dry cows but excluding heifers not yet fresh. Total may not add due to rounding. ²Percent of milk sold to plants and dealers that is approved by health authorities. ³Does not reflect government withholdings or buyout payments. ⁴Based on preliminary estimate by USDA of cash receipts from all farm products.
Source: USDA.

MILK PRODUCTION, PRODUCTION PER COW, AND NUMBER OF MILK COWS; 1960-1998

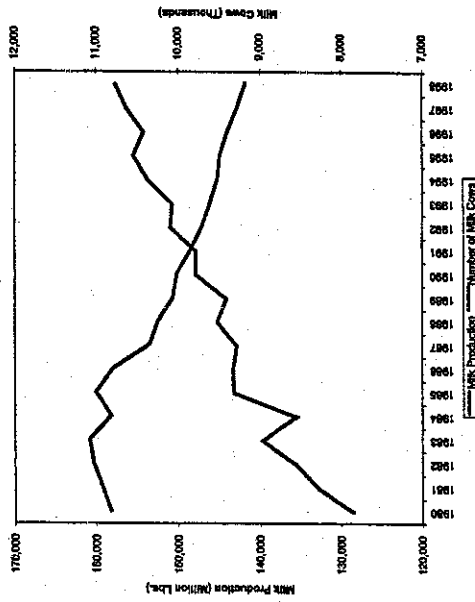
Year	Milk Production (Million Lbs.)	Milk Per Cow (Pounds)	Number of Milk Cows (Thousands)
1960	123,109	7,029	17,515
1961	128,406	11,891	10,799
1962	132,770	12,183	10,898
1963	135,505	12,306	11,011
1964	139,558	12,619	11,059
1965	135,351	12,541	10,793
1966	143,012	13,024	10,981
1967	143,124	13,285	10,773
1968	142,709	13,819	10,327
1969	145,034	14,185	10,224
1970	143,893	14,323	10,046
1971	147,721	14,782	9,983
1972	147,697	15,031	9,826
1973	150,847	15,570	9,688
1974	150,636	15,722	9,581
1975	153,602	16,179	9,494
1976	155,292	16,405	9,466
1977	154,006	16,433	9,372
1978*	156,091	16,871	9,252
1979	157,441	17,192	9,158

*Revised. Source: USDA.

MILK PRODUCTION PER COW; 1980-1998



MILK PRODUCTION AND NUMBER OF MILK COWS; 1980-1998



MILK PRODUCTION IN THE FIVE LARGEST DAIRY STATES: 1975-1998

Year	Total					Other States	US
	California	Wisconsin	New York	Pennsylvania	Minnesota		
1975	10,853	18,900	9,964	7,140	8,946	55,803	115,398
1980	13,577	22,380	10,974	8,496	9,335	64,962	128,406
1981	14,248	23,000	11,059	8,965	10,061	67,343	132,770
1982	14,528	23,230	11,097	9,264	10,341	68,460	135,505
1983	14,733	23,800	11,648	9,510	10,913	70,604	139,588
1984	15,282	23,501	11,443	9,423	10,331	69,990	135,351
1985	16,762	24,700	11,732	9,983	10,835	47,012	143,012
1986	17,222	24,500	11,718	10,152	10,614	74,206	143,124
1987	17,928	24,800	11,439	10,183	10,420	74,770	142,709
1988	18,607	25,000	11,444	10,204	10,413	75,668	145,034
1989	19,420	23,898	11,071	9,998	10,109	74,496	143,893
1990	20,947	24,187	11,067	10,014	10,030	76,246	147,720
1991	21,407	23,770	11,179	10,058	9,775	76,189	147,696
1992	22,092	23,844	11,557	10,368	9,858	77,719	150,886
1993	22,927	22,844	11,415	10,181	9,693	77,060	150,582
1994	25,242	22,412	11,400	10,230	9,342	78,626	153,664
1995	25,344	22,942	11,600	10,600	9,409	79,896	155,425
1996	25,861	22,376	11,510	10,640	9,440	79,827	154,259
1997*	27,582	22,368	11,530	10,662	9,210	81,352	156,091
1998*	27,607	22,842	11,740	10,847	9,275	82,311	157,441

*Revised, Preliminary.

Source: USDA

UTILIZATION OF U.S. SUPPLY OF MILKFAT, 1972-1998¹

Year	Sold by		Butter, Creamery	Cheese	Evaporated & Condensed	Frozen Products	Other ²	Used on Farms Where Produced ³
	Dealers	Producers Directly to Consumers						
1972	43.0	1.3	18.9	19.0	2.6	9.1	3.1	3.0
1973	43.8	1.3	16.0	20.3	2.5	9.5	3.7	2.9
1974	42.3	1.3	16.7	22.2	2.5	9.6	2.8	2.6
1975	42.9	1.4	17.2	20.7	2.3	10.3	2.5	2.7
1976	41.5	1.2	16.1	23.9	2.1	9.6	3.1	2.5
1977	40.6	1.2	17.8	23.5	1.9	9.5	3.2	2.3
1978	40.8	1.2	16.2	24.6	1.9	9.6	3.5	2.2
1979	40.3	1.2	15.7	25.5	1.9	9.4	4.0	2.0
1980	38.4	1.1	17.7	26.4	1.6	9.3	3.7	1.8
1981	36.6	1.1	18.5	27.4	1.7	9.0	4.0	1.7
1982	35.3	1.0	18.4	28.6	1.6	8.9	4.5	1.7
1983	34.7	0.9	18.4	29.3	1.5	9.0	4.5	1.7
1984	36.5	0.8	15.8	28.5	1.6	9.3	5.3	2.2
1985	35.4	0.9	17.0	29.1	1.6	9.0	5.3	1.7
1986	35.8	0.8	16.2	29.4	1.5	9.2	5.4	1.7
1987	36.6	0.8	14.8	30.0	1.5	9.4	5.3	1.6
1988	36.7	0.8	15.9	30.3	1.4	8.9	4.4	1.5
1989	37.6	0.7	17.0	30.2	1.2	8.7	3.2	1.5
1990	36.7	0.6	16.9	31.9	1.3	8.3	3.0	1.4
1991	36.9	0.7	17.3	31.5	1.2	8.6	2.5	1.3
1992	36.1	0.7	17.3	32.5	1.7	7.8	2.6	1.3
1993	36.0	0.7	16.5	33.0	1.2	8.0	3.3	1.3
1994	34.8	0.7	16.0	33.2	1.1	8.6	4.4	1.1
1995	35.4	0.8	15.2	33.8	1.0	8.4	3.8	1.0
1996*	36.0	0.8	13.8	35.0	1.0	8.6	3.8	1.0
1997*	35.4	0.8	13.3	35.3	1.1	8.8	4.4	0.9
1998	34.9	0.7	12.1	35.9	0.9	9.1	5.4	0.9

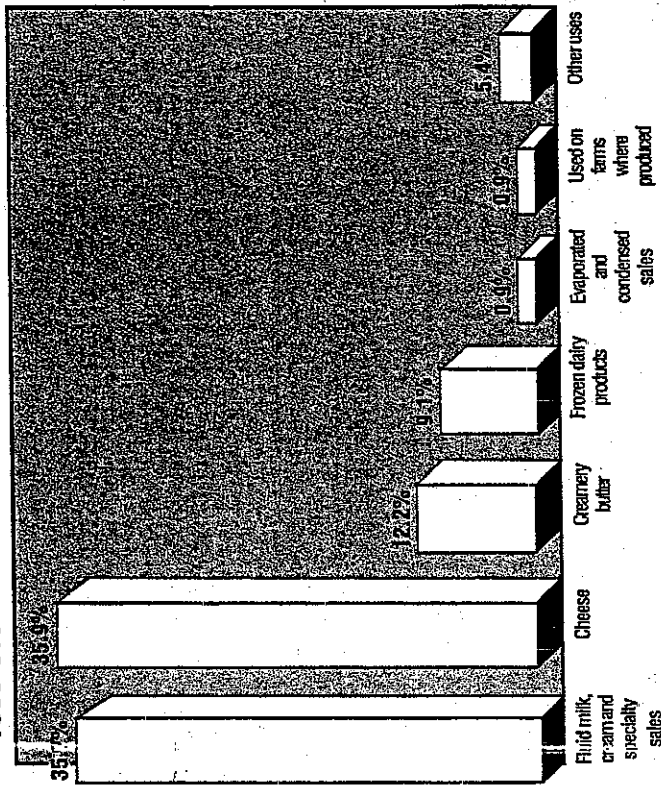
¹Supply of milkfat includes U.S. production, ingredient imports of milkfat and solids from sources outside the U.S., and net change in storage cream. ²Dry whole milk, creamed cottage cheese and other miscellaneous uses. ³Milk fed to calves, consumed on farms as milk and cream and used for farm-churned butter. *Revised. Source: Computations made by the Milk Industry Foundation based on data from the USDA.

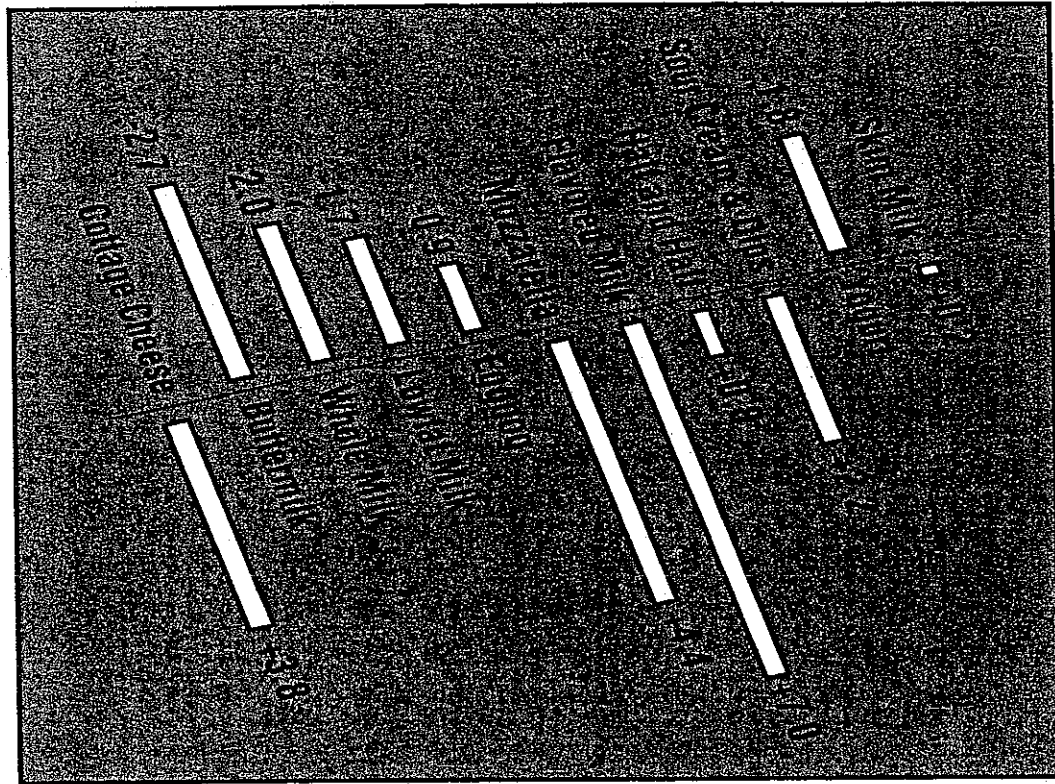
1998 U.S. MILK SUPPLY UTILIZATION, BY PRODUCT¹

Product	Million Pounds
Fluid milk, cream and specialty sales	56,332
Milkfat Equivalent	
Cheese	56,756
Creamery butter	19,178
Frozen dairy products ²	14,323
Evaporated and condensed milk	1,436
Used on farms where produced	1,361
Other uses	8,584
Total	157,970

¹Preliminary. ²Plus 2,058 million pounds of milk equivalent in other manufactured dairy products used in production of frozen dairy products.

1998 U.S. MILK SUPPLY UTILIZATION, BY PRODUCT





PERCENT CHANGE IN PER CAPITA SALES OF
SELECTED DAIRY PRODUCTS, 1997-1998

PERCENT OF FLUID MILK SALES BY PRODUCT IN FEDERAL ORDER MARKETS, 1980-1998¹

Category	1980	1985	1990	1992	1993	1994	1995	1996	1997	1998
	(Percent)									
Whole Milk	58.7	50.5	37.9	35.4	34.5	33.6	32.5	32.4	32.0	31.9
Plain	56.7	48.8	36.5	35.1	33.1	32.2	31.1	31.0	30.7	30.3
Flavored	2.0	1.7	1.4	1.3	1.4	1.4	1.4	1.4	1.3	1.5
Reduced (2%) Milk	29.1	28.9	34.8	35.2	35.1	33.3	31.7	31.1	30.3	29.9
Plain	22.7	25.6	31.8	32.4	32.4	30.9	29.5	29.1	28.5	28.1
With Solids Added	6.4	3.3	3.0	2.8	2.7	2.5	2.2	2.0	1.8	1.8
Lowfat (1%) Milk	NA	6.0	7.8	8.2	8.1	9.4	9.9	9.9	10.1	10.3
Plain	NA	4.6	6.7	7.0	7.2	8.5	9.0	9.2	9.7	9.8
With Solids Added	NA	1.3	1.1	1.0	0.9	0.9	0.9	0.7	0.5	0.5
Nonfat Milk	4.6	5.1	9.9	11.1	12.1	12.9	14.6	15.3	15.8	16.0
Plain	2.9	4.0	8.0	8.6	10.3	11.3	12.7	13.5	14.0	14.2
With Solids Added	1.7	1.1	1.9	1.9	1.7	1.7	1.8	1.8	1.8	1.8
Flavored Milk Drinks	2.7	3.0	3.3	3.5	3.5	3.6	3.8	4.0	4.2	4.4
Buttermilk	1.6	1.9	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.2
Total Reduced Fat, Lowfat & Nonfat Items	38.0	44.9	57.4	59.5	60.3	60.6	61.2	61.5	61.7	61.8
Milk and Cream Mixtures	1.0	1.2	1.3	1.4	1.5	1.4	1.4	1.5	1.5	1.6
Light Cream	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Heavy Cream	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7
Sour Cream	0.7	0.9	1.0	1.1	1.1	1.2	1.3	1.2	1.3	1.3
Total Cream Items	2.1	2.7	3.0	3.2	3.2	3.2	3.4	3.5	3.7	3.8
Yogurt	1.0	1.6	1.6	1.7	1.8	1.9	2.3	2.2	2.4	2.4
Eggnog	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Fluid Milk & Cream	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

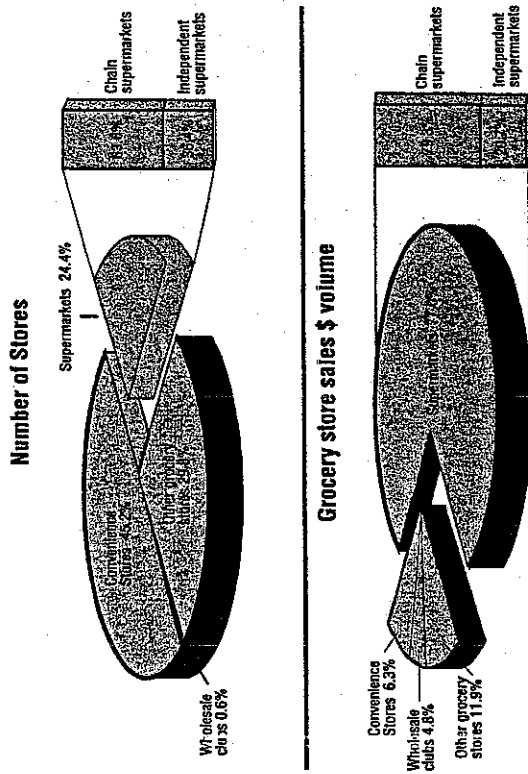
¹Includes sales by handlers regulated under the New York - New Jersey Federal Order 1980-1992. Sales regulated by Federal Order handlers account for nearly three-fourths of total U.S. fluid sales. Note: Total may not add to 100% due to rounding. N/A = Not Available.
Source: USDA

FOOD EXPENDITURES AS A SHARE OF DISPOSABLE PERSONAL INCOME; 1970-1998

Year	Expenditures for food			Proportion of income spent for food			
	Disposable Personal Income	At Home ¹ from Home ²	Away from Home ²	Total ³	At Home ¹ from Home ²	Away from Home ²	
	(Billion Dollars)	(Billion Dollars)	(Billion Dollars)	(Percent)	(Percent)	(Percent)	
1970	727.1	74.2	26.4	100.6	10.2	3.6	13.8
1971	790.2	78.1	28.1	106.2	9.9	3.6	13.4
1972	855.3	84.4	31.3	115.8	9.9	3.7	13.5
1973	965.0	93.1	34.9	128.0	9.7	3.6	13.3
1974	1,054.2	105.4	38.5	143.9	10.0	3.7	13.7
1975	1,159.2	115.2	45.9	161.1	9.9	4.0	13.9
1976	1,273.0	123.1	52.6	175.7	9.7	4.1	13.8
1977	1,401.4	131.8	58.5	190.3	9.4	4.2	13.6
1978	1,580.1	145.3	67.5	212.8	9.2	4.3	13.5
1979	1,769.5	162.2	76.9	239.1	9.2	4.3	13.5
1980	1,973.3	179.1	85.2	264.4	9.1	4.3	13.4
1981	2,200.2	191.0	95.8	286.8	8.7	4.4	13.0
1982	2,347.3	198.4	104.5	302.9	8.5	4.5	12.9
1983	2,522.4	209.0	113.7	322.7	8.3	4.5	12.8
1984	2,810.0	220.9	121.9	342.8	7.9	4.3	12.2
1985	3,002.2	230.7	128.6	359.3	7.7	4.3	12.0
1986	3,187.6	239.3	137.9	377.2	7.5	4.3	11.8
1987	3,363.1	249.0	146.3	395.3	7.4	4.3	11.8
1988	3,640.8	261.9	157.6	419.5	7.2	4.3	11.5
1989	3,894.5	280.9	165.5	446.4	7.2	4.3	11.5
1990	4,166.8	306.0	177.6	483.6	7.3	4.3	11.6
1991	4,343.7	319.5	183.1	502.6	7.4	4.2	11.6
1992	4,826.7	321.8	192.0	513.6	7.0	4.2	11.1
1993	4,829.3	327.7	204.9	532.6	6.8	4.2	11.0
1994	5,062.7	344.8	214.7	559.3	6.8	4.2	11.1
1995	5,355.7	360.4	222.6	583.1	6.7	4.2	10.9
1996	5,608.3	376.0	230.1	606.2	6.7	4.1	10.8
1997*	5,795.1	380.2	237.9	678.1	6.6	5.1	11.7
1998	6,027.9	395.3	301.7	697.0	6.6	5.0	11.6

*Revised. ¹Food purchased from grocery stores and other retail outlets, including food purchased with food stamps and food consumed on farms. Excludes government-donated foods. ²Excludes food paid for by government and business, such as food donated to schools, prisons and other institutions, and expense account meals. ³May not add due to rounding.
Source: USDA, Economic Research Service.

RETAIL STORE FORMATS AND DOLLAR SALES VOLUME; 1998



Source: Progressive Grocer Annual Report, April 1999

CONSUMER USAGE AND SPENDING AT VARIOUS RETAIL FORMATS; 1998

Outlet	% Shopping	Weekly Trips	Weekly Spending
Supermarkets	99	2.1	\$73.40
Mass Merchandisers	77	1.5	\$38.29
Convenience Stores	49	2.5	\$14.53
Chain Drugstores	42	1.3	\$20.74
Wholesale Clubs	27	1.2	\$70.05
Specialty Food Stores	12	1.9	\$24.44

Source: Progressive Grocer '65th Annual Report of the Grocery Industry,' 1998.

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2000 Dairy Foods Career Development Event

Answers: Test

1. B
2. A
3. B
4. A
5. B
6. D
7. D
8. D
9. A
10. C
11. C
12. C
13. A
14. D
15. D
16. B
17. D
18. D
19. B
20. A
21. A
22. D
23. C
24. C
25. C
26. C
27. D
28. A
29. C
30. A

Answers: 2000 Analyze and Interpret

31. A
32. B
33. A
34. D
35. D
36. B
37. A
38. D
39. C
40. C