Problem Solving, part A

General Instructions: Understanding and interpretation of data and is a necessary skill for those involved in dairy processing. Table 1 shows the data from four different farms in the same general area that produce milk, which is comingled for transport. This load was picked up in the order that the farms are show from A-D.

Table 1 - Average Component Testing by Dairy Farm

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **% Butter Fat** | **% Protein** | **% Lactose** | **% Solids Non-Fat** | **Pounds** |
| Farm A | 4.04 | 3.09 | 4.75 | 8.74 | 10,000 |
| Farm B | 3.87 | 3.08 | 4.89 | 8.88 | 21,500 |
| Farm C | 3.98 | 3.19 | 4.80 | 8.94 | 6,250 |
| Farm D | 3.41 | 3.00 | 4.85 | 8.77 | 2,250 |

1. When the truck was finished picking up milk from farm B, how many pounds of protein were on the truck?
   1. 971
   2. 662
   3. 309
   4. 1633
2. What is the percent butter fat of the entire comingled load?
   1. 3.5
   2. 3.7
   3. 3.9
   4. 4.1
3. Which Farm’s milk has the highest percent total solids?
   1. A
   2. B
   3. C
   4. D
4. Which farm contributed the most milk to this load?
   1. A
   2. B
   3. C
   4. D
5. What are the total pounds of milk sugars in this load of milk?
   1. 506
   2. 1070
   3. 1934
   4. 2501
6. Which component of this load of milk (fat, protein, lactose, solids-nonfat) varied the most between farms?
   1. Solids-Nonfat
   2. Lactose
   3. Protein
   4. Fat
7. Which component of this load of milk (fat, protein, lactose, solids-nonfat) varied the least between farms?
   1. Solids-Nonfat
   2. Lactose
   3. Protein
   4. Fat

Problem Solving, part B

General Instructions: Use the following table to answer the following questions.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **West** | | | **Midwest** | | | **Northeast** | | | **Southeast** | | |
| **State** | **2005** | **2010** | **State** | **2005** | **2010** | **State** | **2005** | **2010** | **State** | **2005** | **2010** |
| AK | 13.5 | 7.1 | IL | 1,958 | 1,917 | CT | 384 | 356 | AL | 224 | 159 |
| AZ | 3,742 | 4,149 | IN | 3,166 | 3,343 | DE | 131 | 90 | AR | 298 | 164 |
| CA | 37,564 | 40,385 | IA | 4,025 | 4,337 | ME | 595 | 587 | FL | 2,273 | 2,127 |
| CO | 2,348 | 2,816 | MI | 6,750 | 8,327 | MD | 1,135 | 1,001 | GA | 1,398 | 1,395 |
| HI | 70 | 25.3 | MN | 8,195 | 9,102 | MA | 290 | 244 | KY | 1,367 | 1,157 |
| ID | 10,161 | 12,779 | MO | 1,875 | 1,445 | NH | 302 | 298 | LA | 434 | 235 |
| KS | 2,276 | 2,499 | OH | 4,743 | 5,270 | NJ | 192 | 140 | MS | 382 | 223 |
| MT | 372 | 289 | WI | 22,866 | 26,035 | NY | 12,078 | 12,713 | NC | 1,012 | 862 |
| NE | 1,077 | 1,168 |  |  |  | PA | 10,503 | 10,734 | SC | 288 | 286 |
| NV | 542 | 620 |  |  |  | RI | 18.7 | 19.5 | TN | 1,102 | 850 |
| NM | 6,951 | 7,881 |  |  |  | VT | 2,641 | 2,522 | VA | 1,784 | 1,719 |
| ND | 468 | 384 |  |  |  | WV | 194 | 157 |  |  |  |
| OK | 1,236 | 959 |  |  |  |  |  |  |  |  |  |
| OR | 2,264 | 2,399 |  |  |  |  |  |  |  |  |  |
| SD | 1,437 | 1,884 |  |  |  |  |  |  |  |  |  |
| TX | 6,442 | 8,828 |  |  |  |  |  |  |  |  |  |
| UT | 1,661 | 1,819 |  |  |  |  |  |  |  |  |  |
| WA | 5,608 | 5,901 |  |  |  |  |  |  |  |  |  |
| WY | 73 | 120 |  |  |  |  |  |  |  |  |  |
| **Total** | **84,325** | **94,912** | **Total** | **53,578** | **59,867** | **Total** | **28,463** | **28,862** | **Total** | **10,562** | **9,177** |

Table 2 – Total Milk Production (millions of pounds)

1. Which state had the largest percent increase in milk production from 2005 to 2010?
   1. Idaho (ID)
   2. South Dakota (SD)
   3. Texas (TX)
   4. Wyoming (WY)
2. What percent of the total U.S. milk production came from the Southeast Region during 2010?
3. 4.76%
4. 5.19%
5. 5.97%
6. 15.09%
7. Total milk production in the West Region increased by what percent from 2005 to 2010?
8. 9.5%
9. 15.5%
10. 12.6%
11. 16.7%
12. In the Midwest Region, what state had the largest percent increase in milk production from 2005 to 2010?
13. Missouri (MO)
14. Wisconsin (WI)
15. Illinois (IL)
16. Michigan (MI)
17. Of the 12 states in the Northeast Region, how many increased in milk production from 2005 to 2010?
18. 3
19. 4
20. 5
21. 6
22. All 50 states in the US produce milk. What three (3) states produced the least amount of milk in 2010?
23. Delaware (DE), Rhode Island (RI), Wyoming (WY)
24. Alaska (AK), Rhode Island (RI), Hawaii (HI)
25. Rhode Island (RI), Hawaii (HI), Delaware (DE)
26. Wyoming (WY), Hawaii (HI), West Virginia (WV)
27. Which of the four (4) regions; West, Mid-West, North East, South East, has the largest average milk production per state?
28. West
29. Mid-West
30. North East
31. South East
32. Which of the four (4) regions; West, Mid-West, North East, South East, has the Smallest average milk production per state?
33. West
34. Mid-West
35. North East
36. South East