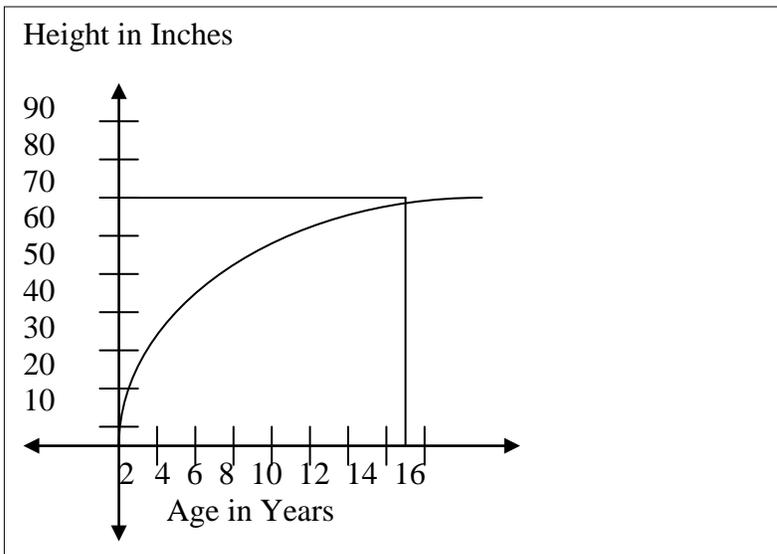


GRE MATH REVIEW #8

Charts and Tables

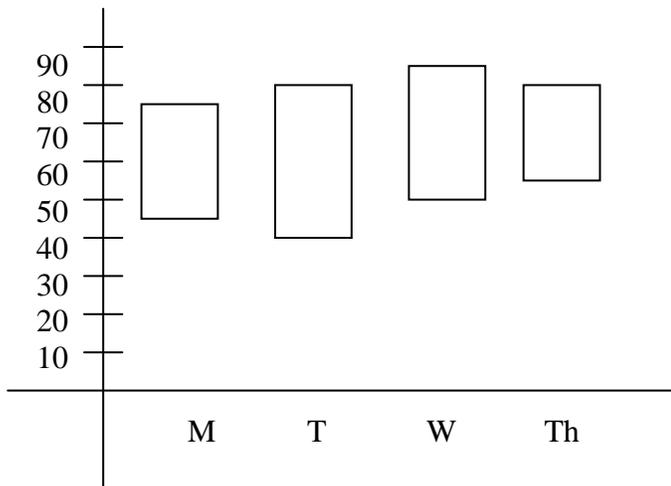
These questions test your ability to read and interpret charts and graphs. The mathematics involved in these questions is nothing more than percentages, ratios, averages, etc. So, if you remember our review on these topics, this section should not be difficult for you. Most students, however, are careless in reading the questions and interpreting the charts rather than with the calculations. In the following discussion, we'll review the types of graphs and charts used on the GRE before working examples.

A **grid graph** is very similar to the Cartesian coordinate system. The following grid graph depicts the relationship between a person's age and his/her height:



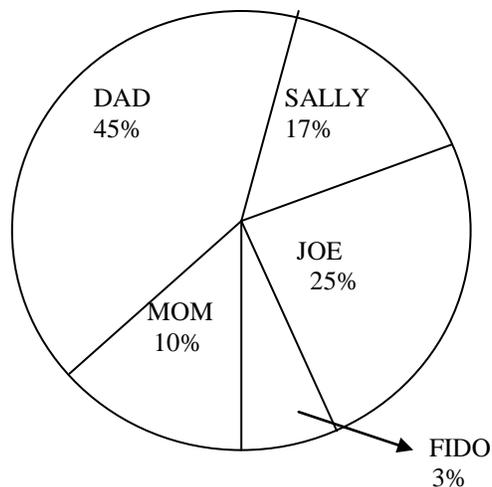
The vertical axis represents height; the horizontal represents age; the plotted curve represents the relationship between them. This graph tells a person's age at any height or a person's height at any age. For example, the point on the curve shows us that at age 15, the person was 70 inches tall.

A **bar graph** is a lot like a grid graph. The following example shows the range in temperature during four consecutive days:



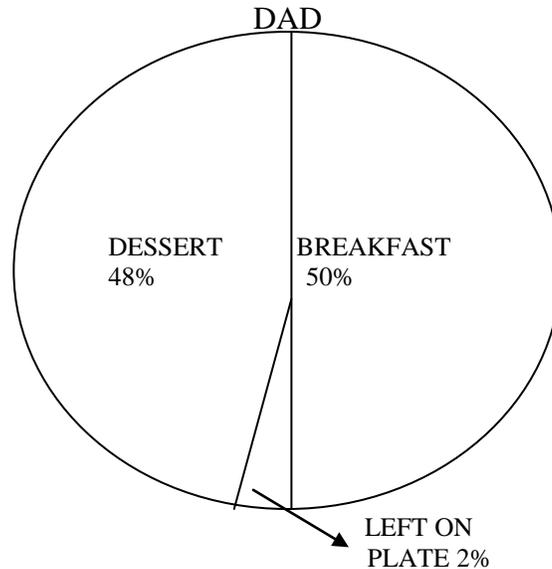
The bottom of each bar represents the low temperature for each day; the top of each bar represents the high temperature; the entire bar represents the range of temperatures. For example, on Monday the temperature ranged from a low of about 45 degrees to a high of about 75 degrees. The bars in any bar graph are like thermometers; they convey information as you move along one axis.

A **pie chart** is a circular chart that depicts fractional parts of whole as wedge-shaped slices. The following example shows how much of a blueberry pie was eaten by each member of a family:



The entire pie stands for 100% of whatever is being represented. In this example, the pie represents 100% of a blueberry pie. Pie charts will always be proportionally accurate on the GRE, so you may be able to get rough estimates of answers by looking at the pie chart.

Pie charts could be made more difficult by using a second graph, chart, or table to elaborate on information contained in the pie chart. For example, we could elaborate on the above pie chart with a second pie chart that represents the 45% of the pie eaten by Dad:



The second pie chart shows when and how Dad consumed his 45% share of the pie. If you were asked what part of the entire pie Dad ate for breakfast, you would multiply 45% by 50% to get 22.5% of the total pie consumed by Dad at breakfast.

A **chart** depicts numerical information as a picture. Instead of just listing what percentage of the pie each family member ate, a chart shows the information graphically. A **table** on the other hand conveys the same information without the picture. A table is just an organized list of numbers broken into categories. Some tables on the GRE will refer to information in other tables or charts. The following table conveys the same information as the first pie chart above:

The Blueberry Pie: Who Ate What

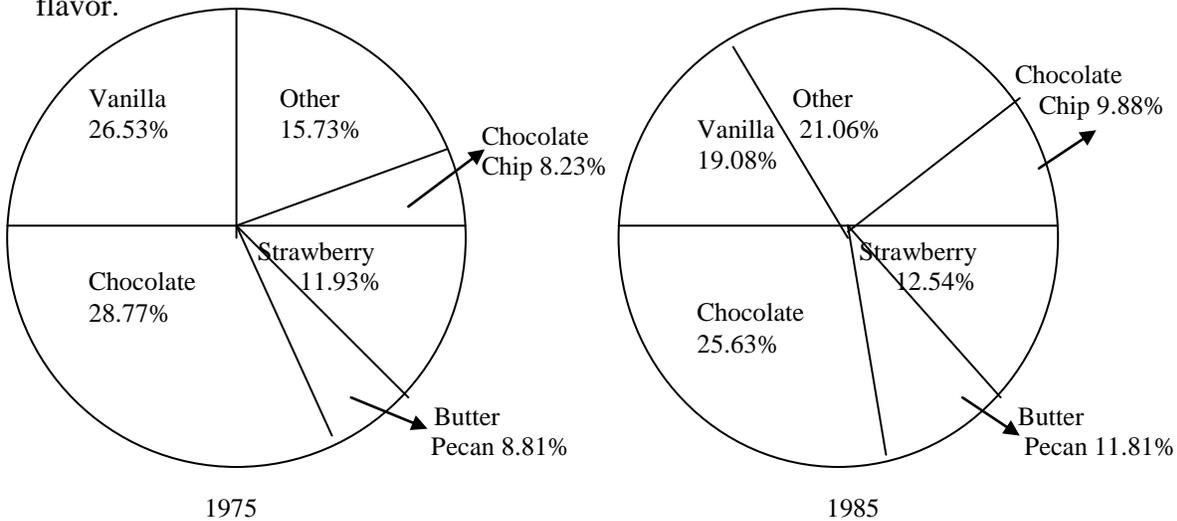
Dad	45%
Joe	25%
Sally	17%
Mom	10%
Fido	3%

Your first concern on a chart problem is understanding what the question is asking you to find, and then understanding how to extract that information from the chart or table. After succeeding at this, the questions are the same as the arithmetic questions we covered earlier. A percentage problem is worked the same way as any percentage problem. The only difference is that some of the information needed to work the problem may be embedded in a chart or table.

Here is a **sample chart section**:

Questions 21-25 refer to the following graphs:

(Fictional) Nationwide survey of people's ice cream preference in 1975 and in 1985 by flavor.



21. To the nearest one percent, what percentage decrease in popularity occurred for chocolate from 1975 to 1985?
 - (a) 9%
 - (b) 10%
 - (c) 11%
 - (d) 89%
 - (e) 90%

22. What is the ratio of categories that increased in popularity to those that decreased?
 - (a) 1:2
 - (b) 1:1
 - (c) 3:2
 - (d) 2:1
 - (e) 5:1

23. In 1985, if 20 percent of the "other" category is Lemon flavor, and 4,212 people surveyed preferred Lemon, then how many people were surveyed?
 - (a) 1000
 - (b) 10,000
 - (c) 42,120
 - (d) 100,000
 - (e) 1,000,000

24. If a percentage point shift results in annual additional sales of \$50,000, how much, in dollars, did combined annual Butter Pecan and Chocolate Chip sales increase between 1975 and 1985?
 - (a) \$2335
 - (b) \$4650
 - (c) \$232,500
 - (d) \$465,000
 - (e) \$23,250,000

25. Which of the following statements can be deduced from the pie graphs?
 - I. Both the Butter Pecan and Vanilla percentages increased by more than 33 percent between 1975 and 1985.
 - II. A higher percentage of people chose Butter Pecan and Strawberry in 1975 than chose Butter Pecan and Chocolate Chip in 1985.
 - III. The total share of Vanilla, Chocolate, and Strawberry decreased by less than 20 percent from 1975 to 1985.

- (a) I only (b) II only (c) III only (d) II and III (e) I, II, and III

Solution to 21: Simply find the difference between 28.77 and 25.63 and then determine what percentage of 28.77 that difference is. The difference is 3.14. Now we want to know what percent of 28.77 is 3.14. Obviously, we can eliminate (d) and (e) because they are much too large. Notice that 10% of 28.77 is 2.877 which is smaller than 3.14. Hence, 3.14 must be 11% of 28.77, which is answer (c).

Solution to 22: The first step in a ratio problem is to count the parts. There are six wedges in each of the pies, so there are six parts. Four of the flavors increased in popularity, and two of the flavors decreased. The ratio of increases to decreases, therefore, is 4:2 which can be reduced to 2:1, answer choice (d).

Solution to 23: Based on the first piece of information in the question, the percentage of people who preferred Lemon in 1985 is 20% of 21.06% which is roughly 4.5 (Notice that our calculations can be rough since the answer choices are so far apart). This means that 4% of the total number of people surveyed is 4212. So, (d) is the correct answer.

Solution to 24: The first thing to remember is that a percentage-point decrease is calculated simply by subtracting percentages. For example, the percentage-point decrease between 120% and 100% is 20%, but the percentage decrease between 120% and 100% is 16.67%. The percentage-point change in Butter Pecan from 1975 to 1985 is a 3 percentage-point increase. The percentage-point change in Chocolate Chip from 1975 to 1985 is 1.65 percentage-point increase. The total increase in percentage points is 4.65. Notice again that the answers are far apart, so we don't have to be exact in our calculations. Simply multiply 4.65 by 50,000, or just using 4 and 5 would result in a number between 200,000 and 250,000. Hence, the answer must be (c).

Solution to 25: This is a very time-consuming problem. To solve it, first check out Statement I. Did the Butter Pecan percentage increase by more than 33% or one-third? It increased from 8.81 to 11.81, which is a 3-point increase. Since 3 is more than one-third of 8.81, the first part of Statement I is true. Vanilla went from 26.53 to 19.08, which is a decrease, not an increase. Therefore, Statement I is not true. We can now eliminate (a) and (e). Looking at Statement II, the combined percentage for Butter Pecan and Strawberry in 1975 is $8.81 + 11.93$ or 20.74. The combined percentage for Butter Pecan and Chocolate Chip in 1985 is $11.81 + 9.88$ or 21.69. Statement II is false which eliminates (b) and (d). Hence, the answer is (c).