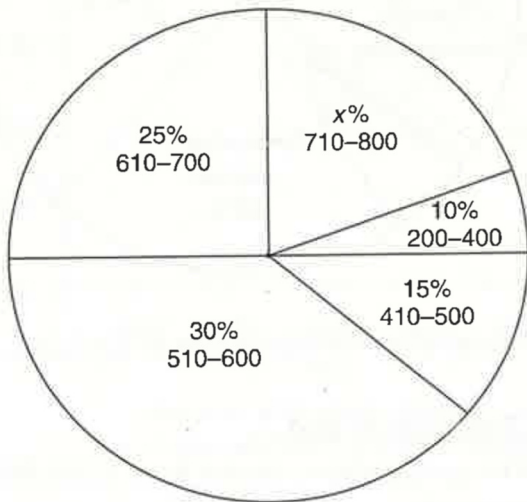


## YII 数学 SAT 演習

## ●7-4 Graphs and Tables

SAT Math Scores at Cedar Lane High School

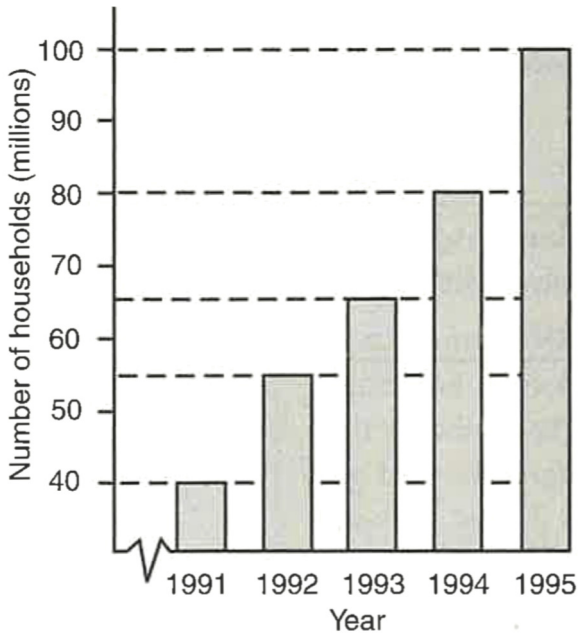


**Questions 1 and 2** refer to the graph above.

- If there are 72 SAT math scores between 510 and 600, how many SAT math scores are above 700?
  - 40
  - 48
  - 56
  - 64
  - 72
- If 20% of the students with SAT math scores from 610 to 700 received college scholarships, how many students with SAT math scores from 610 to 700 received college scholarships?
  - 12
  - 18
  - 30
  - 48
  - 60

Minimum Age Requirement (years)	Number of States
14	7
15	12
16	27
17	2
18	2

- The table above shows the minimum age requirement for obtaining a driver's license. In what percent of the states can a person obtain a driver's license before the age of 16?
  - 94%
  - 47%
  - 38%
  - 19%
  - 6%

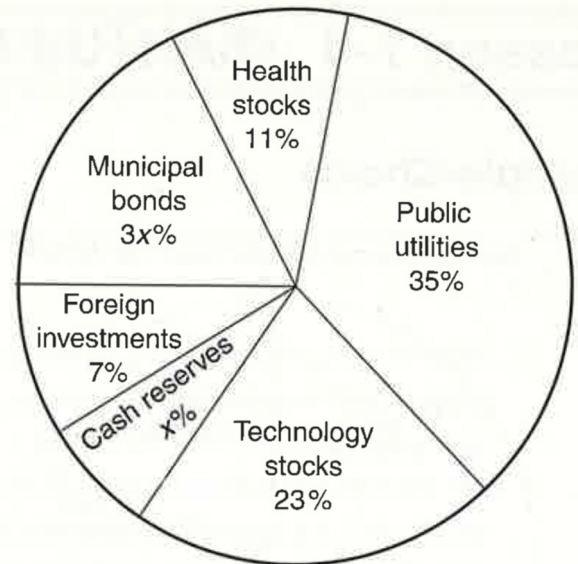


Growth of Computers in U.S. Households

**Questions 4 and 5.**

The graph above shows the number of U.S. households with computers for the years 1991 to 1995.

- What was the percent of increase in the number of households with computers from 1991 to 1995?
  - 60%
  - 75%
  - 80%
  - 120%
  - 150%
- The greatest percent of increase in the number of households with computers occurred in which two consecutive years?
  - 1991 to 1992
  - 1992 to 1993
  - 1993 to 1994
  - 1994 to 1995
  - It cannot be determined from the information given.

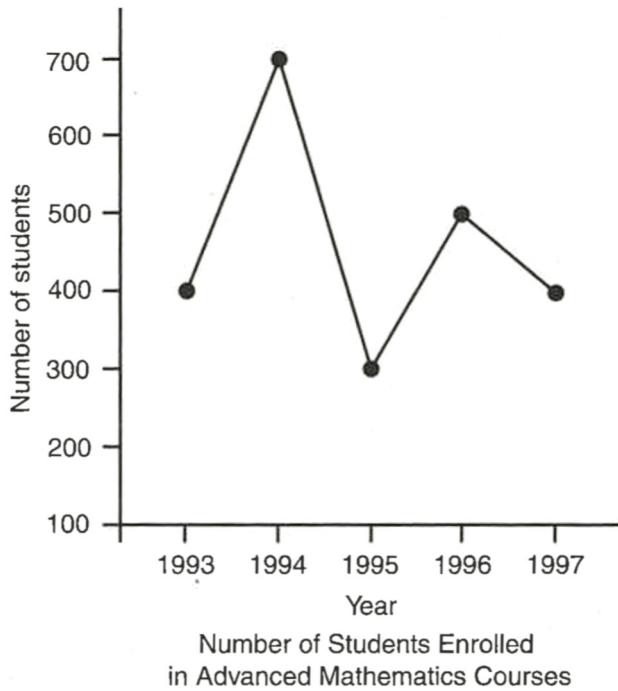


Investment Portfolio Valued at \$250,000

**Questions 6 and 7.**

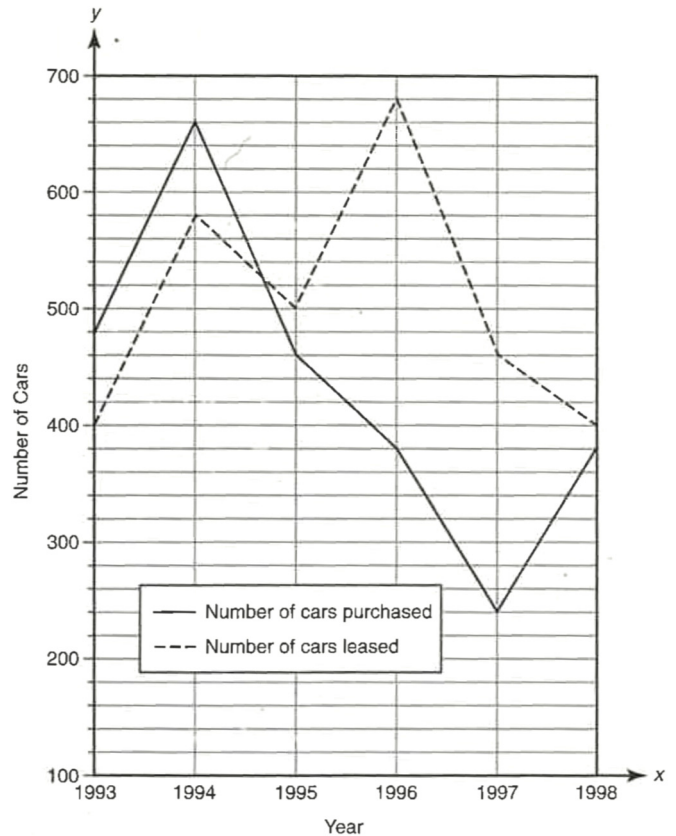
The graph above shows how \$250,000 is invested.

- How much money is invested in municipal bonds?
  - \$45,000
  - \$37,500
  - \$35,000
  - \$30,000
  - \$15,000
- After 20% of the amount that is invested in technology stocks is reinvested in health stocks, how much money is invested in health stocks?
  - \$77,500
  - \$65,000
  - \$50,000
  - \$45,000
  - \$39,000



**Questions 8 and 9** refer to the graph above.

8. The percent increase in the number of students enrolled in advanced mathematics courses from 1993 to 1994 exceeded the percent increase from 1995 to 1996 by approximately what percent?
- (A) 200  
(B) 133  
(C) 75  
(D) 67  
(E) 8
9. From 1997 to 1998 the number of students enrolled in advanced mathematics courses increased by the same percent that student enrollment in advanced mathematics courses dropped from 1996 to 1997. What was the approximate number of students enrolled in advanced mathematics courses in 1998?
- (A) 420  
(B) 440  
(C) 450  
(D) 460  
(E) 480



**Questions 10 and 11** refer to the graph above.

10. In 1995, the number of cars purchased was  $x$  percent of the number of cars leased. What is the best approximation for  $x$ ?
- (A) 75  
(B) 80  
(C) 85  
(D) 92  
(E) 95
11. Which of the following is the best approximation for the decrease in the number of cars purchased per year between 1994 and 1997?
- (A) 105  
(B) 140  
(C) 300  
(D) 420  
(E) 480



## ●7-4 Graphs and Tables 解答・解説

1. (B) Since the slices that comprise a pie chart must add up to 100%,  $10 + 15 + 30 + 25 + x = 100$ , so  $x = 20$ .

*Solution I:* If  $N$  represents the total number of SAT math scores, then 30% of  $N$  is 72 so  $N = 72 \div 0.30 = 240$ . Since 20% of 240 =  $0.20 \times 240 = 48$ , 48 SAT math scores are above 700.

*Solution II:* Since 30% of the total number of SAT scores represented by the graph is 72, 10% of the total number of SAT scores represented by the graph is  $\frac{1}{3} \times 72 = 24$ . Since 10% of the circle represents 24 scores, 20% of the circle represents  $2 \times 24$  or 48 SAT math scores.

2. (A) Since 25% of the 240 SAT math scores are from 610 to 700,  $25\% \times 240 = \frac{1}{4} \times 240 = 60$  students had scores from 610 to 700. If 20% of these students received scholarships, then  $20\% \times 60 = 0.20 \times 60 = 12$  students with math scores from 610 to 700 received college scholarships.



3. (C) According to the given table, a person can obtain a driver's license at 14 years of age in 7 states and at 15 years of age in 12 states. Hence, there are  $7 + 12$  or 19 states in which a person under the age of 16 can obtain a driver's license. Since the total number of states is 50, the percent of the states in which a person under the age of 16 can obtain a driver's license is  $\frac{19}{50} \times 100\%$  or 38%.

4. (E) According to the height of the bars in the given graph, in 1991 the number of households with computers was 40 million and in 1995 the number was 100 million. Hence,

$$\begin{aligned} \text{Percent increase} &= \frac{\text{Amount of increase}}{\text{Original amount}} \times 100\% \\ &= \frac{100 - 40}{40} \times 100\% \\ &= \frac{60}{40} \times 100\% \\ &= 1.5 \times 100\% \\ &= 150\% \end{aligned}$$



5. (A) Calculate the percent of increase for each 2 consecutive years:

- From 1991 to 1992:

$$\begin{aligned} \text{Percent increase} &= \frac{\text{Amount of increase}}{\text{Original amount}} \times 100\% \\ &= \frac{55 - 40}{40} \times 100\% \\ &= \frac{15}{40} \times 100\% \\ &= 37.5\% \end{aligned}$$

- From 1992 to 1993:

$$\begin{aligned} \text{Percent increase} &= \frac{\text{Amount of increase}}{\text{Original amount}} \times 100\% \\ &= \frac{65 - 55}{55} \times 100\% \\ &= \frac{10}{55} \times 100\% \\ &= 18.18\% \end{aligned}$$

- From 1993 to 1994:

$$\begin{aligned} \text{Percent increase} &= \frac{\text{Amount of increase}}{\text{Original amount}} \times 100\% \\ &= \frac{80 - 65}{65} \times 100\% \\ &= \frac{15}{65} \times 100\% \\ &= 23.08\% \end{aligned}$$

- From 1994 to 1995:

$$\begin{aligned} \text{Percent increase} &= \frac{\text{Amount of increase}}{\text{Original amount}} \times 100\% \\ &= \frac{100 - 80}{80} \times 100\% \\ &= \frac{20}{80} \times 100\% \\ &= 25\% \end{aligned}$$

Hence, the greatest percent of increase occurred from 1991 to 1992.

6. (A) The sum of all of the sectors of a circle graph is 100%. Hence,

$$\begin{aligned} 11\% + 35\% + 23\% + x\% + 7\% + 3x\% &= 100\% \\ 76\% + x\% + 3x\% &= 100\% \\ 4x\% &= 100\% - 76\% \\ &= 24\% \\ x &= \frac{24\%}{4\%} = 6 \end{aligned}$$

Since  $3x\% = 3(6)\% = 18\%$ , municipal bonds make up 18% of the investment portfolio. To find the amount of money invested in municipal bonds, multiply the total value of the portfolio by 18%:

$$\begin{aligned} 18\% \text{ of } \$250,000 &= 0.18 \times \$250,000 \\ &= \$45,000. \end{aligned}$$

Hence, \$45,000 is invested in municipal bonds.



7. (E) The original amount invested in health stocks is 11% of the total investment. You are told that 20% of the 23% that is invested in technology stocks is reinvested in health stocks. Since 20% of 23% =  $0.2 \times 23\%$  is now invested in health stocks,

$$\begin{aligned} 15.6\% \text{ of } \$250,000 &= 0.156 \times \$250,000 \\ &= \$39,000 \end{aligned}$$

the amount of money now invested in health stocks is \$39,000.

8. (E) From data in the graph:

- Percent increase from 1993 to 1994

$$\begin{aligned} &= \frac{700 - 400}{400} \times 100\% \\ &= \frac{300}{400} \times 100\% \\ &= 75\% \end{aligned}$$

- Percent increase from 1995 to 1996

$$\begin{aligned} &= \frac{500 - 300}{300} \times 100\% \\ &= \frac{200}{300} \times 100\% \\ &= 66.7\% \end{aligned}$$

- Percent increase from 1993 to 1994 exceeds the percent increase from 1995 to 1996 by  $75\% - 66.7\%$  or, approximately, 8%.

9. (E) From 1996 to 1997, the percent decrease was  $\frac{500-400}{500} \times 100\%$  or 20%. If the percent increase from 1997 to 1998 was 20%, then the number of students enrolled in advanced mathematics courses in 1998 was  $400 + 20\% \text{ of } 400 = 400 + 80 = 480$ .

10. (D) In 1995, about 460 cars were purchased and 500 cars leased. Since  $\frac{460}{500} = 92\%$ , the best approximation for  $x$  is 92.

11. (B) For 1994–1995, 1995–1996, and 1996–1997 the number of cars purchased decreased a total of  $660 - 240$  or 420 cars. Hence, the decrease in the number of cars per year was approximately  $\frac{420}{3}$  or 140.