

# Graphs & Data Tables

# Practice

Below is data for the effect of altitude on pressure

Create a line graph for the following as follows:

1) ) Label the graph axes.

2). Scale the axes.

3) Plot the data pairs.

4) Draw a trend line.

<b>IV</b>	<b>DV</b>
<b>x</b>	<b>y</b>
Altitude, (1000 feet)	Pressure (psi)
0	15
5	13
10	10
15	9
20	6

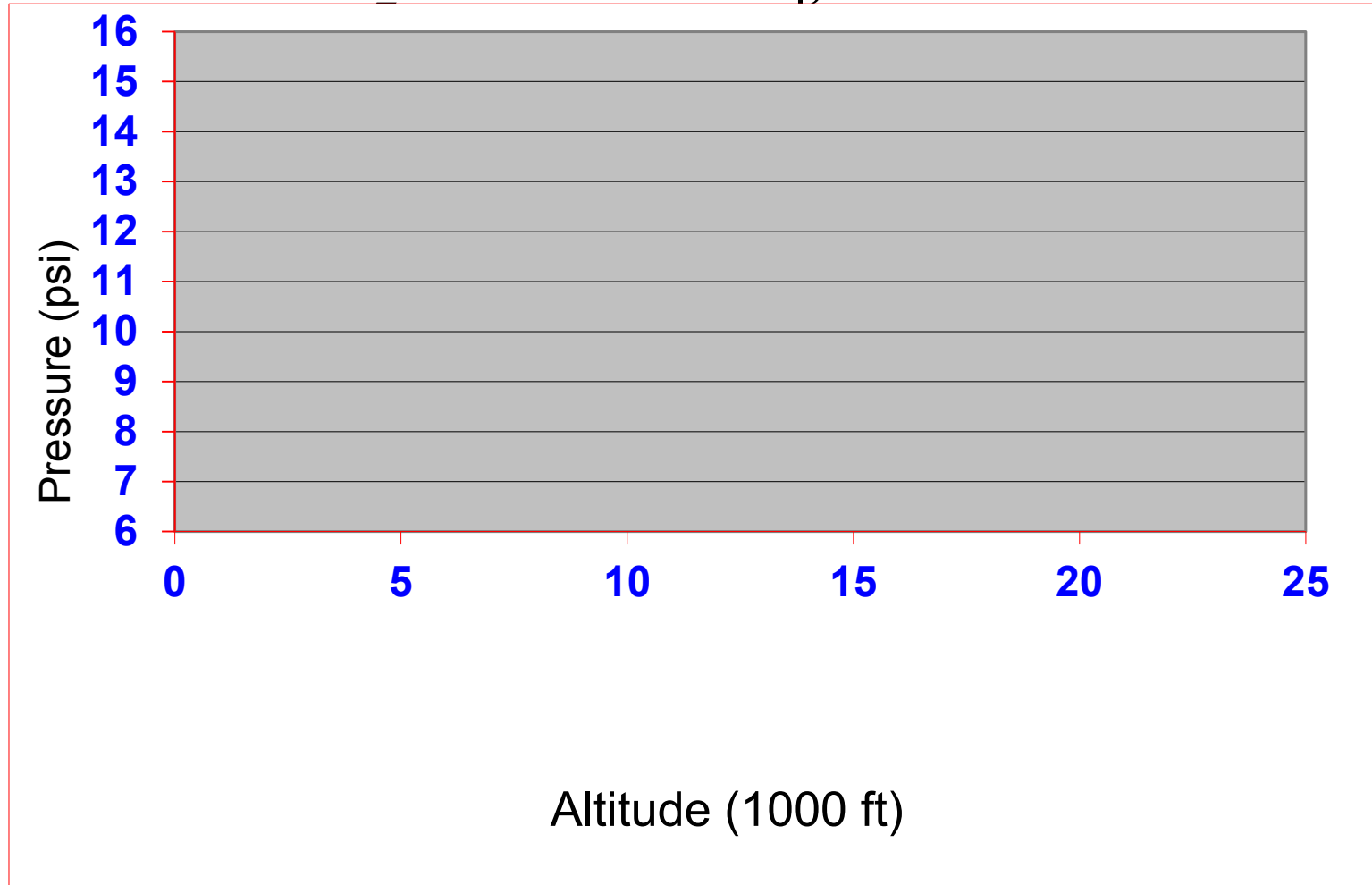
# Bell Work, Thursday, Feb 7, 2013

2) Determine the scale for the axes and number the axes.

$$\text{Scale} = \left( \frac{\text{maximum} - \text{minimum}}{\quad} \right), \text{ round-off}$$

**x axis scale:**  
 **$20 - 0 = 20$**   
 **$20 \div 5 = 4$ ,**  
**round up to 5**

**y axis scale:**  
**Scale by 1**

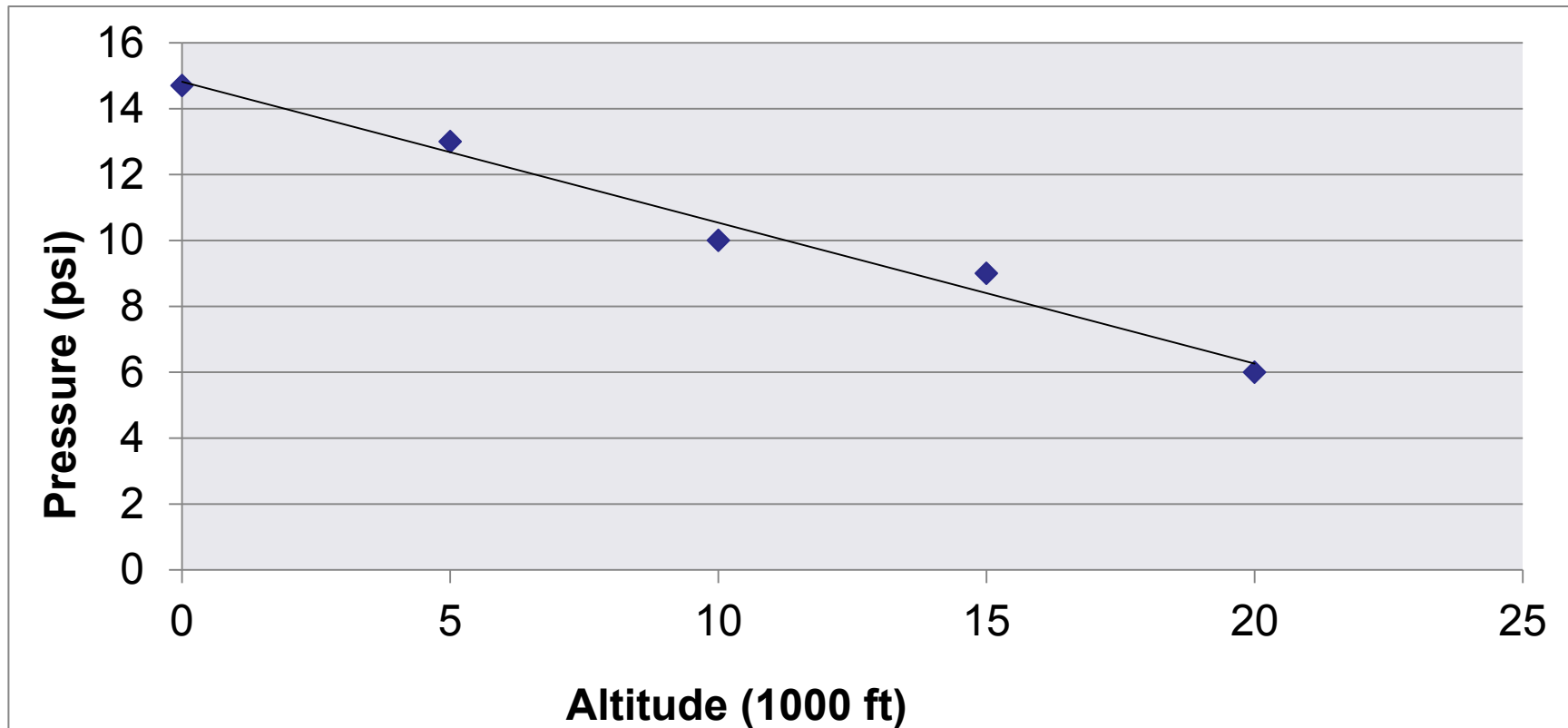


# Bell Work, Thursday, Feb 7, 2013

**1) Plot the data pairs.**

**2) Draw a trend line.**

**Trend line: A straight line that passes as close to as many points as possible.**



If the altitude is increased  
(independent variable) (explain how the independent is changed)  
then the air pressure will decrease.  
(dependent variable) (explain how the dependent will change)



time	altitude (ft)	temperature (°F)	pressure (psi)
7:08 am	0	74	14.7
7:34 am	26,000	-27	6.8
7:50 am	43,000	-73	2.4
8:10 am	53,000	-94	1.4
8:25 am	65,000	-80	0.74
9:05 am	95,000	-41	0.2
9:47 am	113,740	-29	0.09

According to a *National Geographic* article, two men manned a hot-air balloon and ascended to the edge of the atmosphere. They recorded the following data during their ascent.

**1. How did the pressure change as the altitude increased?**

- a. The pressure decreased.**
- b. The pressure increased.**
- c. The pressure decreased then increased.**
- d. None of the above**

time	altitude (ft)	temperature (°F)	pressure (psi)
7:08 am	0	74	14.7
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According to a *National Geographic* article, two men manned a hot-air balloon and ascended to the edge of the atmosphere. They recorded the following data during their ascent.

**2. How did the temperature change as the altitude increased?**

- a. It decreased.
- b. It increased.
- c. It decreased then increased.**
- d. None of the above

time	altitude (ft)	temperature (°F)	pressure (psi)
7:08 am	0	74	14.7
7:34 am	26,000	-27	6.8
7:50 am	<b>A.</b> 43,000	-73	2.4
8:10 am	<b>B.</b> 53,000	-94	1.4
8:25 am	<b>C.</b> 65,000	-80	0.74
9:05 am	<b>D.</b> 95,000	-41	0.2
9:47 am	<b>E.</b> 113,740	-29	0.09

According to a *National Geographic* article, two men manned a hot-air balloon and ascended to the edge of the atmosphere. They recorded the following data during their ascent.

**3. At what altitude did they experience the coldest recorded temperature?**

**53,000 ft**

time	altitude (ft)	temperature ('F)	pressure (psi)
7:08 am	0	74	14.7
7:34 am	26,000	-27	6.8
7:50 am	43,000	-73	2.4
8:10 am	53,000	-94	1.4
8:25 am	65,000	-80	0.74
9:05 am	95,000	-41	0.2
9:47 am	113,740	-29	0.09

- A. < 60,
- B. 60 – 120,
- C. 121 – 150,
- D. 151 – 180,**
- E. > 180

**4. How long did it take them to go from an altitude of 0 feet to their maximum of 113,740 feet.?**

**Report your answer in minutes.**

**7:08 am – 9:47 am = 2 hr 39 min**

**(2 x 60) + 39 min = 159 minutes**

# Page 21, GEE Book

time	altitude (ft)	temperature (°F)	pressure (psi)
7:08 am	0	74	14.7
7: 34 am	26,000	-27	6.8
7:50 am	43,000	-73	2.4
8: 10 am	53,000	-94	1.4
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9:47 am	113,740	-29	0.09

According to a *National Geographic* article, two men manned a hot-air balloon and ascended to the edge of the atmosphere. They recorded the following data during their ascent.

**5. How much did the pressure drop between 40,000 feet and 60,000 feet?**

**Give the range of altitudes during which the pressure drops the fastest.**

- a. 1.0 psi    **b. 2.0 psi**    c. 2.4 psi  
d. 4.0 psi    e. 4.4 psi

**See question 6**

## Page 21, GEE Book

time	altitude (ft)	temperature (°F)	pressure (psi)
7:08 am	0	74	14.7
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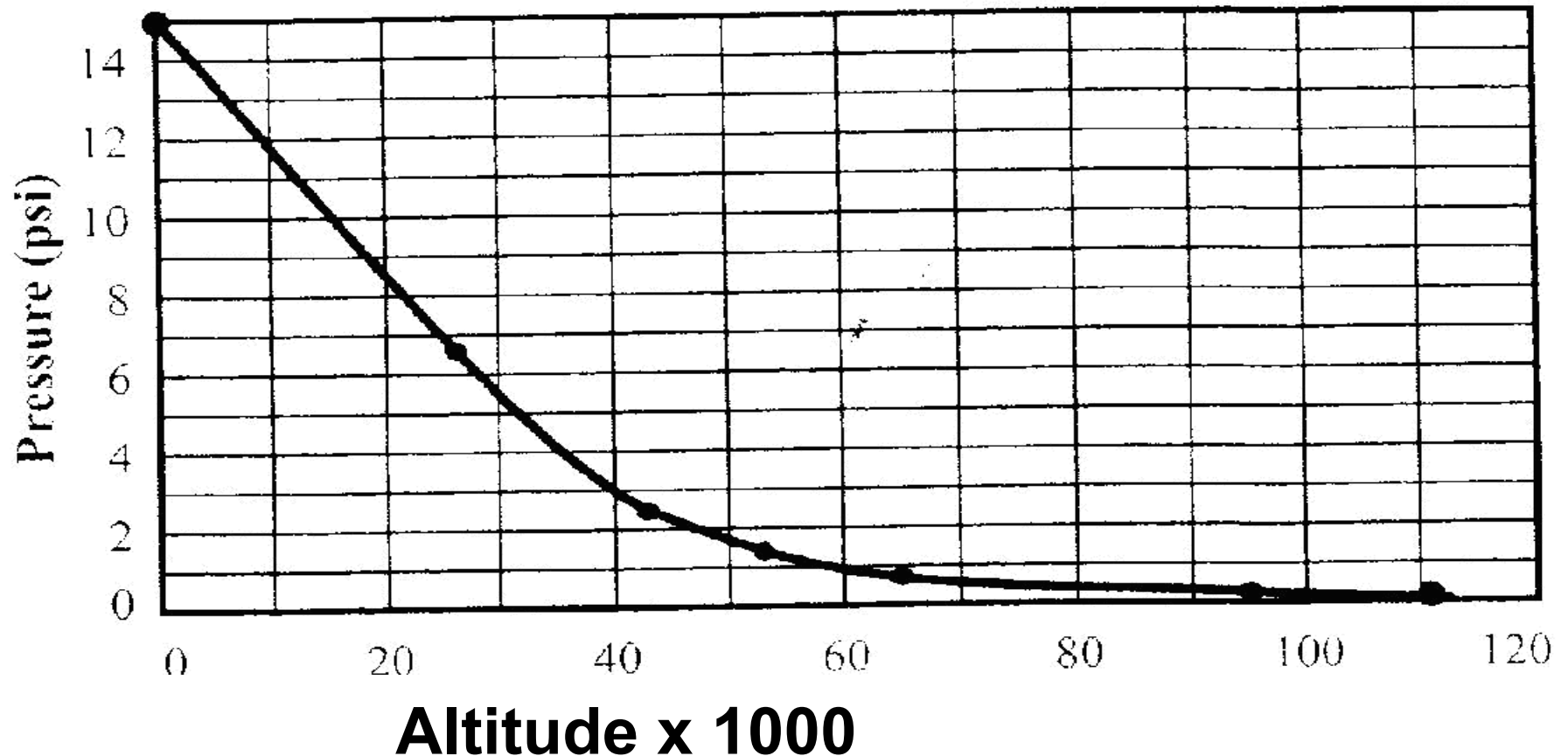
**5\*.Give the range of altitudes during which the pressure drops the fastest.**

**See question 7**

**A line graph is best used to show how one variable changes with respect to another.**

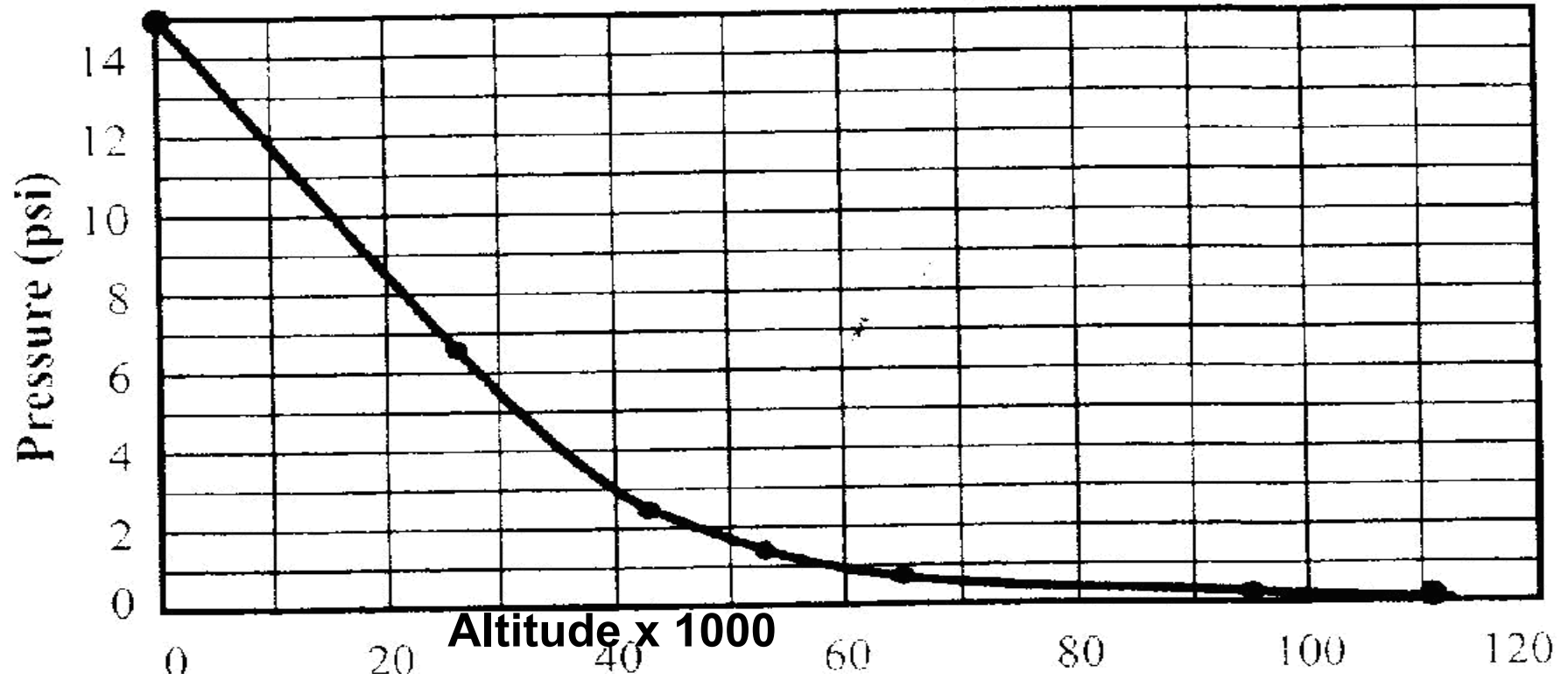
**The slope shows the rate of change.**

Altitude Versus Pressure



A line graph is best used to show how one variable changes with respect to another.

Altitude Versus Pressure



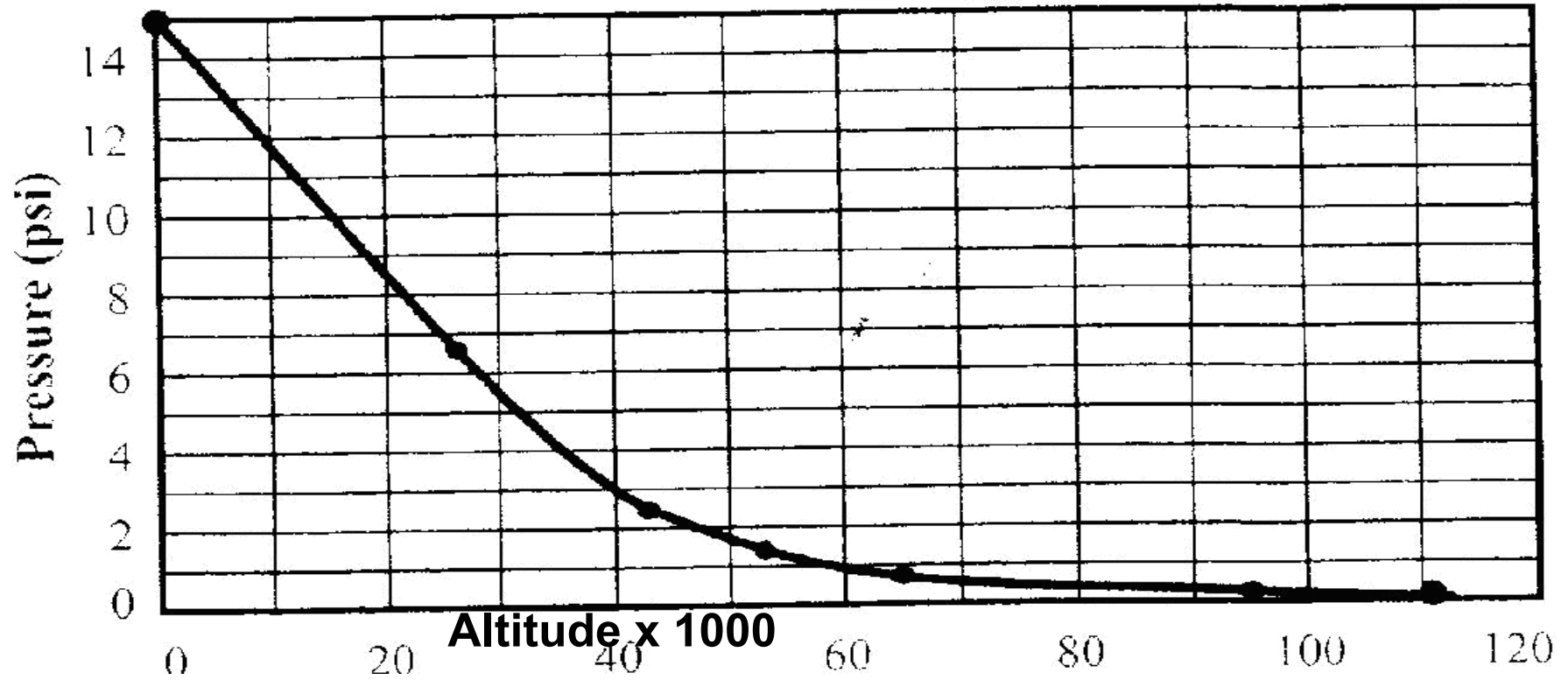
6. How much did the pressure drop between 40,000 feet and 60,000 feet?

40,000 ft = 3 psi, 60,000 ft = 1 psi  
 $3 - 1 = 2$  psi

- a. 1.0 psi b. 2.0 psi c. 2.4 psi  
d. 4.0 psi e. 4.4 psi

A line graph is best used to show how one variable changes with respect to another.

Altitude Versus Pressure

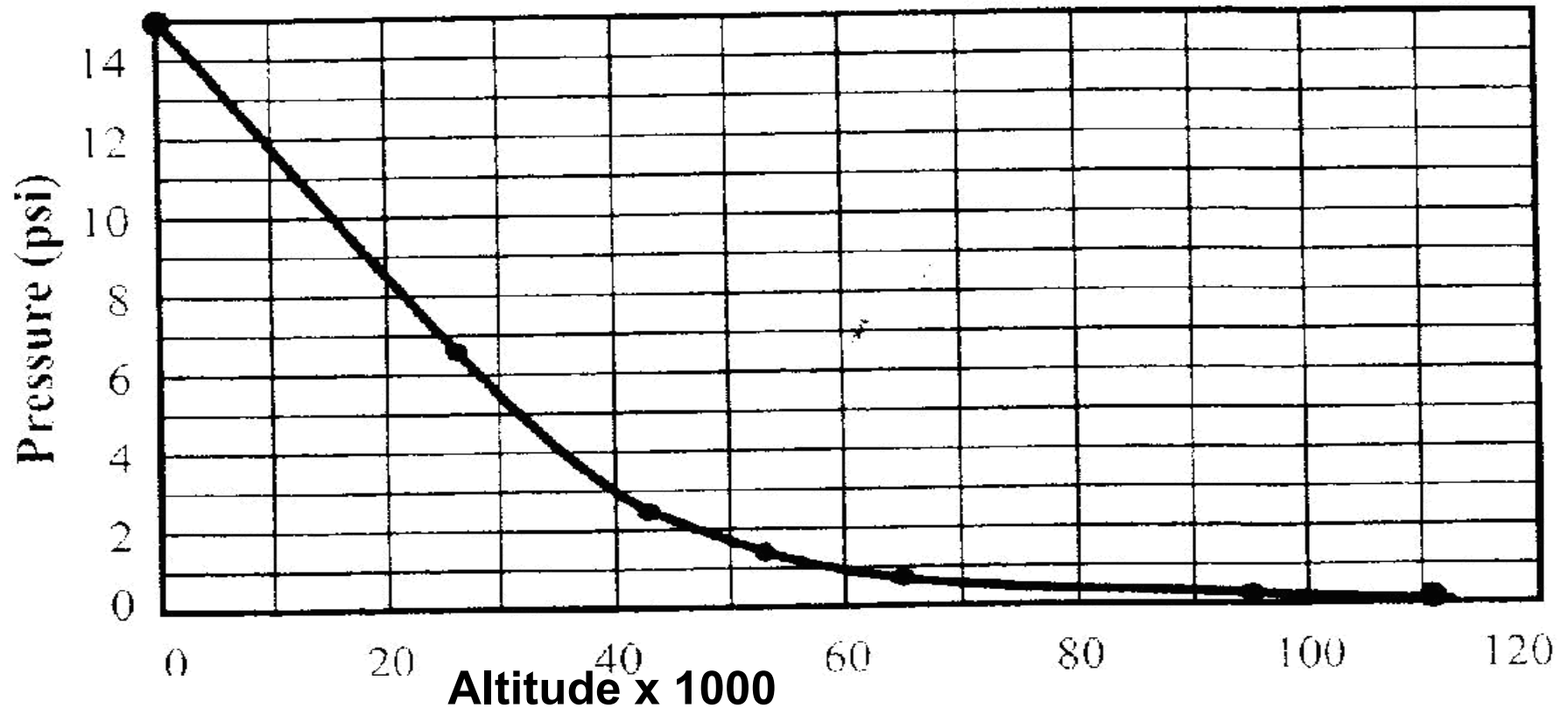


7. Give the range of altitudes (in thousand feet) during which the pressure drops the fastest.

- a. 0 - 10      b. 0 - 20      c. 0 - 30  
d. 0 - 40      e. 0 - 50

# Page 22, GEE Book

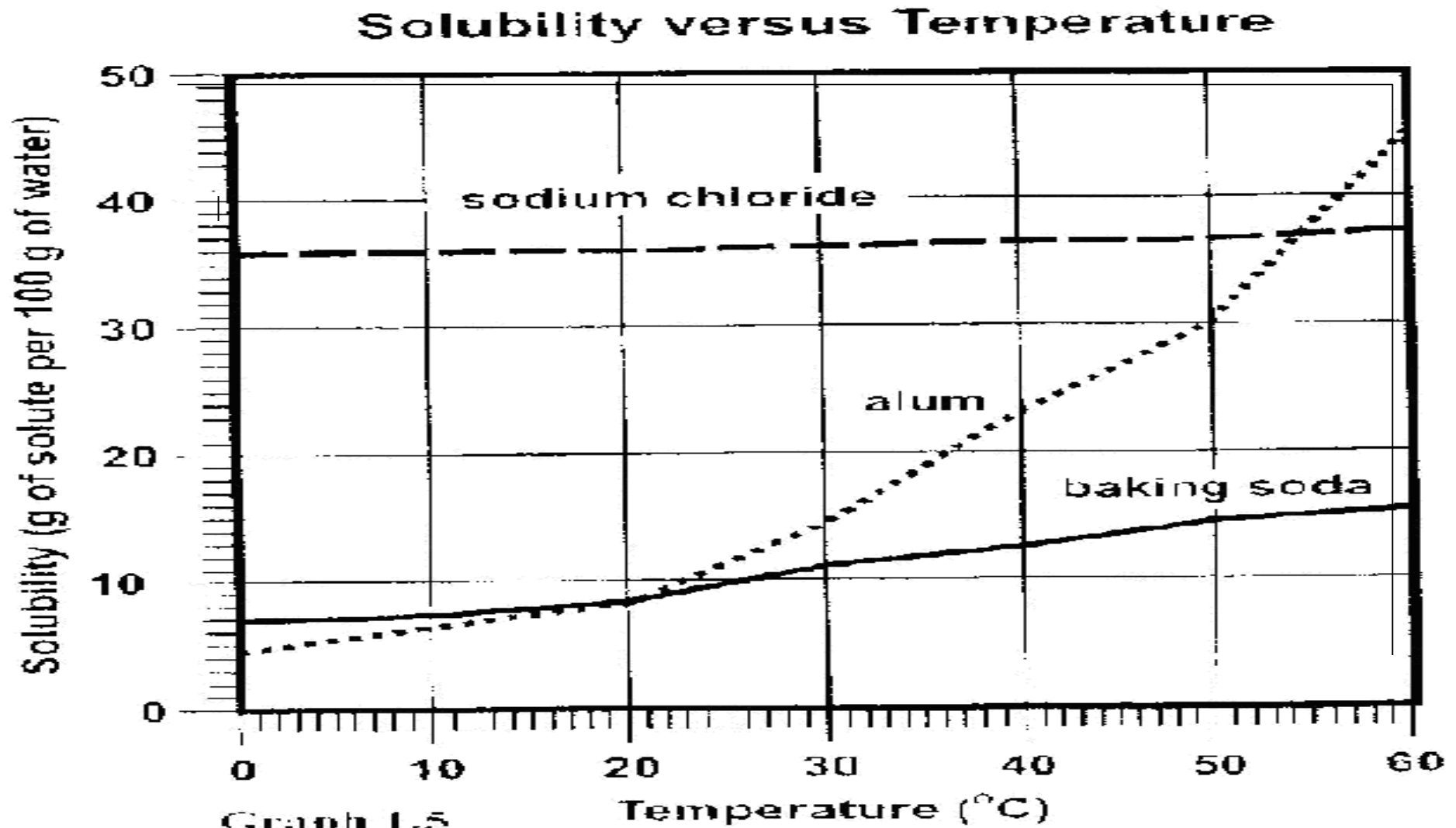
## Altitude Versus Pressure



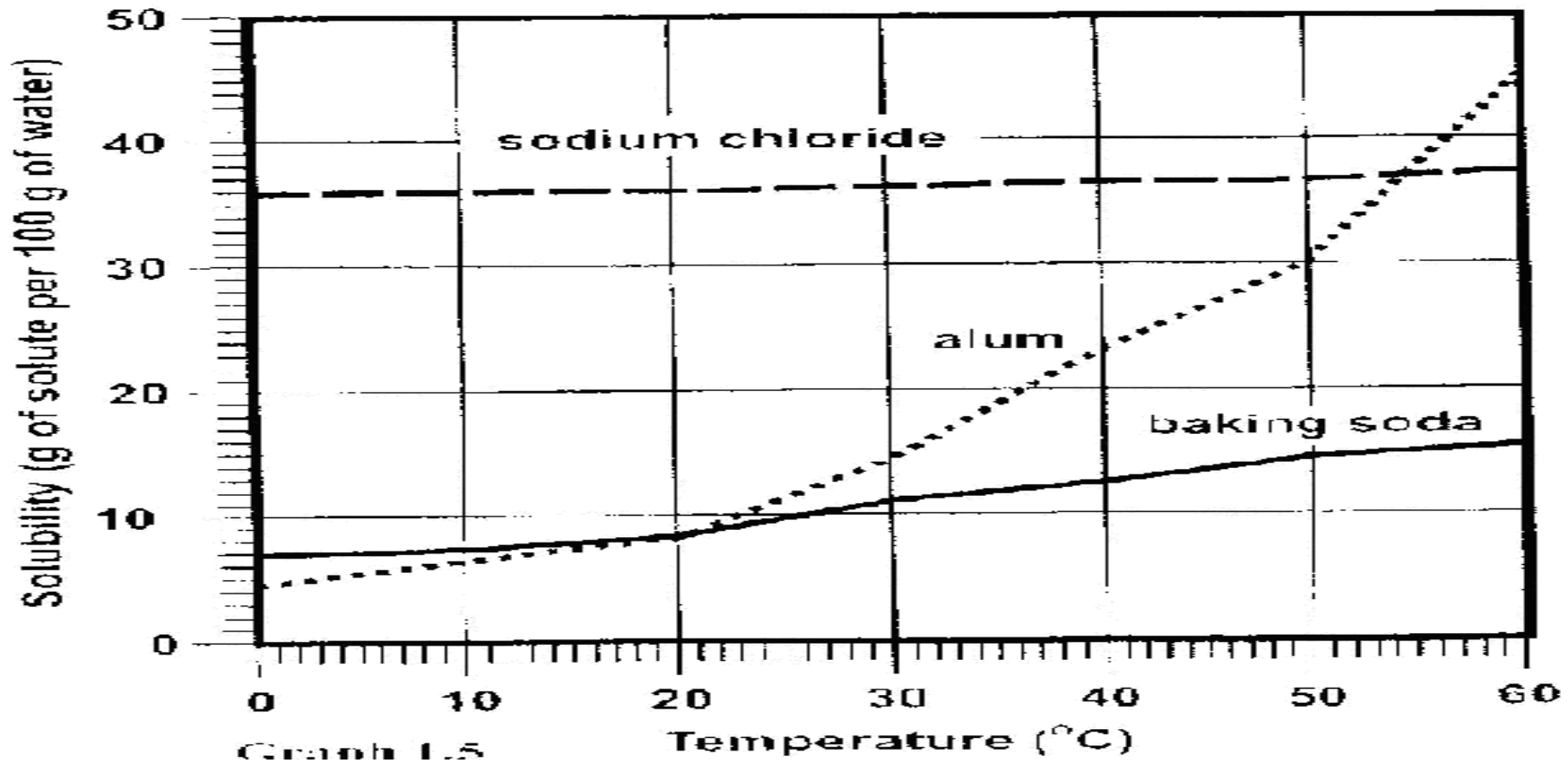
Give a reason why graphing this data is easier to analyze than comparing the same data in the previous table.

- The data in a line graph is a visual representation of the relationship between the two variables, altitude and pressure.
- You can see the rate and direction of change from the slope.

**Multiple line graphs are used to compare multiple values.**



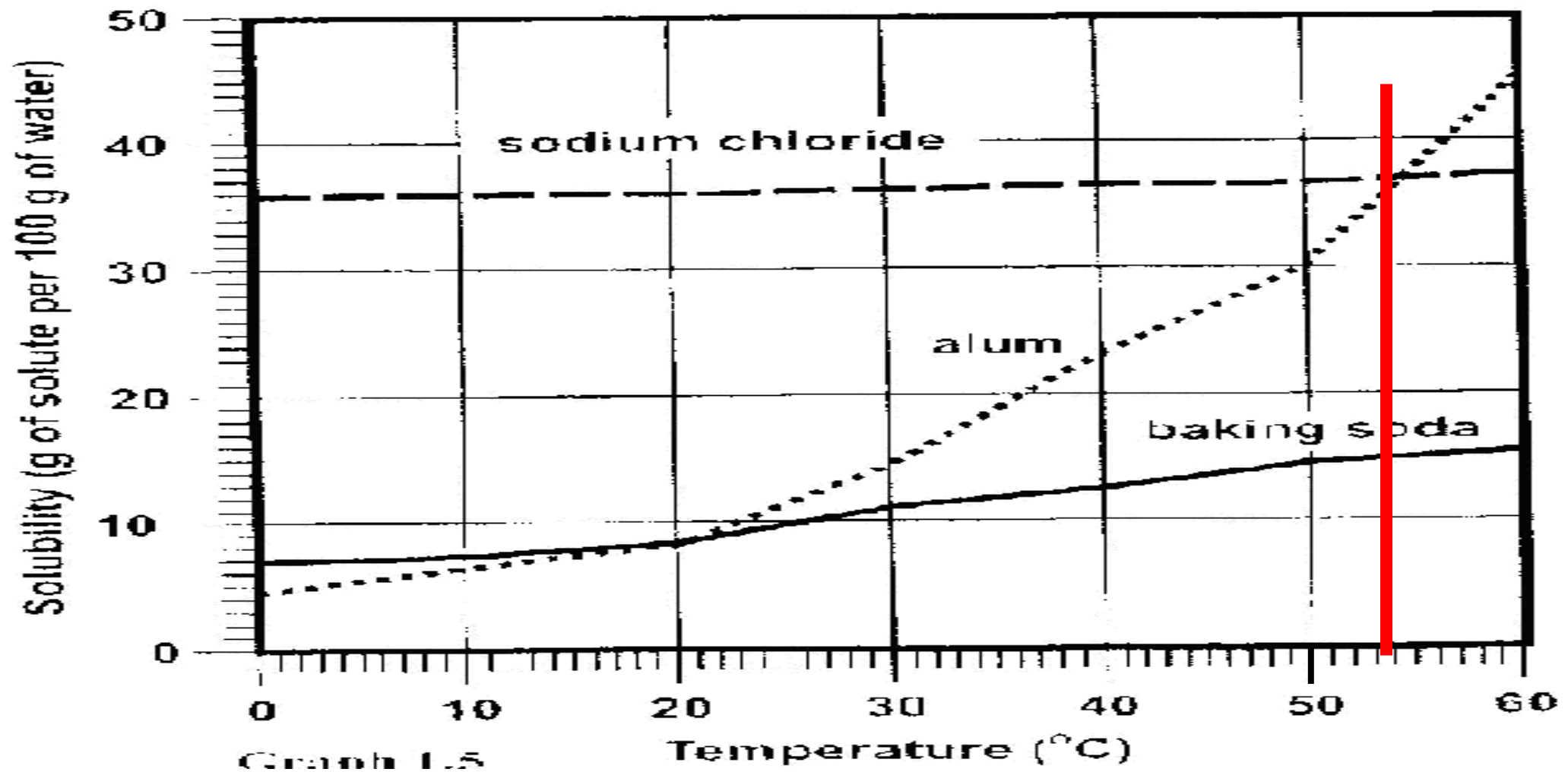
## Solubility versus Temperature



8. At 20°C, which two substances have the same solubility?

- a. alum & baking soda
- b. alum and sodium chloride
- c. sodium chloride and baking soda
- d. none of the above

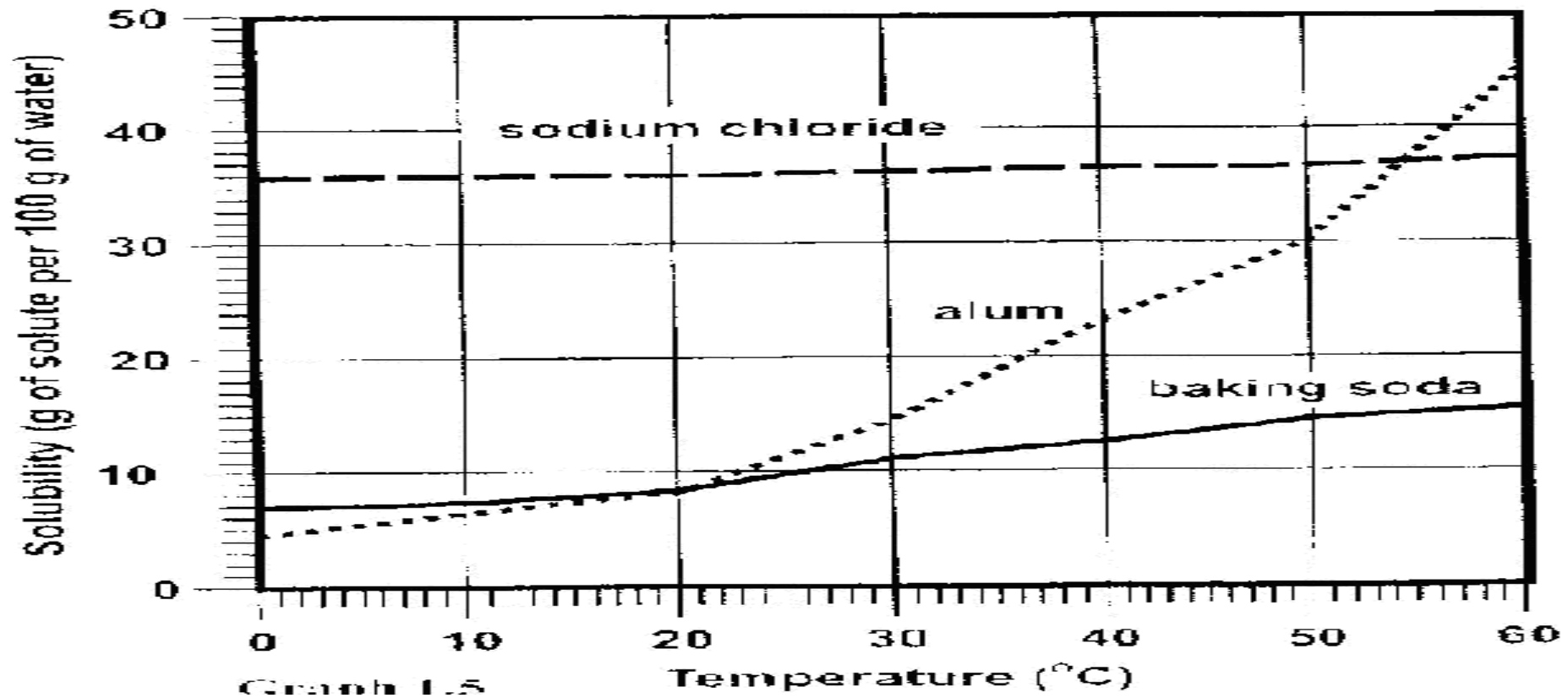
## Solubility versus Temperature



9. At about what temperature does alum have the same solubility as sodium chloride? **54 – 55 °C**

A. 16, B. 22, C. 50, **D. 54**, E. No answer is correct.

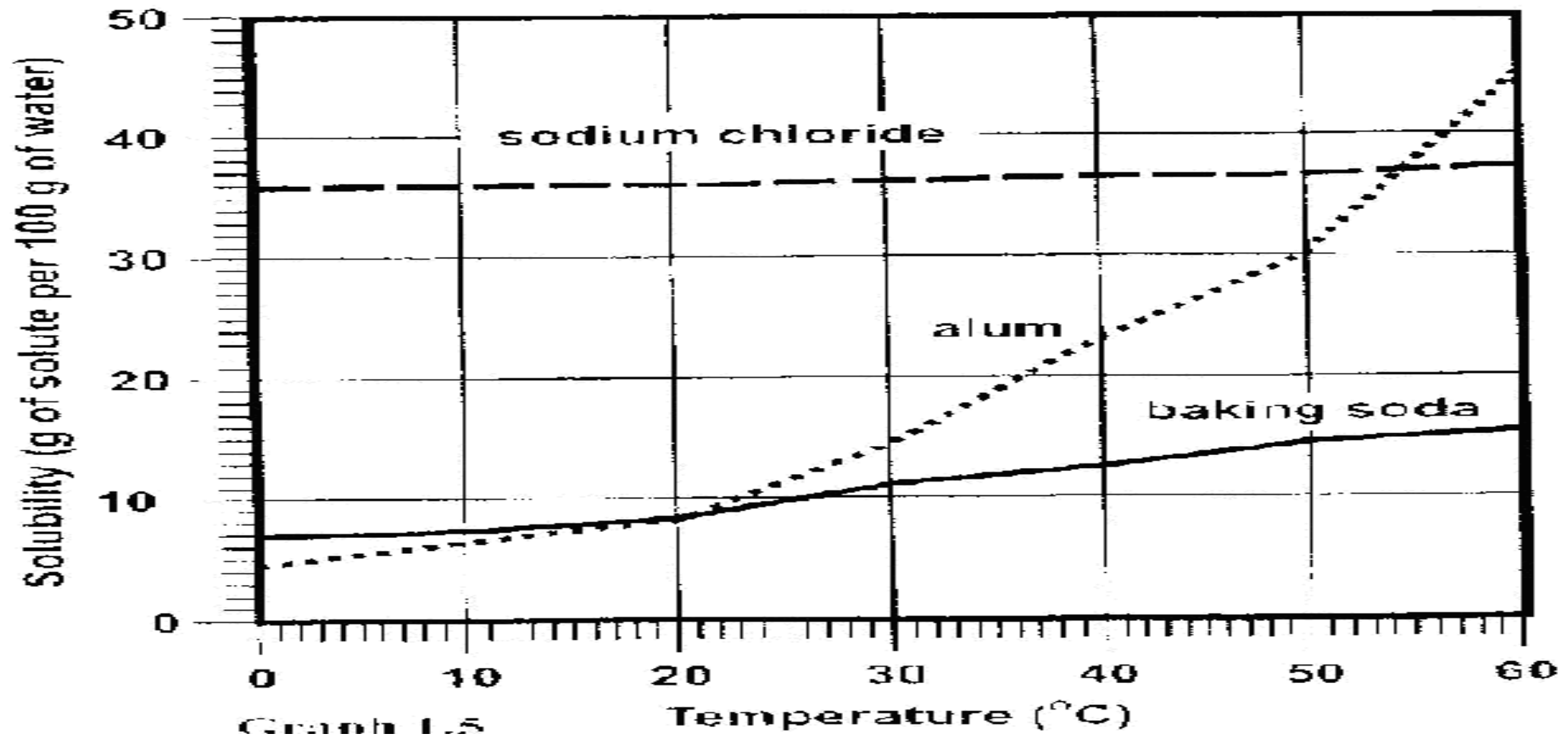
## Solubility versus Temperature



10. Which substance's solubility is least affected by temperature?

- a. alum
- b. baking soda
- c. sodium chloride
- d. none of the above

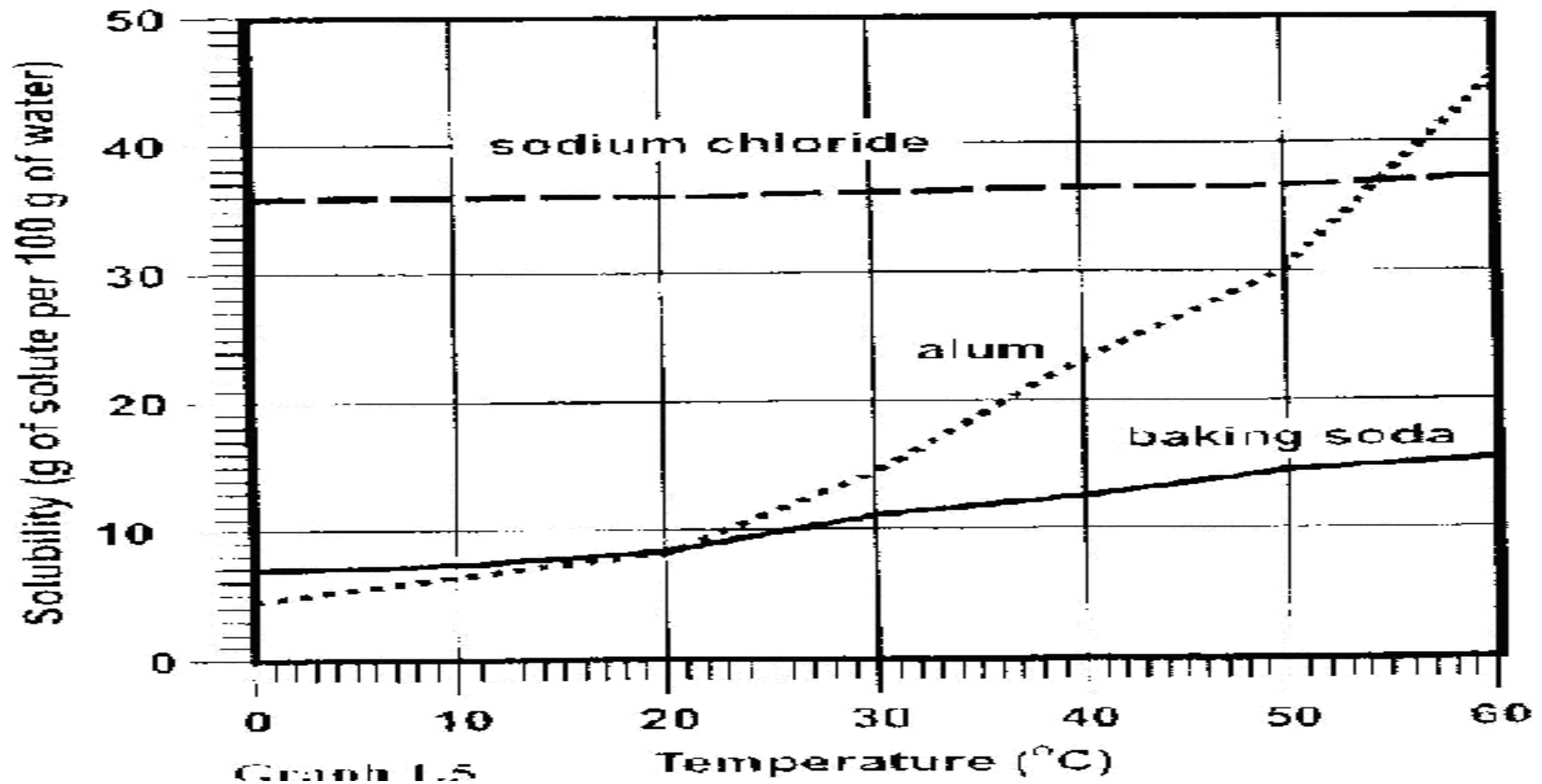
## Solubility versus Temperature



11. At 50° C, how many grams of alum will dissolve in 100 grams of water? 30 grams

A. 15, B. 20, C. 25, D. 30, E. No answer is correct

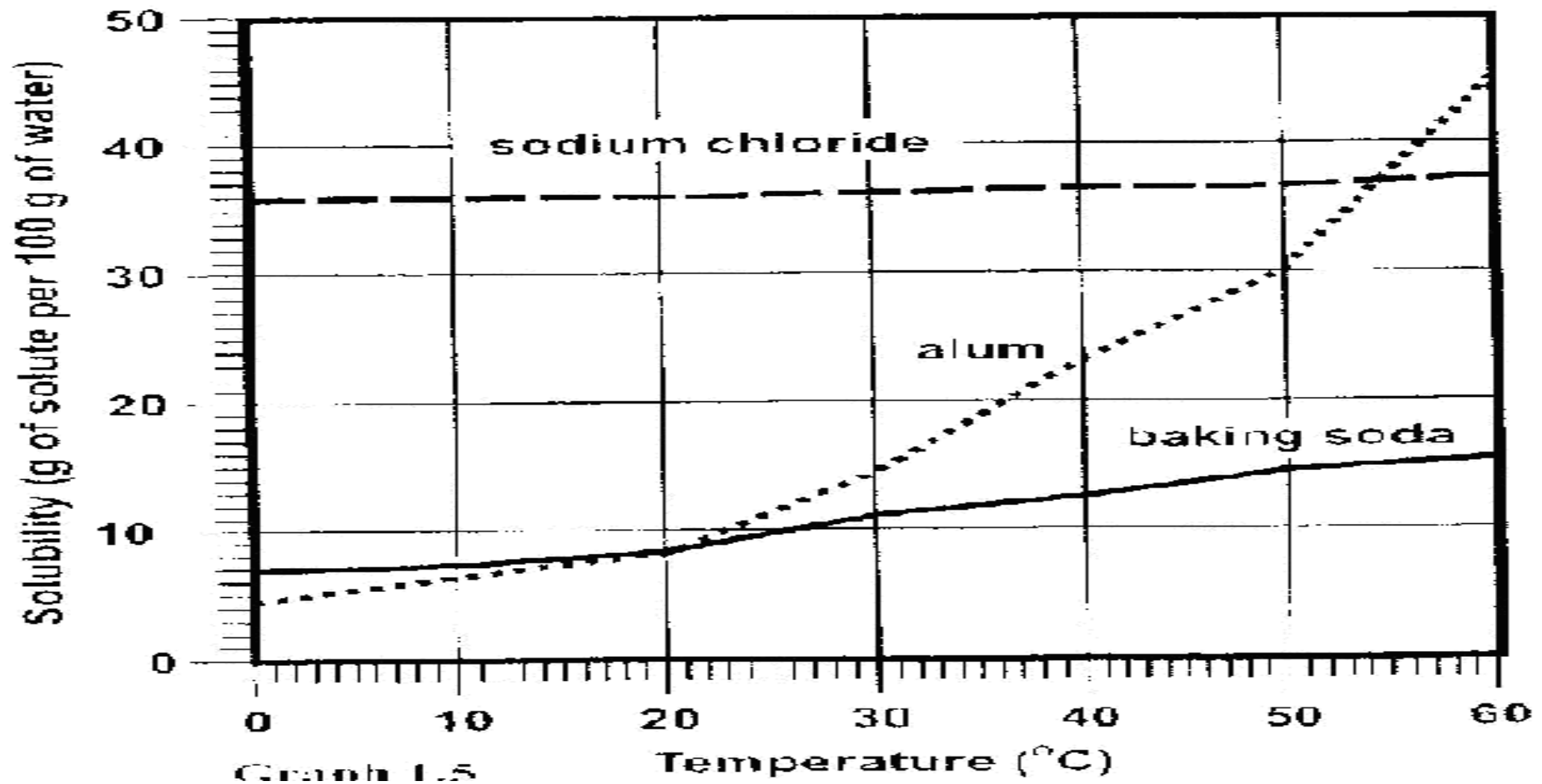
## Solubility versus Temperature



12. About how much does the solubility of sodium chloride increase from 0°C to 60°C ?

**2** grams per 100 mL of water

## Solubility versus Temperature

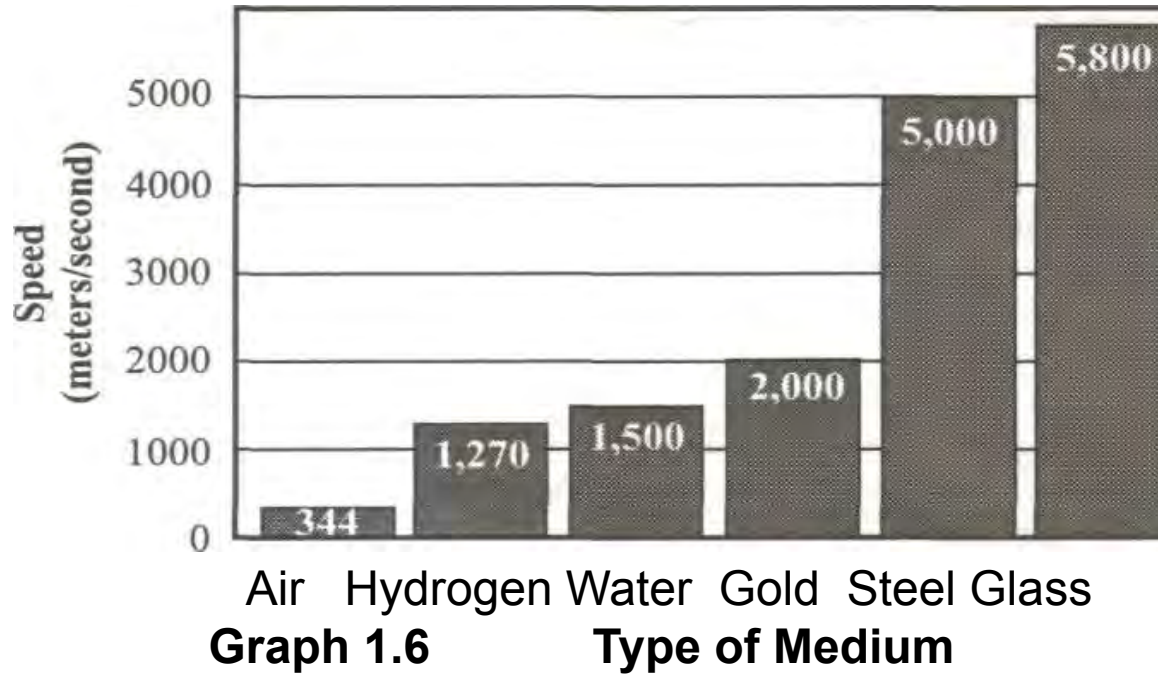


12. About how much does the solubility of sodium chloride increase from 0°C to 60°C ?

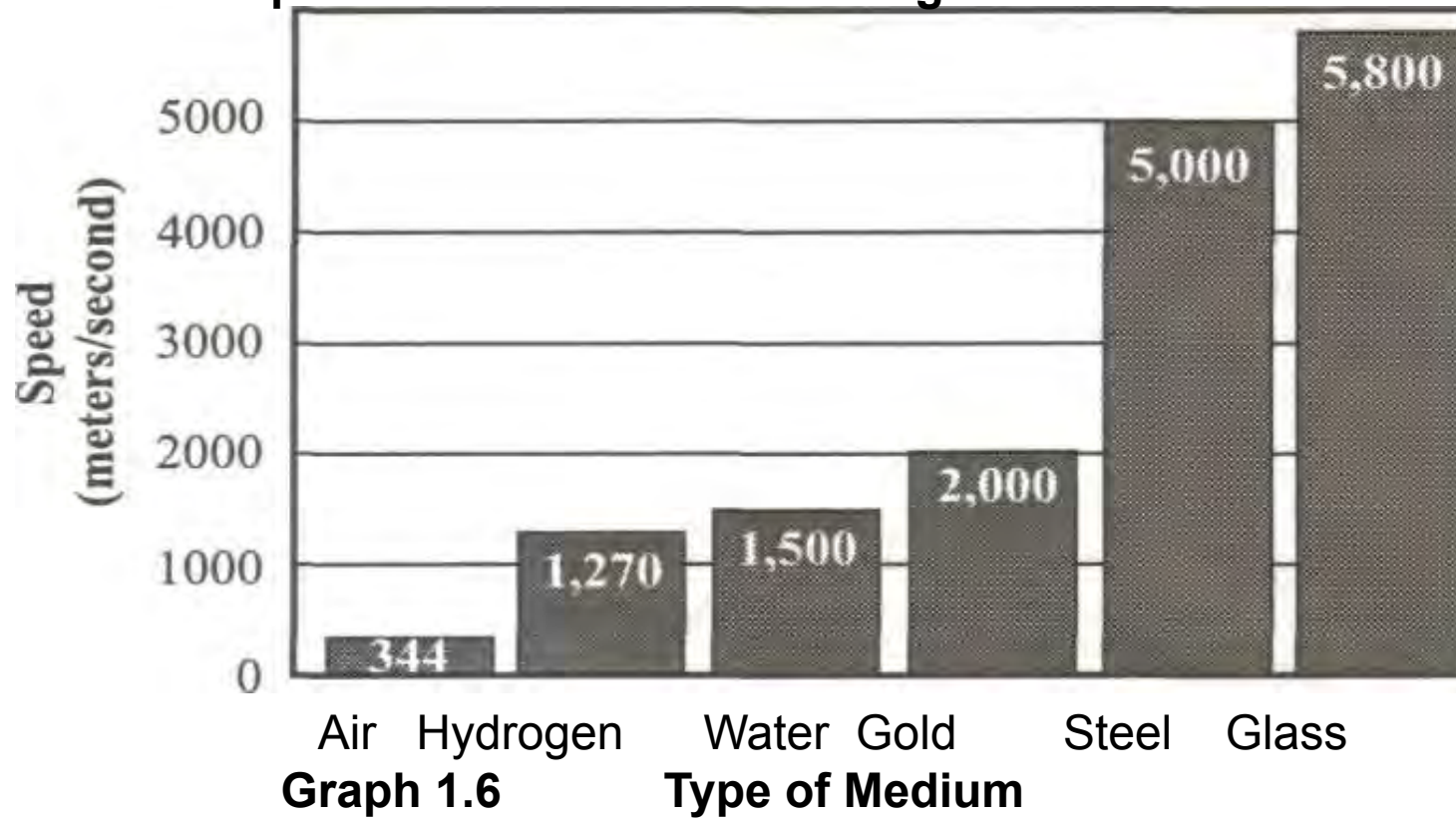
- A. 5, B. 10, C. 25, D. 40, E. No answer is correct

**Bar graphs are used to show easy-to-read, unconnected bars which represent a discrete quantity of information.**

**The Speed of Sound Waves Through a Medium**



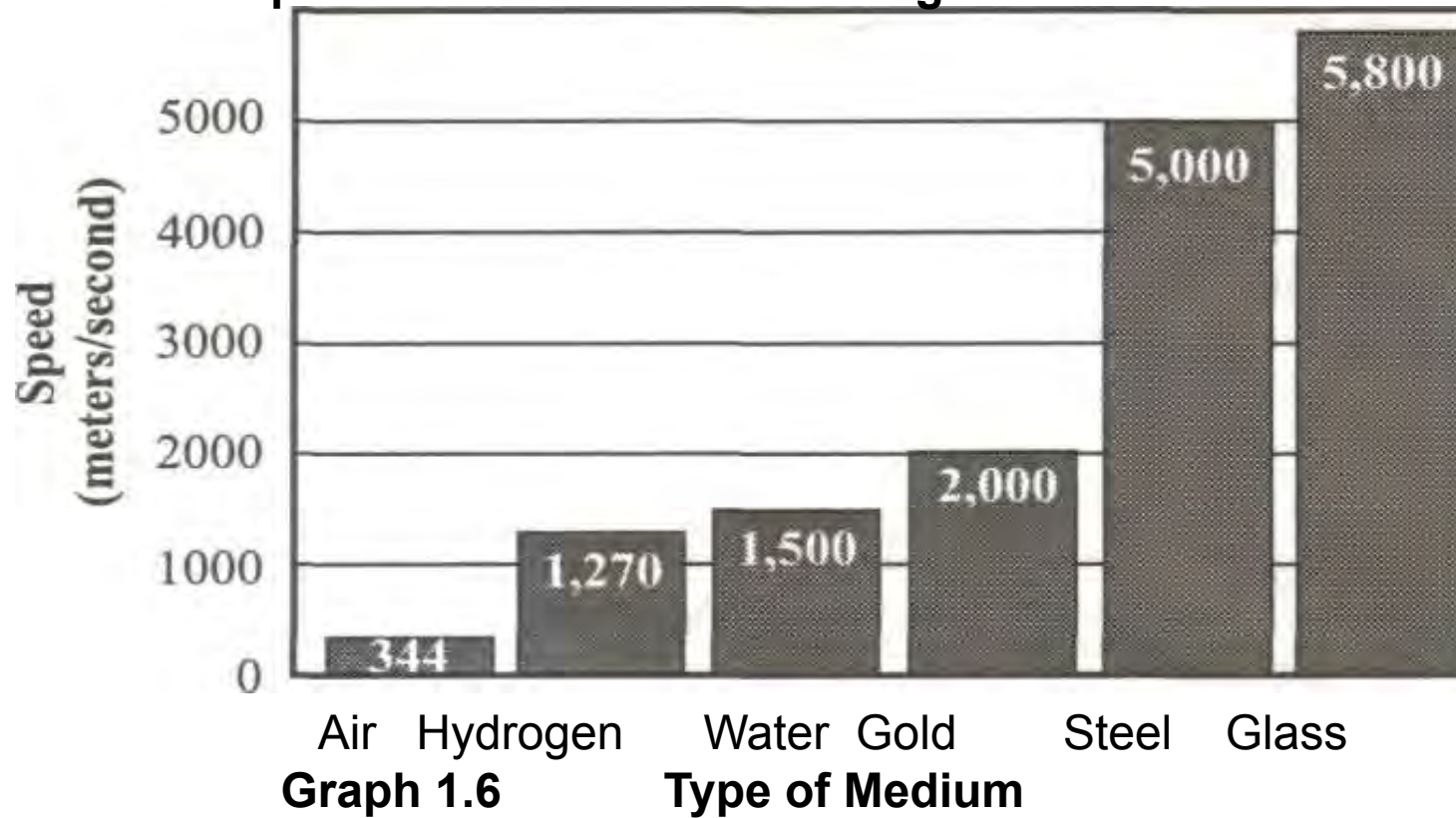
## The Speed of Sound Waves Through a Medium



**11. What is the speed of sound through water?**

**1500** m/s

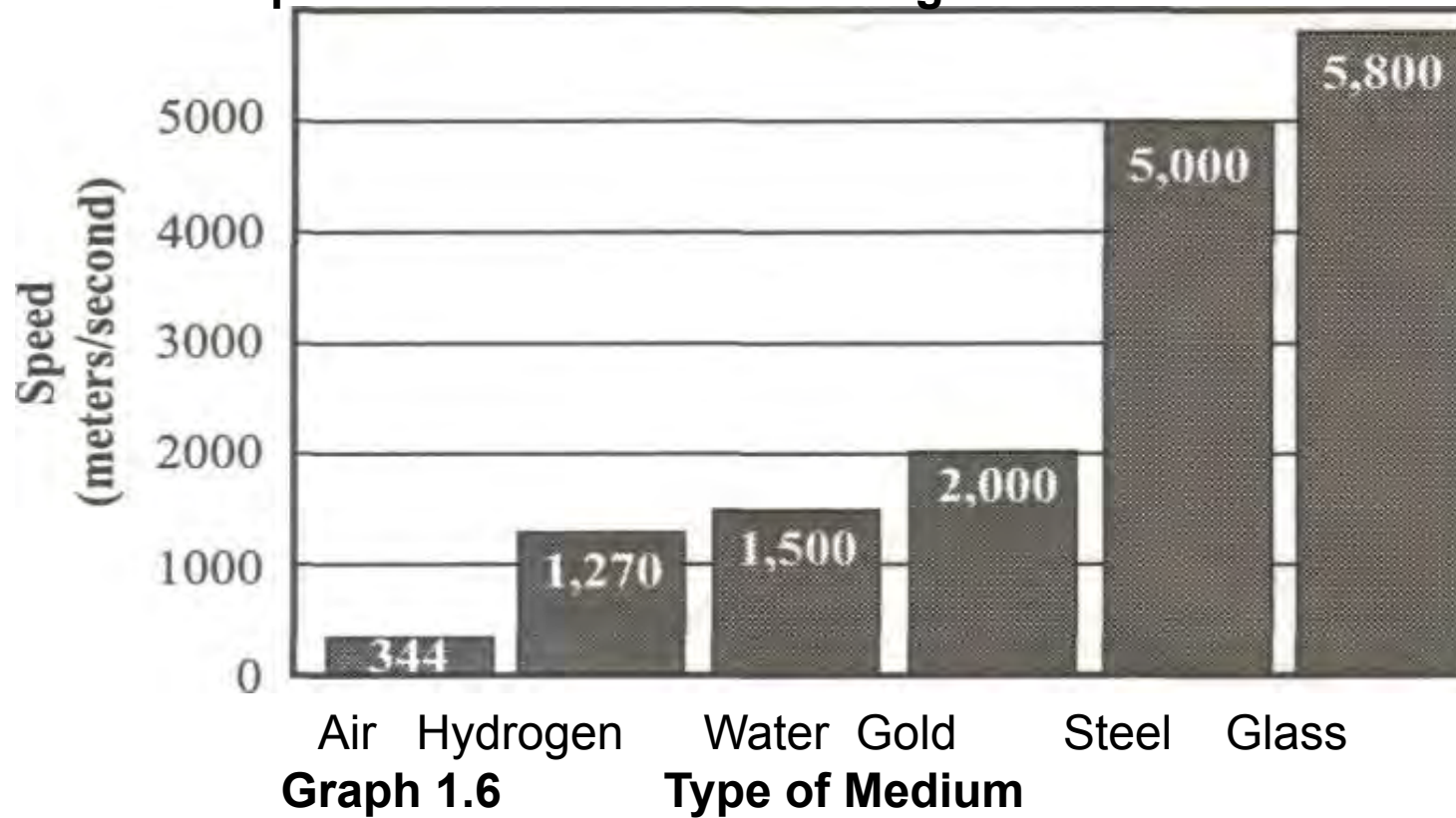
## The Speed of Sound Waves Through a Medium



**12. How much faster does sound travel through steel than through gold?**

$$5000 \text{ m/s} - 2000 \text{ m/s} = 3000 \text{ m/s}$$

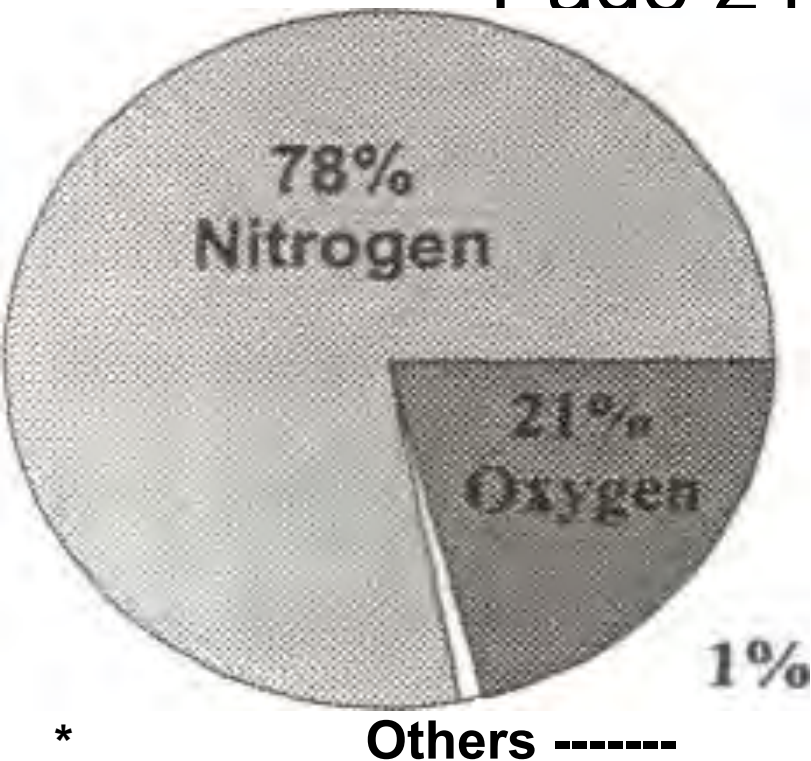
## The Speed of Sound Waves Through a Medium



**13. In which medium does sound travel the slowest?**

- a. Air      b. Hydrogen      c. Water  
d. Gold      e. Steel      f. Glass

## Page 24, Circle or Pie Graphs



**A circle graph is used to show parts of a whole.**

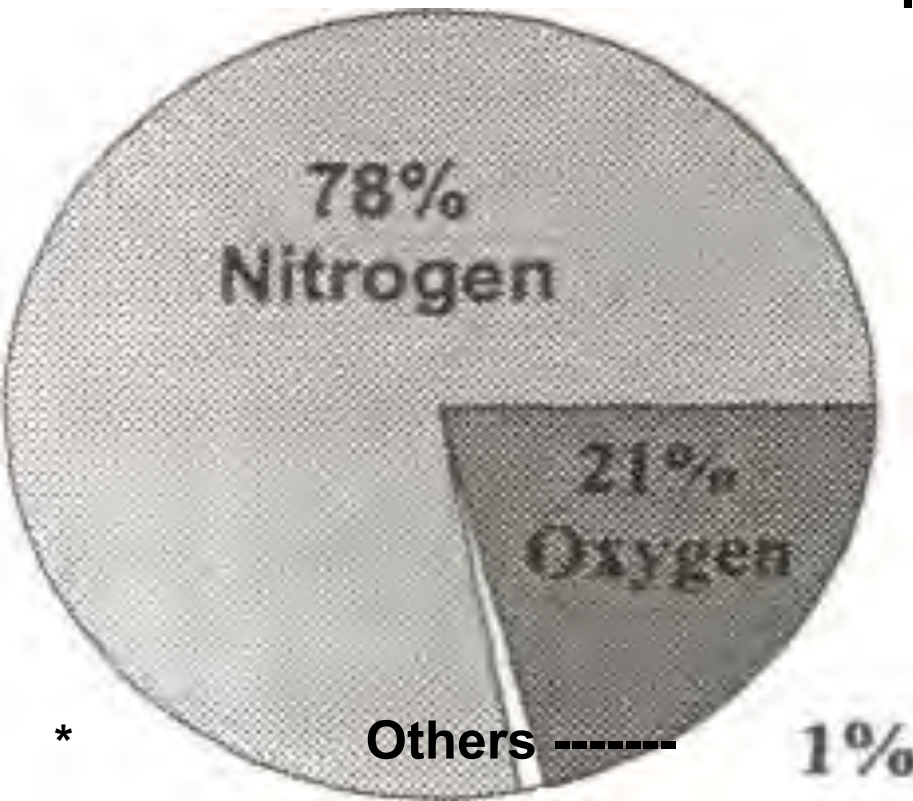
**Many times, circle graphs show percentages of a total.**

**Circle graphs are also called pie graphs or pie charts.**

**Circle graph 1.7 shows the percentages of gases in the atmosphere.**

**14. What is the total percent of the circle graph?**

**100%**



Why would a circle graph not measure the growth of a plant?

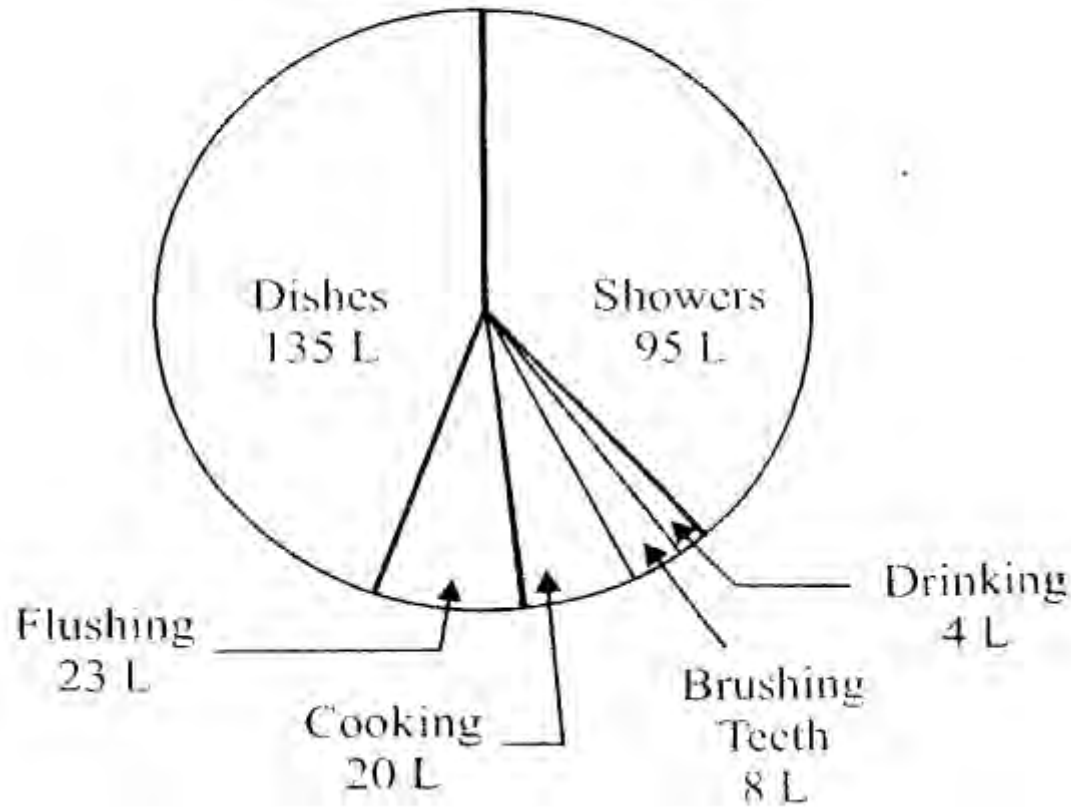
**A plant's growth is not measured in percent.**

**15. A person breathing at rest inhales about 500 mL of atmospheric air per breath. How many mL of nitrogen are in that 500 mL?**

$$500 \text{ mL} \times 78\% = 500 \times .78 = 390 \text{ mL}$$

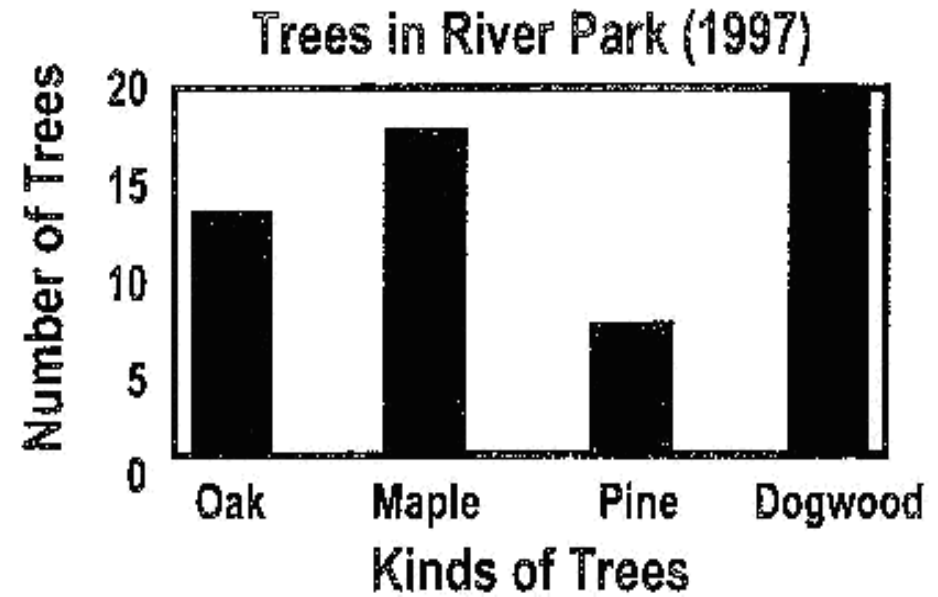
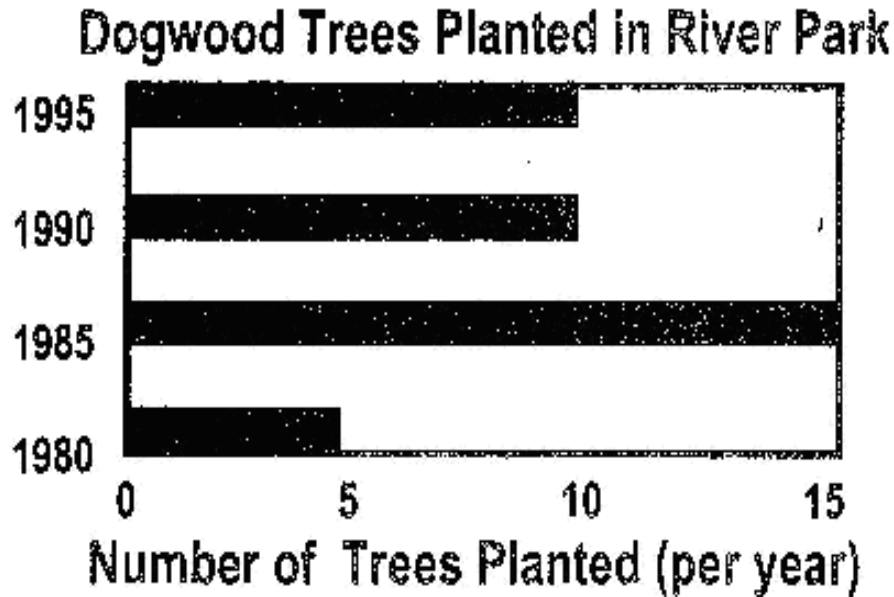
**To convert % to decimal number, divide the % number by 100.**

**Average Daily Water Use in the Home  
(based on 285 Liters/Day)**



Page 28

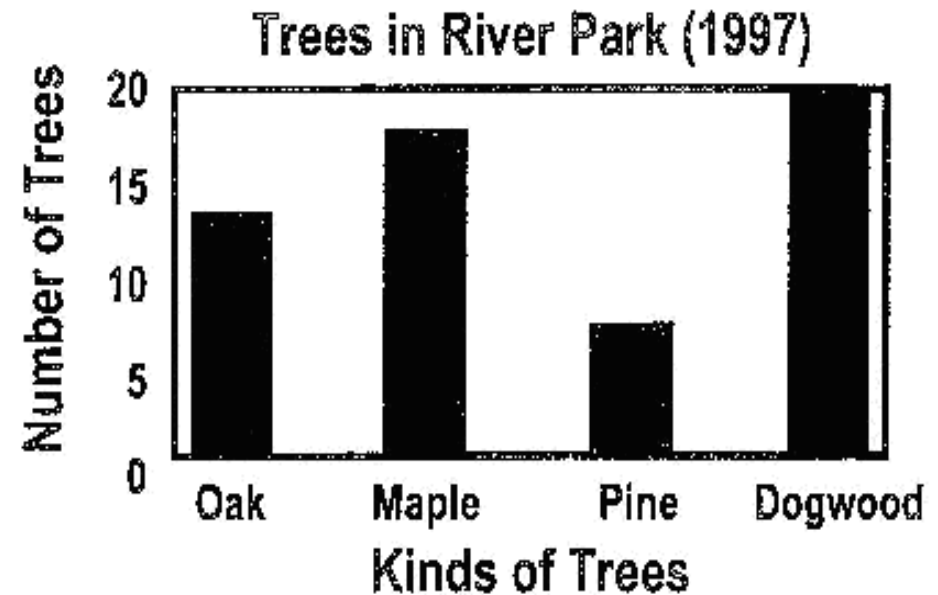
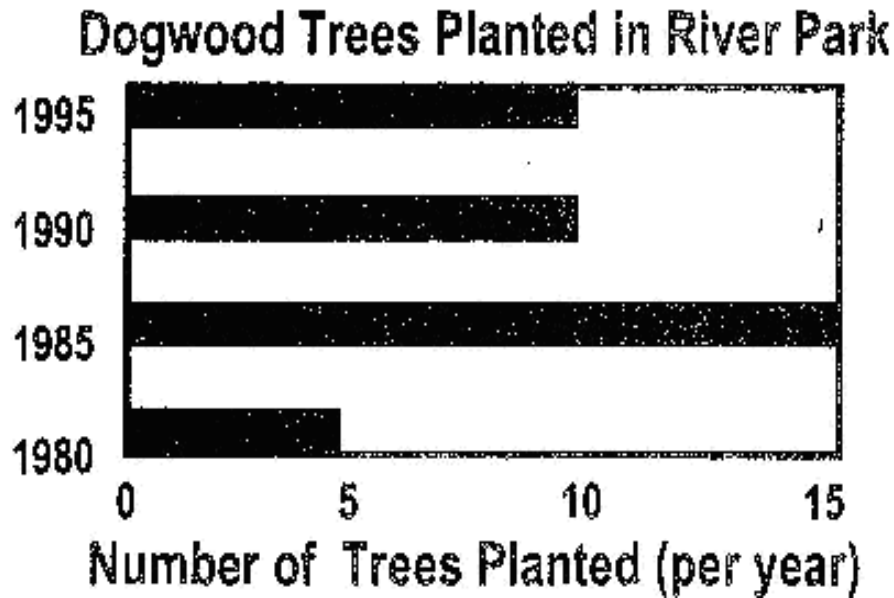
16. What area of water usage consumes the most water?
- A. Dishes                      B. Showers                      C. Drinking
- D. Cooking**                      E. Brushing Teeth                      F. Flushing



5, .. How many dogwood trees were in the park in 1997?

- A. 20 C. 10
- B. 15 D. 5

# P. 35

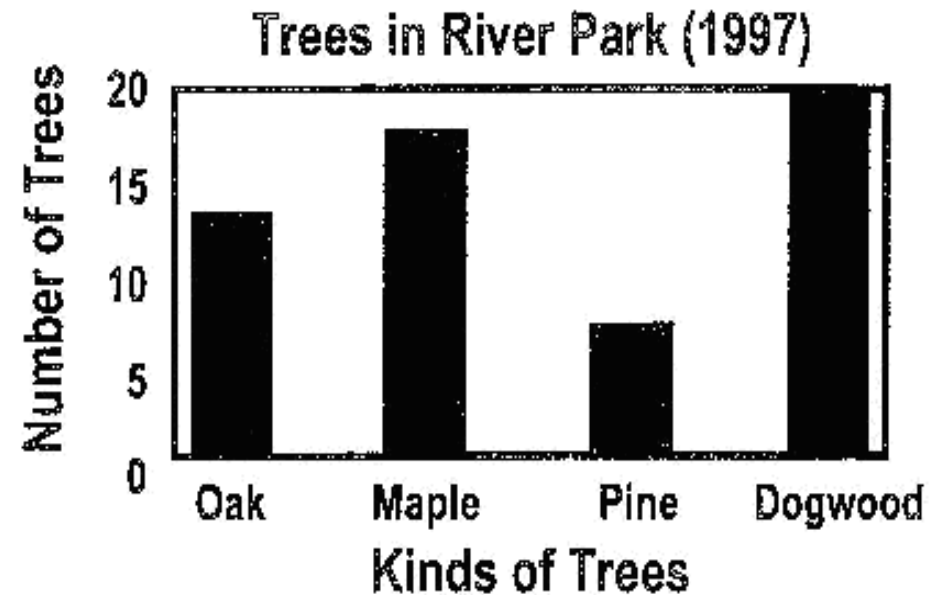
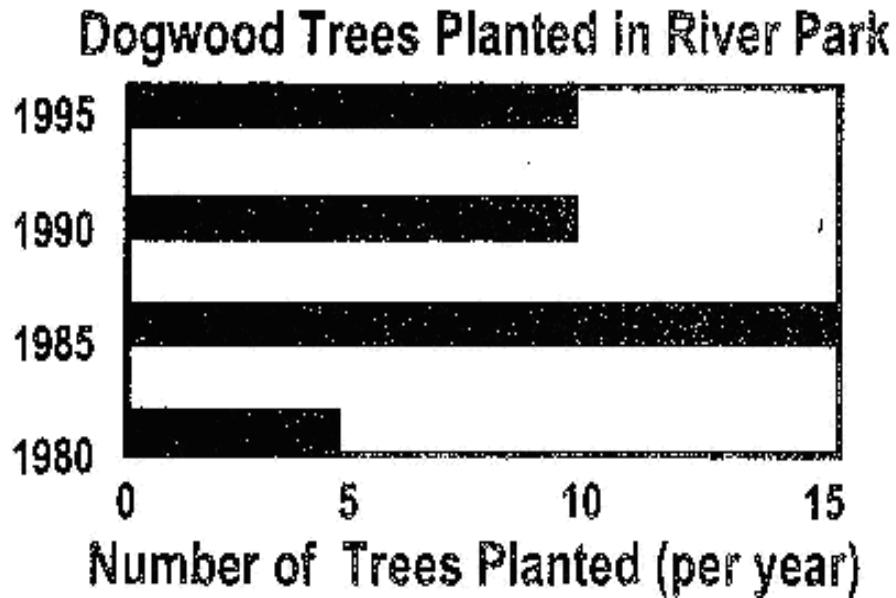


6, <sup>18</sup>. What is the total number of dogwood trees planted between 1980 and 1995?

A. 5      C. 30

B. 15      D. 40

# P. 35



7, 18. What percent total dogwood trees planted remained alive in 1997?

- A. 25      C. 75  
B. 50      D. 100

# P. 35

Incubation Temperature of Turtle Eggs Versus Sex of Hatchling				
Four Groups of 25 Eggs	Temperature	Number of Male	Number of Female	Eggs Not Hatched
Group 1	26°C	21	2	2
Group 2	28°C	13	11	1
Group 3	30°C	1	19	5
Group 4	32°C	1	20	4

18. At what temperature did most of the turtle eggs hatch?
- A. 26°C B. 28°C C. 30°C D. 32°C

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Group 3	30°C	1	19	5
Group 4	32°C	1	20	4

19. What temperature produced the most females?
- A. 26 C
  - B. 28°C
  - C. 30°C
  - D. 32°C

Incubation Temperature of Turtle Eggs Versus Sex of Hatchling				
Four Groups of 25 Eggs	Temperature	Number of Male	Number of Female	Eggs Not Hatched
Group 1	26°C	21	2	2
Group 2	28°C	13	11	1
Group 3	30°C	1	19	5
Group 4	32°C	1	20	4

20. What temperature produced the most males?  
A. 26°C B. 28°C C. 30°C D. 32°C

11. What conclusion can be made about the relationship between incubation temperature and the number of male hatchlings in comparison to incubation temperature and the number of female hatchlings?

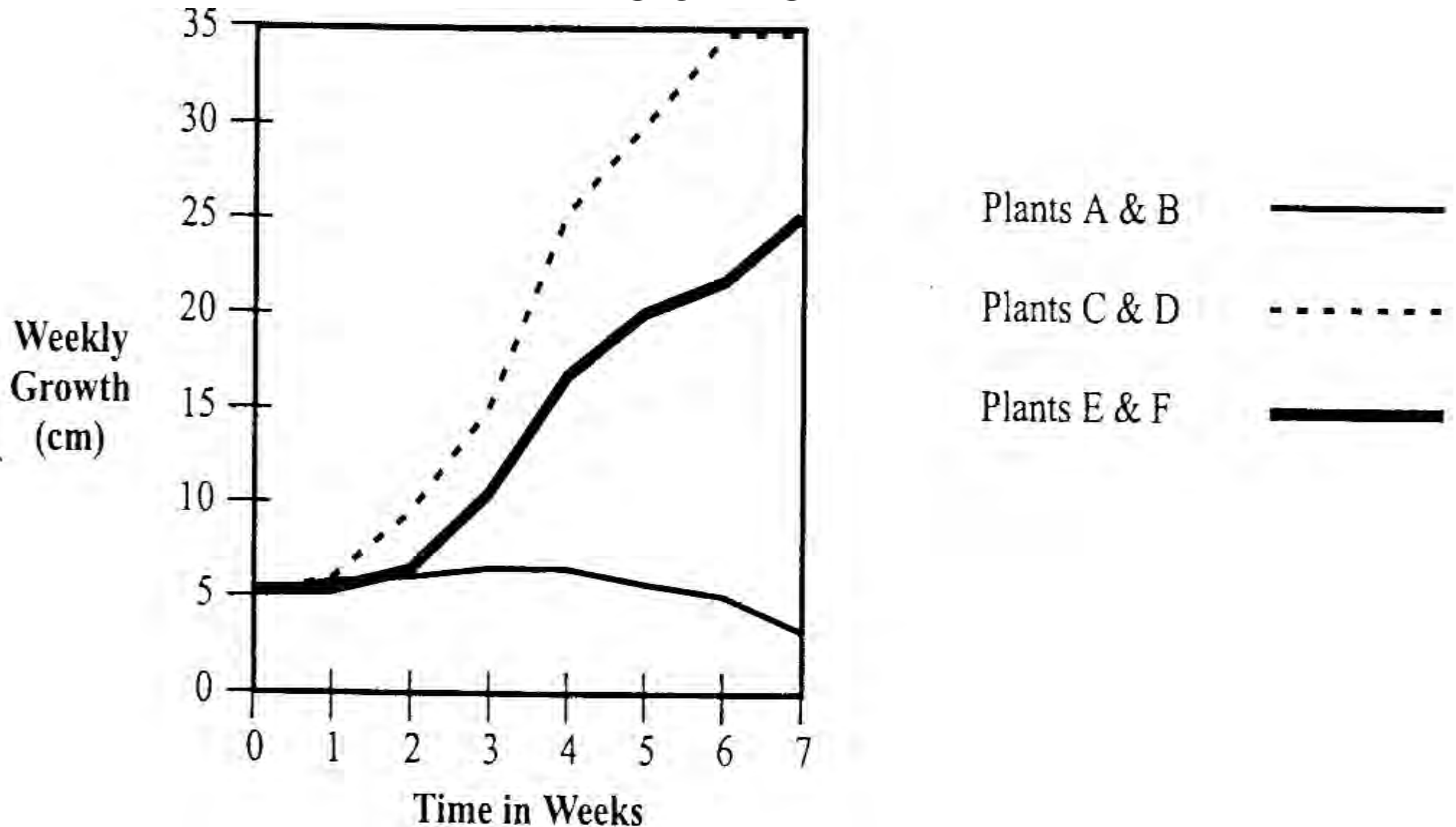
- A. Higher temperatures during incubation produce more males, and lower temperatures during incubation produce more females.
- B. Higher temperatures during incubation produce more females, and lower temperatures during incubation produce more males.
- C. Higher temperatures during incubation caused more eggs to hatch.
- D. No relationship can be determined between incubation temperature and the sex of turtle hatchlings.

Incubation Temperature of Turtle Eggs Versus Sex of Hatchling				
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21. What conclusion can be made about the relationship between incubation temperature and the number of male hatchlings in comparison to incubation temperature and the number of female hatchlings?

A. ☒ B. ☐ C. ☐ D. ☐

# Green Bean Plants Experiment, page 36 - 37



# Green Bean Plants Experiment, page 36 - 37

12. What was the independent variable in the experiment with the green bean plants?

- A. The type of soil
- B. The amount of water
- C. The amount of sunlight
- D. The type of bean plant



# Green Bean Plants Experiment, page 36 - 37

13. Which plants were the control group plants?
- A. The plants in the full sunlight
  - B. The plants that receive little sunlight
  - C. The plants in the dark.
  - D. All the above
  - E. None of the above.

# Green Bean Plants Experiment, page 36 - 37

14. All factors were kept constant in order for the data to be valid except
- A. The type of soil
  - B. The amount of water
  - C. The amount of sunlight
  - D. The type of bean plant

# Green Bean Plants Experiment, page 36

## - 37

15. In which week did plants C & D show the greatest growth?

- A. Weeks 1 - 2
- B. Weeks 2 - 3
- C. Weeks 3 - 4
- D. Weeks 4 - 5
- E. Weeks 5 - 6
- F. Weeks 6 - 7

# Green Bean Plants Experiment, page 36 - 37

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- C. Weeks 3 - 4
- D. Weeks 4 - 5
- E. Weeks 5 - 6
- F. Weeks 6 - 7

# Green Bean Plants Experiment, page 36

## - 37

16. In which week did plants C & D show the least growth?

A. Weeks 1 - 2

B. Weeks 2 - 3

C. Weeks 3 - 4

D. Weeks 4 - 5

E. Weeks 5 - 6

F. Weeks 6 - 7

# Green Bean Plants Experiment, page 36 - 37

17. What happened to plants A & B in the fourth week?

- A. Grew faster than plants C & D
- B. Grew faster than plants E & F
- C. Grew slowly
- D. The plants died
- E. None of the above

# Green Bean Plants Experiment, page 36 - 37

18. What conclusion can you draw about the growth of the plants in relationship to the amount of light they each received?
- A. Some plants grew faster.
  - B. Some plants died.
  - C. The more sunlight the plants received, the faster they grew.
  - D. Some plants grew slower.
  - E. Not enough information to reach a conclusion.

# Green Bean Plants Experiment, page 36 - 37

19. Does the investigation support the hypothesis?

Yes

No

Why or why not?

**Because the plants in full sunlight grew faster  
in a shorter period of time.**

**30. Predict what might happen if this experiment was repeated for tomato plants.**

- A. Tomato plants will grow faster than green beans**
- B. Tomato plants will grow slower than green beans.**
- C. Tomato plants exposed to full sunlight will grow faster than tomato plants in the shade.**
- D. Not enough information.**

**Because**

**Tomato plants are green plants and should react to sunlight as any other green plant.**