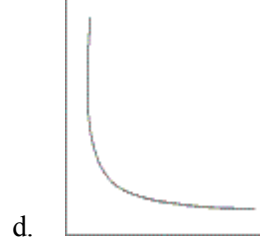
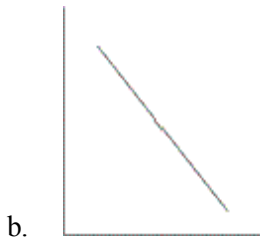
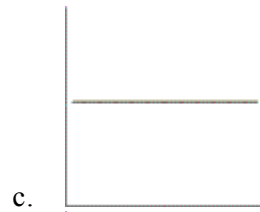
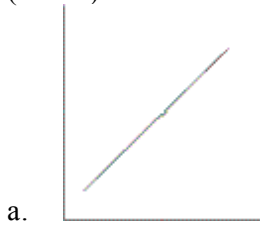
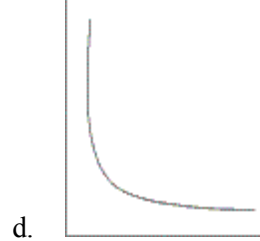
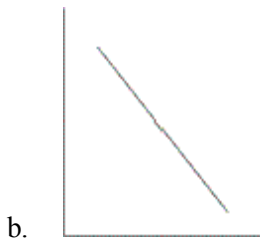
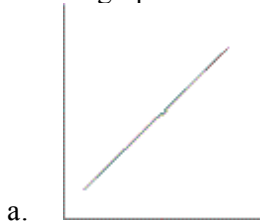




\_\_\_\_\_ 8. Which of the following graphs best represents the relationship between volume (y-axis) and temperature (x-axis)? Assume the pressure is held constant.



\_\_\_\_\_ 9. Which graph correctly represents the relationship of pressure (y-axis) vs. Kelvin temperature (x-axis)?



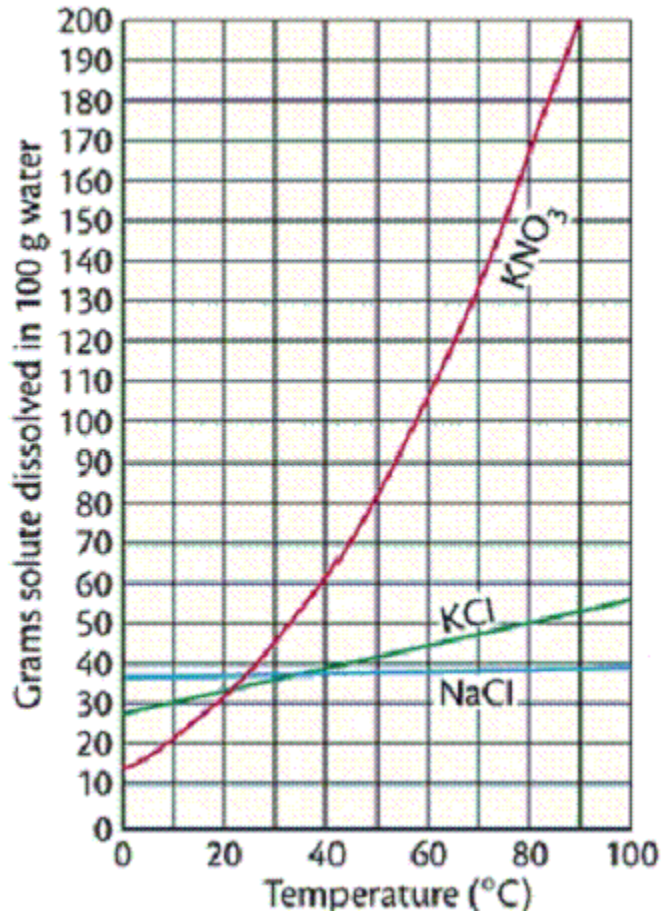
\_\_\_\_\_ 10. What instrument is normally used to measure atmospheric pressure?

- a. thermometer
- b. barometer
- c. vacuum
- d. manometer

\_\_\_\_\_ 11. Cloudy weather usually occurs under low pressure weather systems. When low pressure moves into an area, you would expect the level of mercury in a barometer to

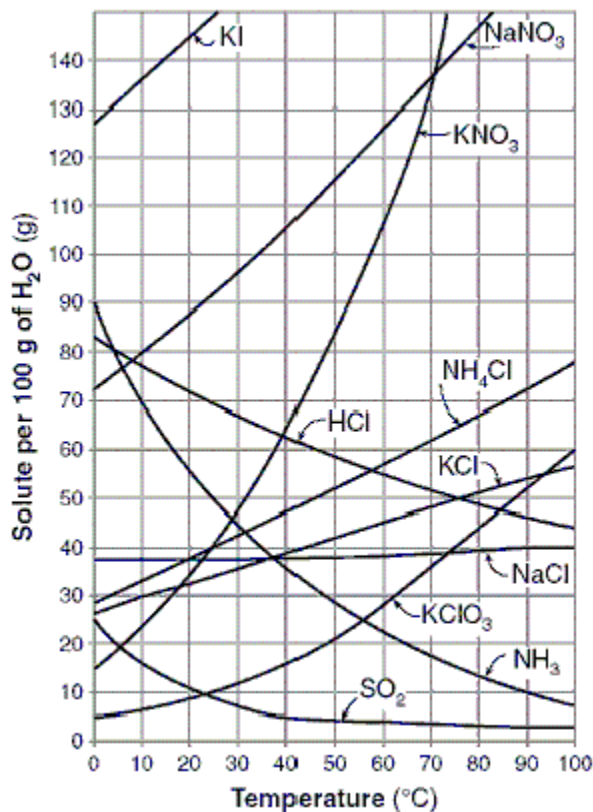
- a. rise
- b. fall
- c. stay constant
- d. rise, fall, then rise again

Figure 4B-2

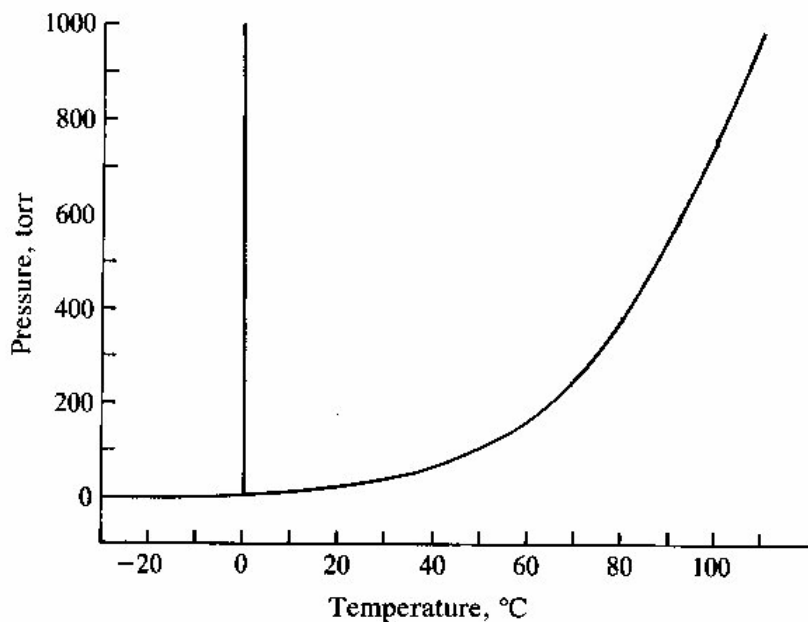


- \_\_\_\_\_ 12. (Use Figure 4B-2.) Which substance has the lowest solubility at 0°C?
- a. KNO<sub>3</sub>
  - b. KCl
  - c. NaCl

Figure 4B-3

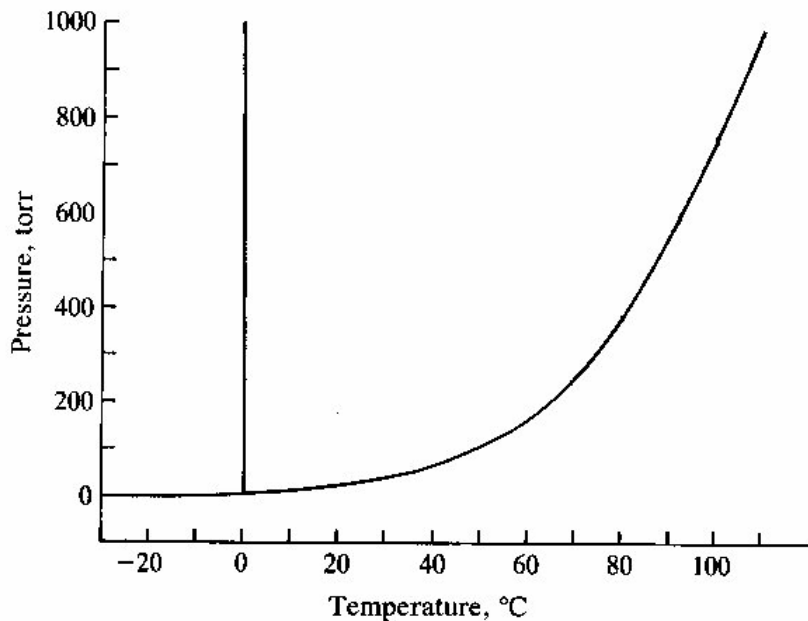


- \_\_\_\_\_ 13. (Use Figure 4B-3.) A solution that contains 80 grams COMPLETELY DISSOLVED of NH<sub>4</sub>Cl in 100 grams of water at 40°C is
- unsaturated.
  - saturated.
  - supersaturated.
- \_\_\_\_\_ 14. Which type of solute will dissolve in the non-polar solvent, hexane?
- nonpolar
  - polar
  - ionic
  - metal
- \_\_\_\_\_ 15. What is the molarity of a solution that contains 6 moles of solute in 2 liters of solution?
- 6M
  - 12M
  - 7M
  - 3M
- \_\_\_\_\_ 16. What is the molarity of a solution containing 56 grams of solute in 959 mL of solution? (molar mass of solute = 26 g/mol)
- 1.5 M
  - 2.2 M
  - 2.1 M
  - 0.0022 M



17.

- If a sample is at 400 torr of pressure and a temperature of -10 degrees, the sample would be a
- a. solid
  - b. liquid
  - c. gas
  - d. plasma

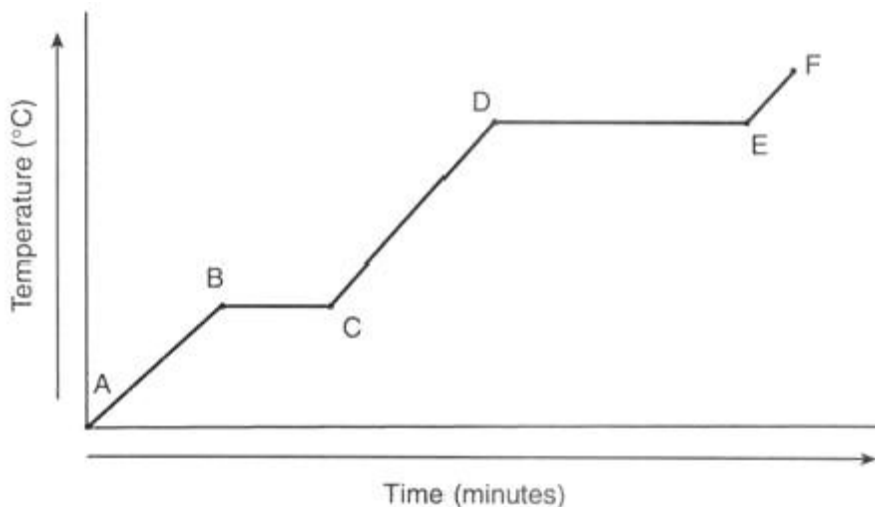


18.

- If a sample is at 200 torr of pressure and a temperature of 40 degrees C is heated to 100 deg C, the sample would
- a. freeze
  - b. melt
  - c. condense
  - d. boil

- \_\_\_\_\_ 19. What is the amount of heat required to raise the temperature of 200.0 g of aluminum by 10°C? (specific heat of aluminum =  $0.21 \frac{\text{cal}}{\text{g}^\circ\text{C}}$ )
- a. 420 cal  
b. 4200 cal  
c. 42,000 cal  
d. 420,000 cal
- \_\_\_\_\_ 20. A 312 gram sample of lead absorbs 1500 joules of energy. What will be the change in temperature? (Specific heat of lead = 0.13 J/g deg C)
- a. 0.62 °C  
b. 12 °C  
c. 37 °C  
d. 61,000 °C
- \_\_\_\_\_ 21. Which statement below describes the energy flow in the following phase changes?  
Example A: Solid ice changing into liquid water  
Example B: Water vapor changing into liquid water
- a. Example A: The solid ice absorbs energy from the surroundings  
b. Example B: The water vapor absorbs energy from the surroundings  
c. Example A: The solid ice releases energy to the surroundings  
d. Energy is not transferred during phase changes
- \_\_\_\_\_ 22. Classify the chemical reaction below:
- $$2\text{Cl}_2(\text{g}) + 7\text{O}_2(\text{g}) + 130 \text{ kcal} \rightarrow 2\text{Cl}_2\text{O}_7(\text{g})$$
- a. endothermic  
b. exothermic  
c. energy neutral  
d. both endo and exothermic

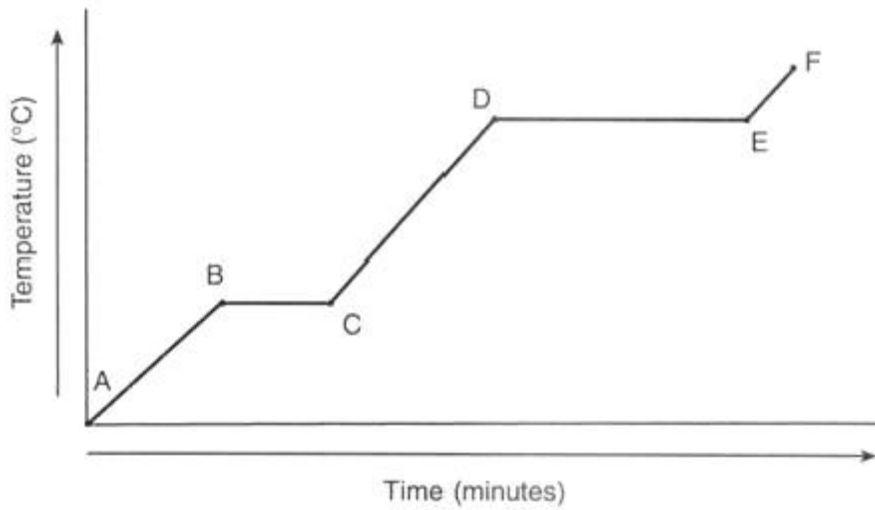
\_\_\_\_\_ 23.



What section of the graph shows the sample boiling?

- a. a-b  
b. b-c  
c. c-d  
d. d-e

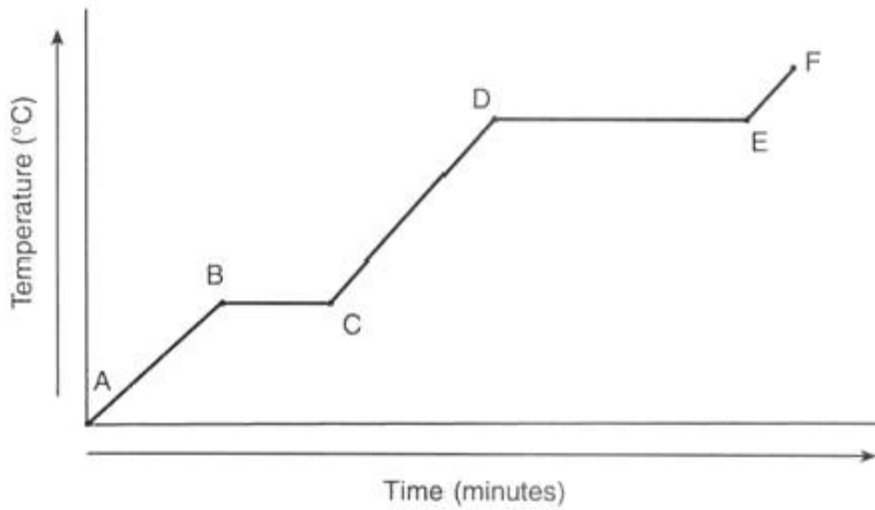
24.



What section of the graph can both liquid and solid exist at the same time?

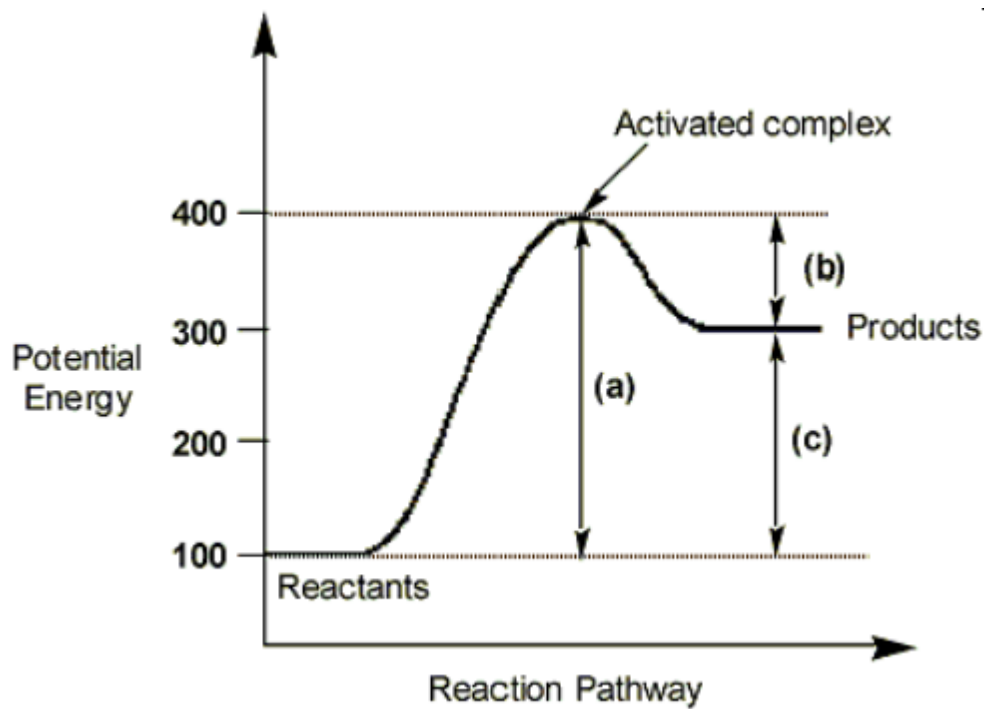
- a. a-b
- b. b-c
- c. c-d
- d. d-e

25.



In what section of the graph is the potential energy of the sample increasing?

- a. a-b
- b. b-c
- c. c-d
- d. e-f

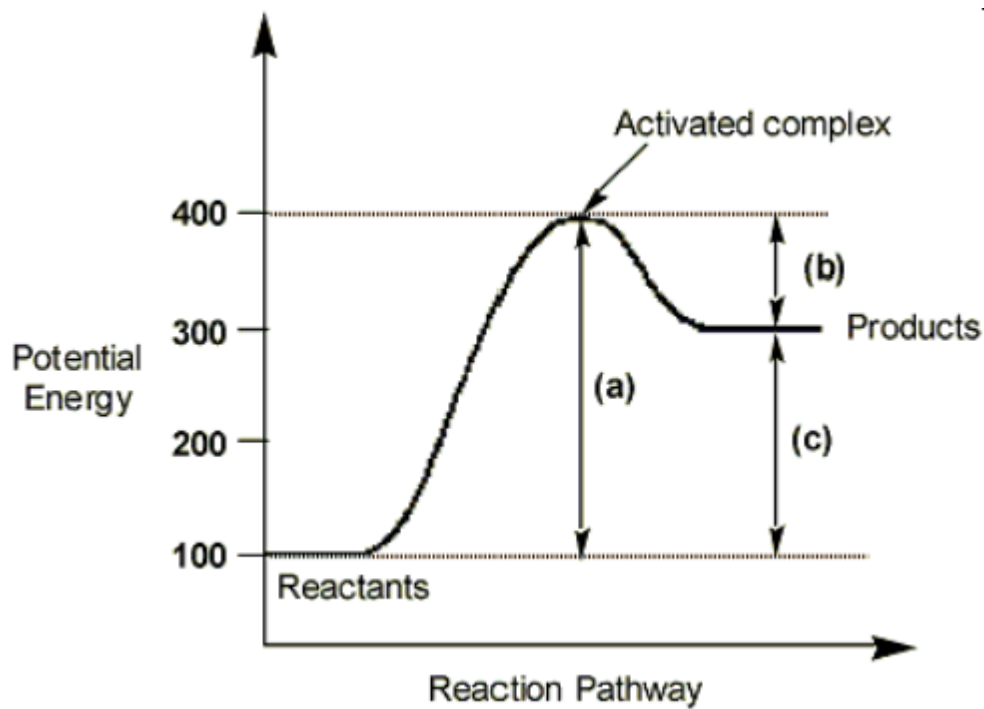


26. \_\_\_\_\_

Would this reaction be classified as endothermic or exothermic?

- |                |                                      |
|----------------|--------------------------------------|
| a. endothermic | c. neither endothermic or exothermic |
| b. exothermic  | d. neutral                           |

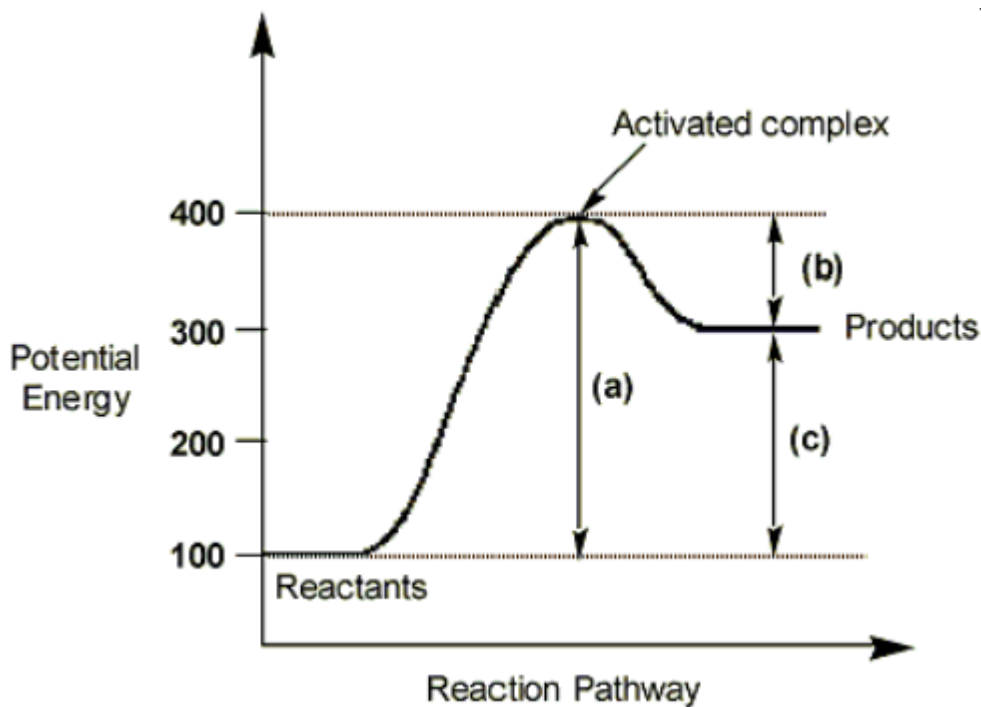




27. \_\_\_\_\_

What is the change in potential energy (Heat of reaction  $\Delta H$ ) for the forward reaction?

- |         |         |
|---------|---------|
| a. +100 | c. -100 |
| b. +200 | d. -200 |



\_\_\_\_\_ 28. \_\_\_\_\_

What is the activation energy of the forward reaction?

- |         |         |
|---------|---------|
| a. +100 | c. -100 |
| b. +300 | d. -300 |

\_\_\_\_\_ 29. Strong bases are associated with \_\_\_\_\_ ions, while strong acids are associated with \_\_\_\_\_ ions.

- |                                 |  |
|---------------------------------|--|
| a. $\text{H}^+$ , $\text{OH}^-$ | c. $\text{H}_3\text{O}^+$ , $\text{H}^+$ |
| b. $\text{OH}^-$ , $\text{H}^+$ | d. $\text{H}^+$ , $\text{Cl}^-$          |

\_\_\_\_\_ 30. Which of the following is the correct relationship between pOH and  $\text{OH}^-$  concentration?

- |  |                                |
|--|--------------------------------|
| a. As pOH increases, $\text{OH}^-$ increases | c. $\text{OH}^-$ never changes |
| b. As pOH increases, $\text{OH}^-$ decreases | d. there is no relationship    |