

# SCIENCE

## Sample Problems



### Charts & Graphs: The Finder

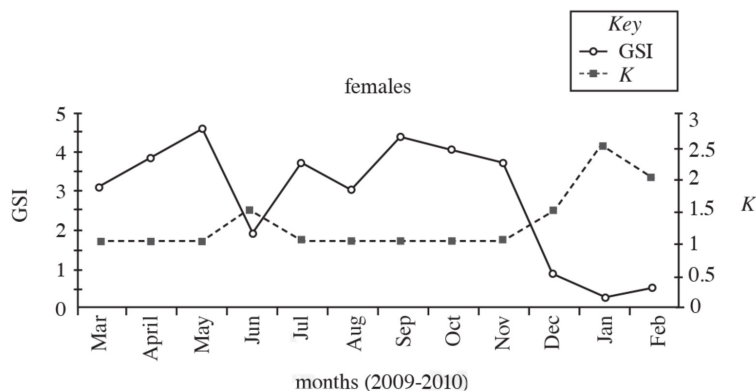


Figure 2

37. Based on Figure 2, when the GSI of females reached its lowest point in the year, what was the measure of  $K$ ?
- 1.5
  - 2
  - 2.5
  - 4.5

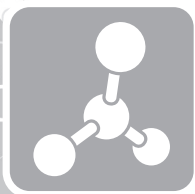
### Charts & Graphs: Interpolation

#### Experiment 3

Keeping the voltage constant at 24 volts and the secondary windings constant at 500 turns, the student measured secondary voltage each time the numbers of turns in the primary windings were altered (see Table 3).

Table 3		
Trial	$N_p$	$V_s$ (volts)
15	100	119.74
16	200	59.70
17	300	39.84
18	500	23.80
19	1,000	11.92
20	1,500	7.97
21	2,000	5.96

- Based on the results of Experiment 3, a transformer with 1,250 turns in the primary windings, a voltage of 24 volts, and a secondary winding of 500 turns would most likely induce a secondary voltage:
  - between 5.96 volts and 7.97 volts.
  - between 7.97 volts and 11.92 volts.
  - between 11.92 volts and 23.80 volts.
  - greater than 23.90 volts.



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### Charts & Graphs: Extrapolation

#### Experiment 2

The maximum isometric force was measured in adult zebrafish myofibrils injected with varying  $\text{Ca}^{2+}$  concentrations (see Figure 2).

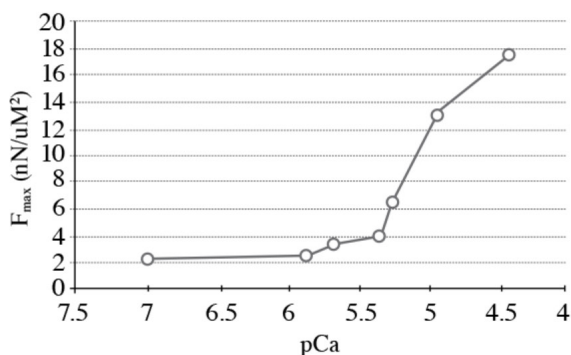


Figure 2

Note: pCa is calculated as the negative log of the concentration of  $\text{Ca}^{2+}$ . As a result of this measurement method, a lower numerical pCa indicates a higher concentration of  $\text{Ca}^{2+}$  ions.

3. In Experiment 2, a scientist took an additional reading of  $F_{\max}$  at pCa of 7.5. The  $F_{\max}$  was most likely closest to:
- A. 0 nN/uM<sup>2</sup>.
  - B. 2 nN/uM<sup>2</sup>.
  - C. 4 nN/uM<sup>2</sup>.
  - D. 8 nN/uM<sup>2</sup>.