Florida Teacher Certification Examination
Middle Grades Integrated Curriculum 5–9
Sample Science and Mathematics Questions

1. Moderate Complexity

   A student is investigating the relationship between the amount of light reaching a solar cell and the speed of a motor that is powered by the solar cell. The student adjusts the light dimmer switch, increasing the brightness of light reaching the cell.

   The student's action represents which component of the experimental process?

   A. forming hypotheses
   B. collecting data
   C. ✔ manipulating variables
   D. analyzing results

2. High Complexity

   If x represents the number of gallons of pure antifreeze to be added, what is the correct translation of the following problem?

   > How much pure antifreeze must be added to 10 gallons of a 40% antifreeze solution to increase its concentration to 60% antifreeze?

   A. $0.4(10 + x) = 0.6(10 + x)$
   B. $0.4(10) = 0.6(10 + x)$
   C. $0.4 (10 + x) = 0.6(10)x$
   D. ✔ $0.4(10) + x = 0.6(x + 10)$

3. High Complexity

If s represents the air speed of the plane in km/h and w represents the wind speed in km/h, which system of equations could be used to solve the following problem?

With a tailwind, a small light plane can fly 800 km in 5 hours. Going against the wind, the same plane can travel the same distance in 7 hours. What is the wind speed?

A. $5s + w = 800$
$7s - w = 800$

B. $7s + w = 800$
$5s - w = 800$

C. $5(s - w) = 800$
$7(s + w) = 800$

D. ✔ $5(s + w) = 800$
$7(s - w) = 800$