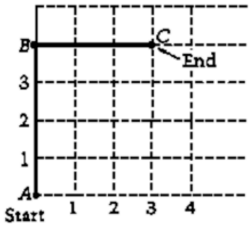
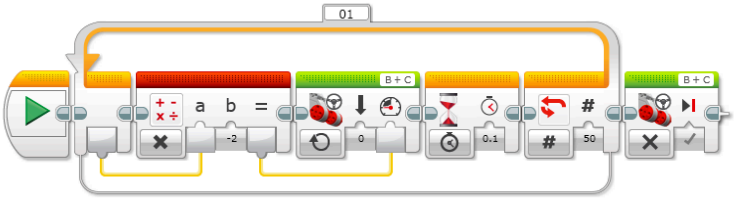
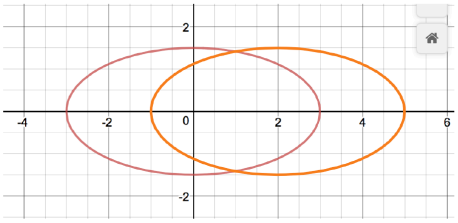
Sample Content Test Items

Test Item	Correct Response
(A) If the formula for the velocity of a robot is $v(t) = 1.78t + 2.1$ where v is measured in cm/sec and t is measured in sec, what is the acceleration of the robot? Be sure to include appropriate units in your answer.	$1.78\ cm/sec^2$
(B) A certain company keeps a list of 50 employees and their annual salaries. When the salary of the very highly paid president is added to this list, which of the following statistics is most likely to be approximately the same or nearly the same for the original list and the new list? A. The highest salary B. The range C. The mean D. The median E. The standard deviation	D. The median
(C) The darkened segments in the figure below show the path of a robot that starts at point A and moves to point B and then on to point C. The robot moves at a constant rate of 1 unit per second. The robot's distance from a point is the shortest distance between the robot and the point.  What is the distance between point A and point C?	5 units
(D) Write the mathematical expression that is represented by the following LaTeX code. `x^2-1=\left(x+1\right)\left(x-1\right)`	$x^2 - 1 = (x + 1)(x - 1)$
(E)	It will travel backwards, decreasing (decelerate from full "on") motor power by 2 units every tenth of second, repeating 50 times then put on a break and stop.

Suppose the following Mindstorms code is designed to run on a wheeled robot. Explain what the robot will do. 	
(F) The formula for the red figure is $3 = \sqrt{x^2 + 4y^2}$. Determine the formula for the orange figure. 	$3 = \sqrt{(x-2)^2 + 4y^2}$