Topic	Pattern Recognition
Activity	4.2
Level	Elementary

Name: _____

Directions: In each sequence below are numbers that create a pattern. Can you see it? Fill in the blanks to make each pattern correct, showing your work below each.

1. 10, 20, 30, ____, ____, ____

_____

2. 5, 10, ____, 20, ____, 30, ____

_____

3. ____, 4, 6, ____, 10, 12, 14, ____

_____

4. 1, 3, 5, 7, 9, ____, ____, ____

_____

5. 12, 10, 8, 6, ____, ____, ____

_____

6. 15, 14, 13, 12, 11, ____, ____, ____

_____

7. 3, 6, 9, ____, 15, ____, ____, 24

_____

8. 4, 8, 12, 16, ____, ____, ____

_____

9. 25, 22, 19, 16, ____, ____, ____

_____

10. 3, 8, 13, 18, ____, ____, ____

_____

Topic	Adding Algebraically
Activity	2
Level	Intermediate

Name: _____

DIRECTIONS: Solve the problems below. When you are finished, check your work with RoboArm.

1. Axis #1 is 67° away from the point of origin. We know it was moved 23° the second time we moved it. How far was RoboArm moved the first time? _____

2. Axis #4 must be moved 35° more to get to 46°. Where is it located now? _____

3. Axis #2 is located at 33°. We need to get to 93°. How many degrees do we need to move RoboArm to get to our destination? _____

4. Axis #3 was at 15°. We moved it 45° more. At what degree will Axis #3 end up? _____

5. Axis #4 is located at 122°. We know it was moved 45° the second time we moved it. How many degrees was Axis #4 moved the first time? _____

6. Axis #1 is 120° from the point of origin. It was moved 43° more. At what degrees is Axis #1 located now? _____

7. Axis #2's stopping point was at 82°. We know it was moved 43° the first time. How far was Axis #2 moved the second time? _____

8. Axis #2 is located at 23°. We need to get to 80°. How far do we have to move Axis #2 in order to reach our destination? _____

9. Axis #1 is located 120° from the point of origin It was moved 180° more. What is the location of Axis #1 now? _____

10. Axis #3 of RoboArm was moved three times. The final location was 85° from the point of origin. Axis #3 was moved 23° the first time and 17° the second time. How far was Axis #3 moved the third time? _____

Topic	Area of a Circle
Activity	2
Level	Intermediate

Name: _____

Directions: Use the HydrauLift to answer the questions below.

1. Look carefully at HydrauLift. How many circular-shaped parts do you see on HydrauLift? List them here: _____

2. Locate the pistons on HydrauLift. How many are there? _____

3. Are all the pistons the same size or different sizes? _____

4. What shape is the piston? _____

5. How can you find the diameter of the piston? _____

6. How can you find the radius of the piston? _____

7. How can you find the circumference of the piston? _____

8. What information do you need to find the surface area of a piston? _____

9. What is the formula to find the surface area of a piston? Formula = _____

10. Find the radius and diameter of both pistons.

    P1 radius = _____ diameter = _____
    P2 radius = _____ diameter = _____

11. Now, using the information from above, find the surface area of each piston.

    API = _____
    AP2 = _____

Extra! What is the mass HydrauLift can raise with 10 pounds of pressure on each lift?
Mass = Pressure x Surface Area of Piston
Mass = _____ on Lift 1
Mass = _____ on Lift 2

Name: _____

Topic	Circumference
Activity	2
Level	Intermediate

CIRCUMFERENCE PROJECT PAGE

Position RoboArm so that the arm is fully extended and the gripper almost grazes the work surface. RoboArm can be placed in this position by moving Axis 3 up so that it is above parallel to the table, and moving Axis 2 down. Find the circumference of the circle that RoboArm would trace on the table or workspace if Axis 1 were rotated.

How would you determine the distance a gerbil would run on its exercise wheel in a day?

A bicycle tire has a diameter of 26 inches. Find the distance the bicycle will travel in 10 rotations of the tire in 16 rotations.