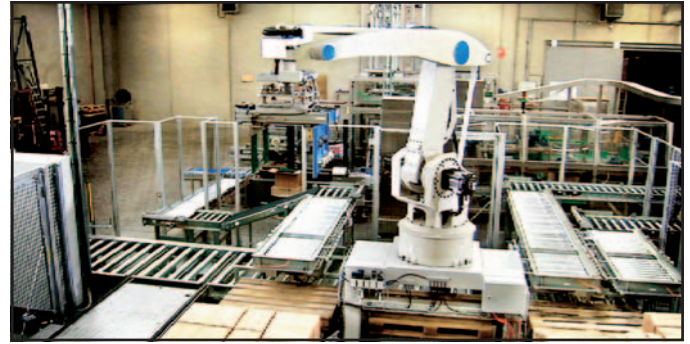


Robot Arm

Name(s): _____

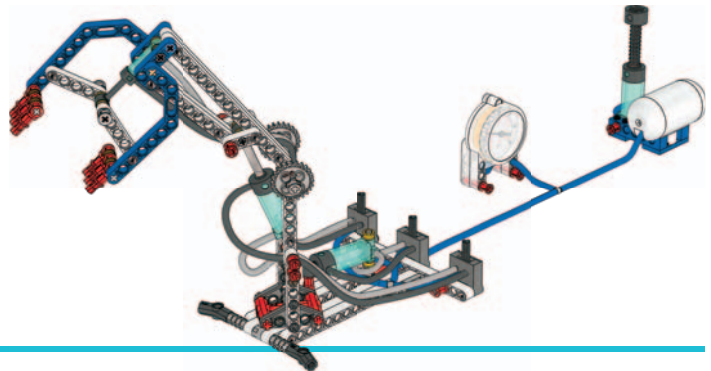
Build the Robot Arm and investigate how to make the most energy efficient sequence of strokes. Let's find out!



Build the Robot Arm.

(All of book 4A and book 4B to page 19, step 19)

- Pump air into the system and use the manometer to detect whether there is an air leak
- Try all valve settings and check all moving parts to ensure that they move freely
- Then turn the arm to its resting position: turned to the far right, arm up and grippers open, and empty the air tank



What is the most energy efficient sequence?

Find out which sequence is the most energy efficient for picking and placing objects.

First, predict which sequence of strokes is the most energy efficient at picking and placing a pellet of paper. Your sequence has to start in the resting position, use all six movements at least once and then return to the resting position.

Then, test your sequence of strokes and note the loss of pressure after each stroke. Start with 2.5 bars of pressure.

Test several times to make sure your results are consistent. Record your findings on graph paper.

Stroke	My sequence
A	
B	
C	
D	
E	
F	
G	
H	

Explain your findings:

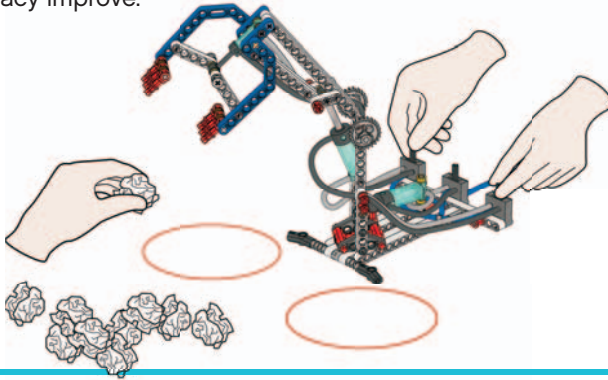
How good of a robot operator are you?

Find out how quickly and accurately you can pick and place pellets of paper from one circle to another circle.

First, predict how many pellets you can accurately place within the circle in 30 seconds.

Then, test how many pellets you can accurately place within the circle in 30 seconds.

Repeat the test three times to see if your speed and accuracy improve.



	My prediction	My findings
Test 1		
Test 2		
Test 3		

Optional: My Amazing Pneumatic _____ !

Invent a new and useful machine that uses the same mechanisms as the Robot Arm but does a different job. Sketch it and explain the three most important features.

Optional: Further Research

Describe some of the industries and jobs the Robot Arm can be used for and what some of its limitations might be.