Name: _____ Group: _____ Date: _____

Tech labs

TECH 9

Linking in technical objects

PROGRAMS:	ST, EST, AST
LAB TYPE:	Observation
CONCEPT:	Characteristics of the linking of mechanical parts
STUDENT BOOK:	Chapter 13, page 427

GOAL

Study various technical objects to determine the characteristics of the links in them.

OBSERVATION CRITERIA

1. What purpose does linking serve in a technical object?

_____

_____

2. All links in technical objects display four basic characteristics. In the table below, identify the distinguishing feature of a link that can be used to associate it with each characteristic.

Characteristic	Distinguishing feature
Direct link	
Indirect link	
Rigid link	
Flexible link	
Removable link	
Non-removable link	
Complete link	
Partial link	

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MATERIALS

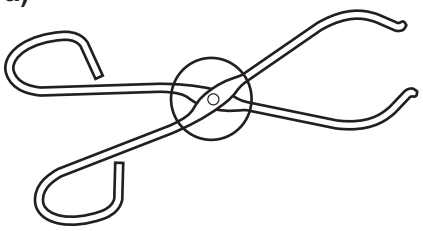
- beaker tongs
- Petri dish
- retort stand
- overflow can
- universal clamp
- C-clamp
- screwdriver
- try square
- retractable utility knife
- plastic cutter
- water pump pliers

PROCEDURE

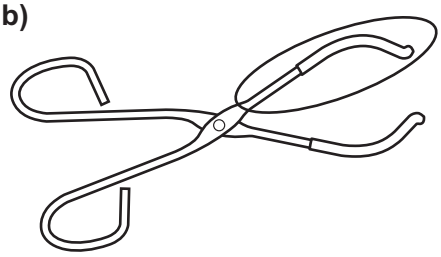
1. In a real example of each of the objects below, locate the link circled in the illustration.
2. Study the various links and determine their characteristics.

1. Beaker tongs

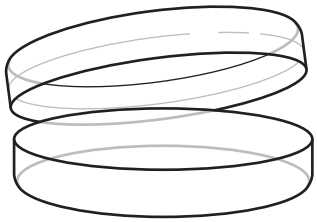
a)



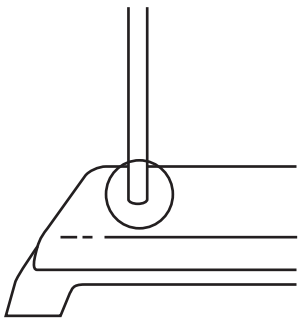
b)

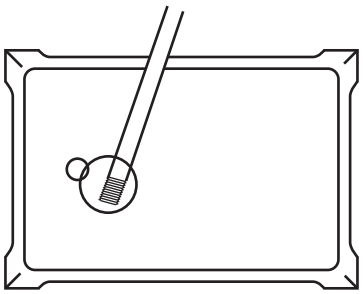


2. Petri dish



3. Retort stand





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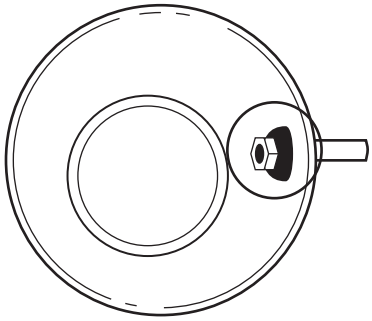
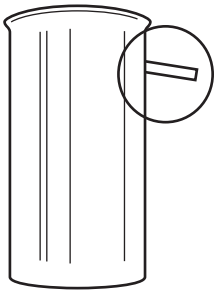
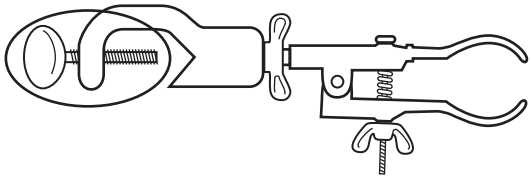
4. Overflow can

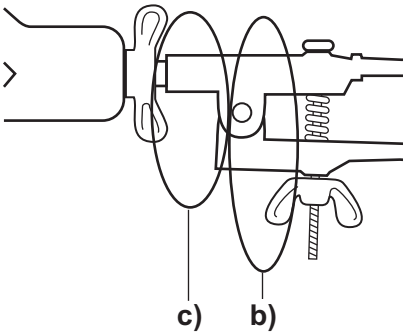




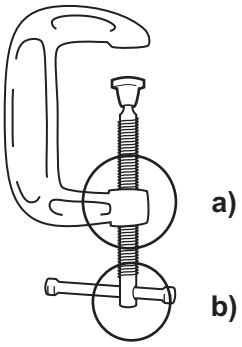
5. Universal clamp

a)

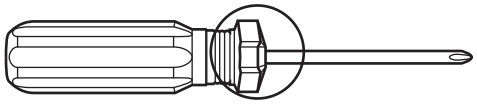




6. C-clamp

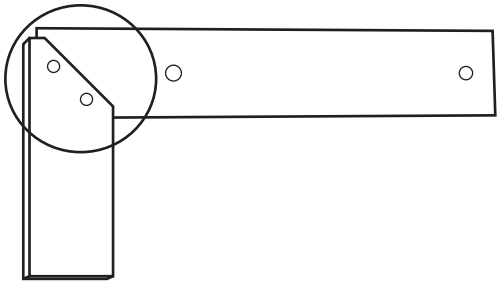


7. Screwdriver



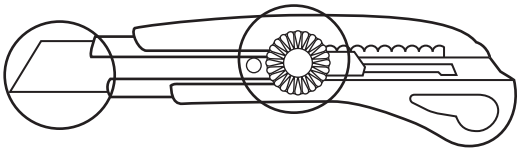
Name: _____ Group: _____ Date: _____

8. Try square

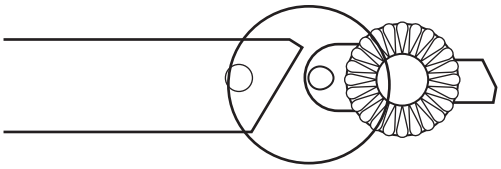


9. Retractable utility knife

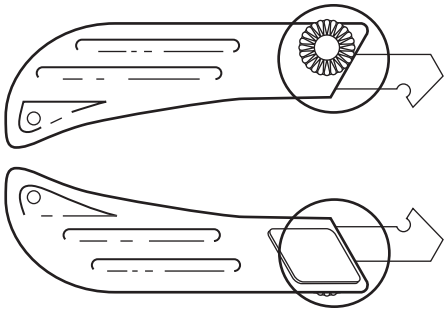
a)



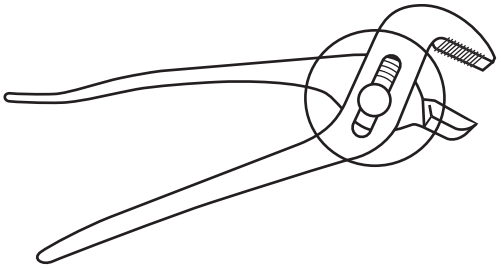
b)



10. Plastic cutter



11. Water pump pliers



Name: _____ Group: _____ Date: _____

OBSERVATIONS

Record your observations in the table below. Give your table a title.

Title: _____

Object	Link	Direct	Indirect	Rigid	Flexible	Removable	Non-removable	Complete	Partial
1. Beaker tongs	**a)** Between the handles								
	b) Between the rubber casing on the tong ends and the tongs themselves								
2. Petri dish	Between the lid and the container								
3. Retort stand	Between the base and the upright metal rod								
4. Overflow can	Between the spout and the can								
5. Universal clamp	**a)** Between the tightening screw and the body of the clamp								
	b) Between the jaws of the clamp								
	c) Between the tightening screw and the clamp								
6. C-clamp	**a)** Between the frame of the clamp and the threaded rod								
	b) Between the threaded rod and the metal bar								
7. Screwdriver	Between the handle and the metal shaft								
8. Try square	Between the blade and the plastic handle								
9. Retractable utility knife	**a)** Between the retractable blade and the housing								
	b) Between the tightening mechanism and the blade								
10. Plastic cutter	Between the blade and the housing								
11. Water pump pliers	Between the handles								

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REFLECTING ON YOUR OBSERVATIONS

1. Which objects contain at least one linking component, according to your observations?

2. A friend tells you that a link is both complete and partial.

a) Explain why this is impossible.

b) Give three other examples of paired characteristics that cannot describe a single link.

3. Has this lab helped you understand the characteristics of links?

4. How could you improve the protocol for this lab?