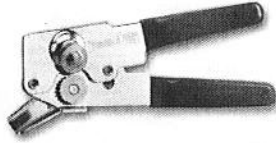


NAME Teacher

1. A rivet is used to link the two arms of a can opener. What are the characteristics of this link?



Explain each characteristic.

A. Direct or indirect?

indirect: The rivet holds both arms together

B. Rigid or flexible?

Rigid: Both parts + the linking component cannot be deformed.

C. Removable or non-removable?

Non-removable: The rivet will need to be broken in order to take the arms apart

D. Complete or partial?

partial: Both arms can move separate of the other

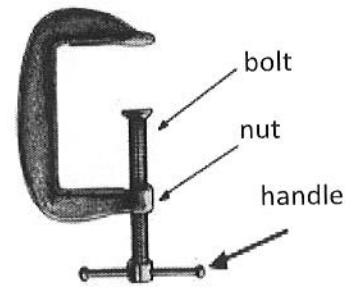
2. Name the characteristics of each of the links below.

indirect	direct
Rigid	rigid
Removable	removable
complete	partial

3. Consider the guides on the objects below.

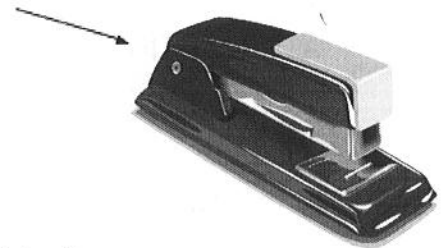
a) What type of guide is the nut in the C clamp?

helical

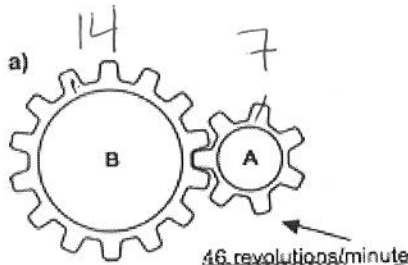


b) What type of guide is the stapler handle?

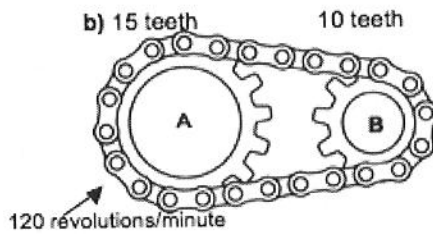
rotational



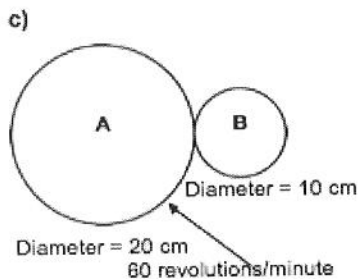
4. A company has lost its computer data on the rotational speed of the B components in the systems below. Using the information provided in the drawings of these systems, calculate the rotational speed of the B components.



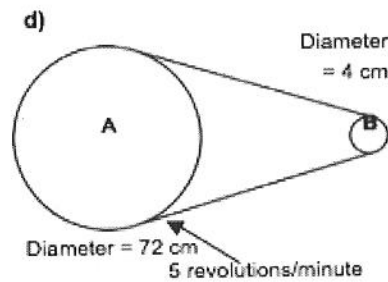
$$\frac{7}{14} = \frac{1}{2} \quad 46 \text{ RPM} \times \frac{1}{2} = 23 \text{ RPM}$$



$$\frac{15}{10} = 1.5 \quad 120 \text{ RPM} \times 1.5 = 180 \text{ RPM}$$



$$\frac{20}{10} = 2 \quad 60 \times 2 = 120 \text{ RPM}$$



$$\frac{72}{4} = 18 \quad 5 \text{ RPM} \times 18 = 90 \text{ RPM}$$

↑ in Question #4

5. Write the names of each of the systems above and determine the speed ratios for each? (Assume gear A is always the driver)

a) Simple Gear

b) chain + sprocket

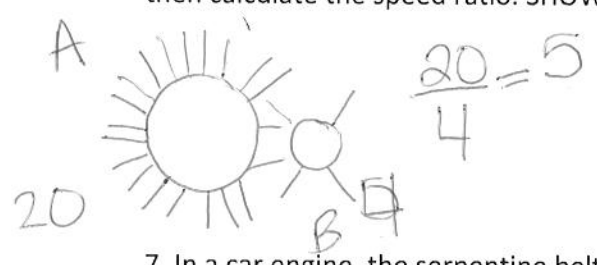
c) friction gear

d) Belt + pulley

6. A motion transmission system consists of a driver and a driven component. Both these parts rotate in the same direction. The driven component B spins 5 times faster than driver component A. The driven component has 4 teeth.

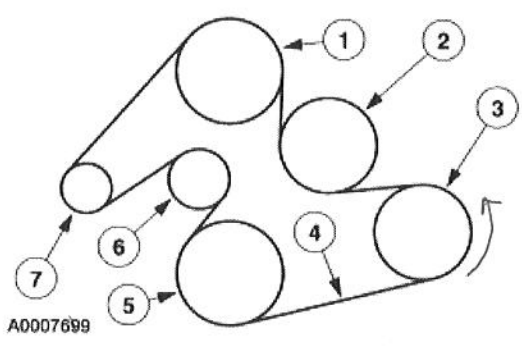
a. Name this type of transmission system. chain + sprocket

b. Draw the motion transmission system below proportionally and with the correct number of teeth, then calculate the speed ratio. SHOW YOUR WORK!



7. In a car engine, the serpentine belt is used to transmit motion between the parts. One of these engines is pictured below.



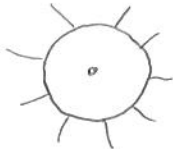



Give the direction of rotation of the other parts below. The alternator turns **counterclockwise**.

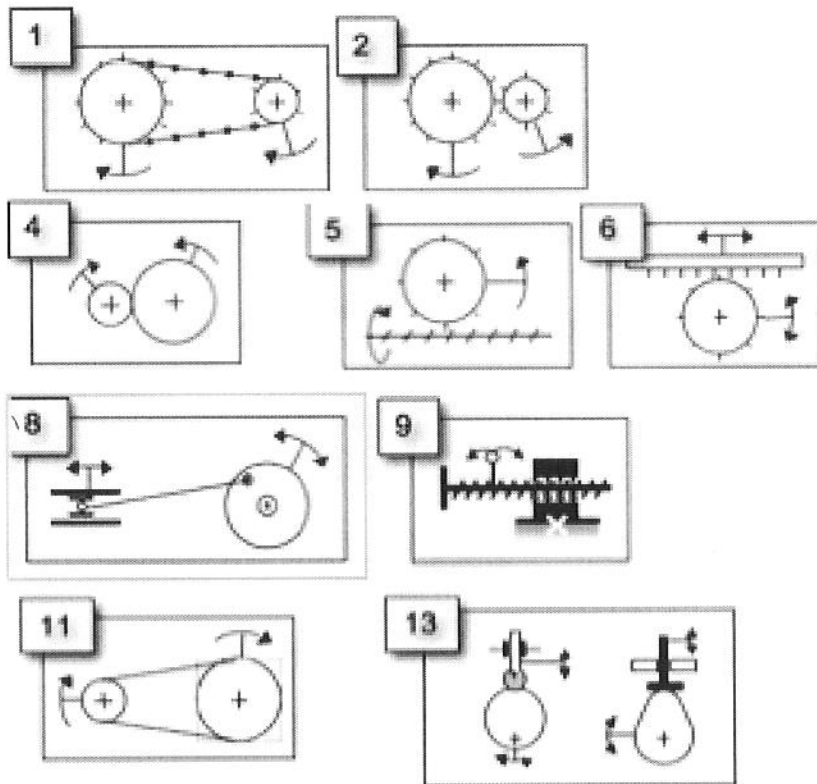


- 1- Power steering pump CCW
- 2- Water pump CW
- 3- Alternator CCW
- 4- Serpentine belt CCW
- 5- A/C compressor CCW
- 6- Tensioner CW
- 7- Idler pulley CCW

\* All parts inside the belt turn the same way → outside opposite inside!!

8. Draw the correct symbol for each of the components listed below:

Screw or worm	
Rack	
Gear or pinion	
Cam	
Eccentric	
Pulley or friction wheel	



9. Name each of the systems shown above and indicate whether they are transmission or transformation systems.

#	Name of System	Transmission/Transformation
1	chain + sprocket	transmission
2	simple gear	transmission
4	friction gear	transmission
5	worm + worm gear	transmission
6	rack + pinion	transformation
8	slider crank	transformation
9	screw gear	transformation
11	Belt + pulley	transmission
13	cam + follower	transformation

