

TERM 2 TECHNOLOGY

GRADE 8

UNIT 1 : IMPACT OF TECHNOLOGY



Write down the following terms and their meaning from your textbook (pg 78; 79; 80; 82; 86; 89; 90; 93)

1) *Environmentally*

2) *Decomposing*

3) *Consumers*

4) *Recycle*

5) *Logo*

6) *Natural resources*

7) *Pollution*

8) *Reinforced*

9) *Modify*

10) *Biodegradable*

11) *Durability*

12) *Reduce*

13) *Fast food outlets*

14) *Packaging*

15) *Preserve*

16) *Cardboard*

17) *Prototype*

18) *Improve*

POSITIVE IMPACT OF TECHNOLOGY

- Some new materials are environmentally friendly because they are **biodegradable**.
- Biodegradable means: That bacteria or other biological agents can dissolve or break down chemical materials.
- Biodegradable products are environmentally friendly.
- They are capable of **decomposing** back into natural elements.



- Most plastics are not biodegradable.
- Qualities of plastic :
 - Lightness
 - Strength
 - Durability
- Plastic is a permanent threat to the natural environment .
- Plastic causes a serious littering problem.
- Plastic waste pollutes the soil, rivers, lakes and oceans.

- New biodegradable technology helps to produce bio-plastic or organic plastic.
- Ingredients such as vegetable oil and corn starch are used to make this type of plastic.
- Biodegradable plastic causes less damage to the environment. It breaks down faster and gets taken up by the soil.

Positive effect of technology on life /environment

1) Better quality of living

- Television; cars; toys; cell phones

2) More opportunities

- Recycling of metal; glass; paper; plastic and other

3) Development of better quality materials

- Better materials can push the boundaries and possibilities
- More bio-degradable materials means less damage to environment

Case study 1 : Page 79

Activity 1



UNIT 2 : INVESTIGATION SKILLS

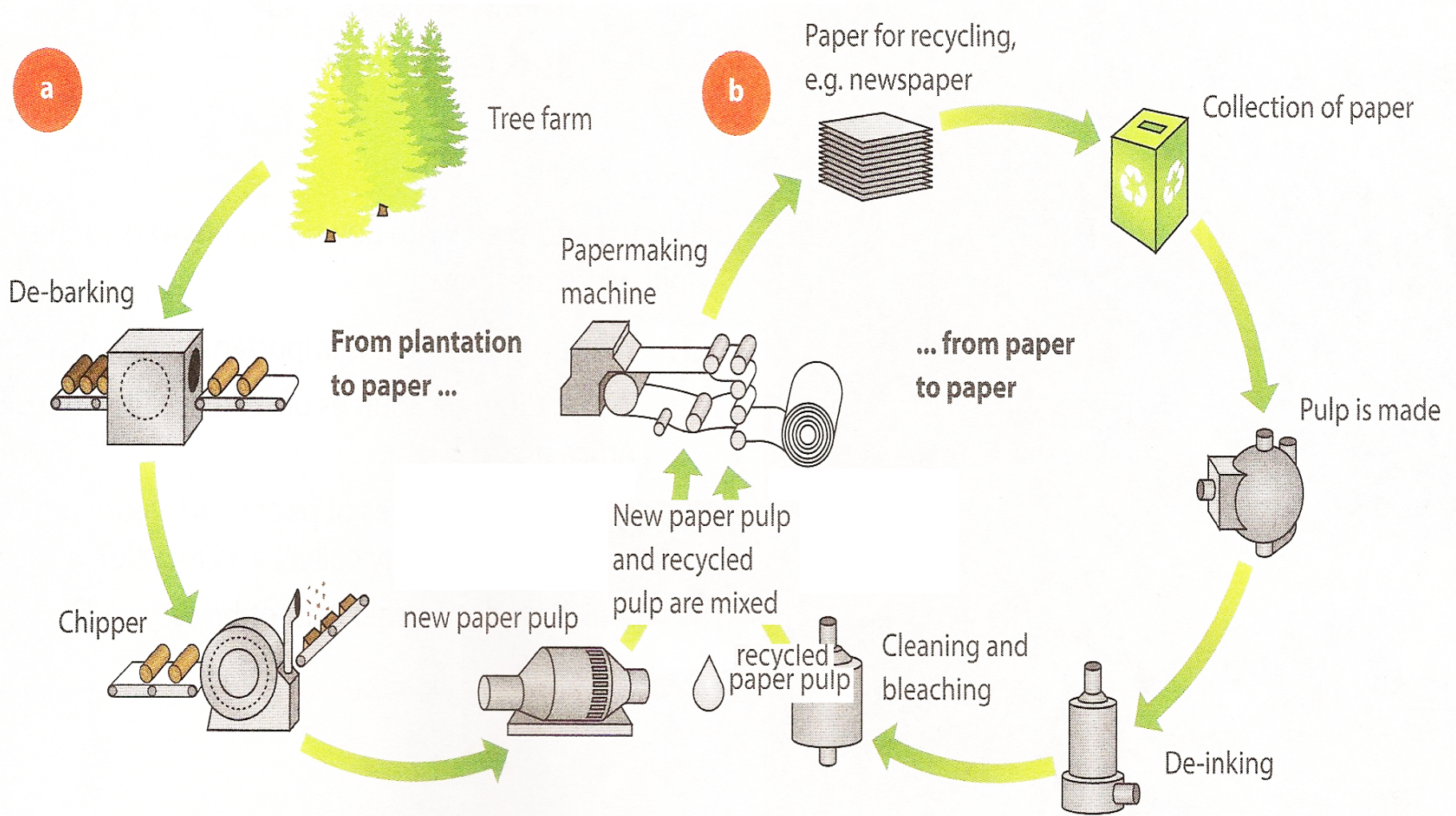
- Paper products make up about 40% of our waste.
- Manufacturers use as many as 13 mature trees to make one ton of paper.
- Paper products can be recycled up to 8 times.
- We need about 60% less energy when we use recycled products instead of new materials

Case study 1 page 80 -81

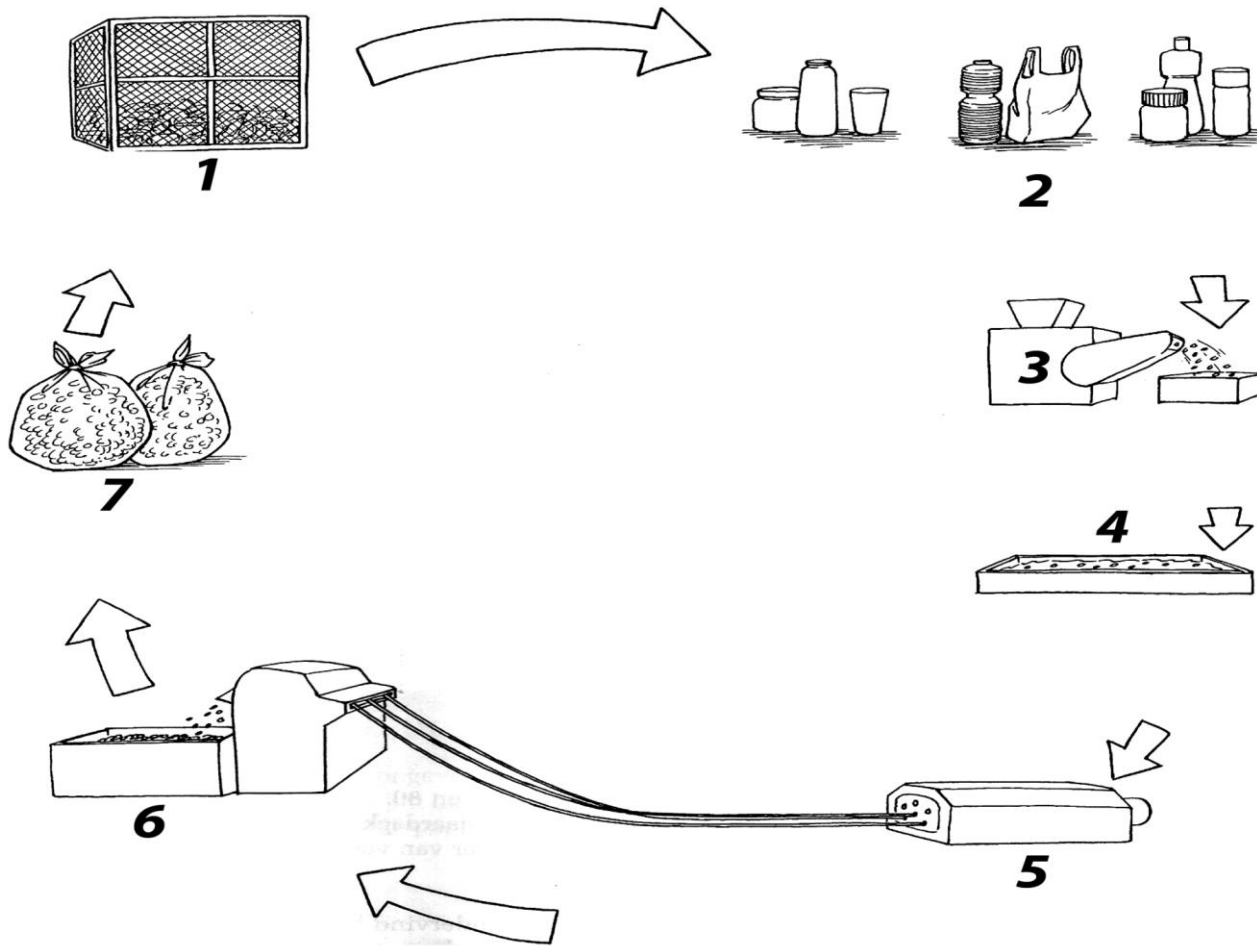
Answer question 1 -3



Recycling of paper



Recycling of plastic

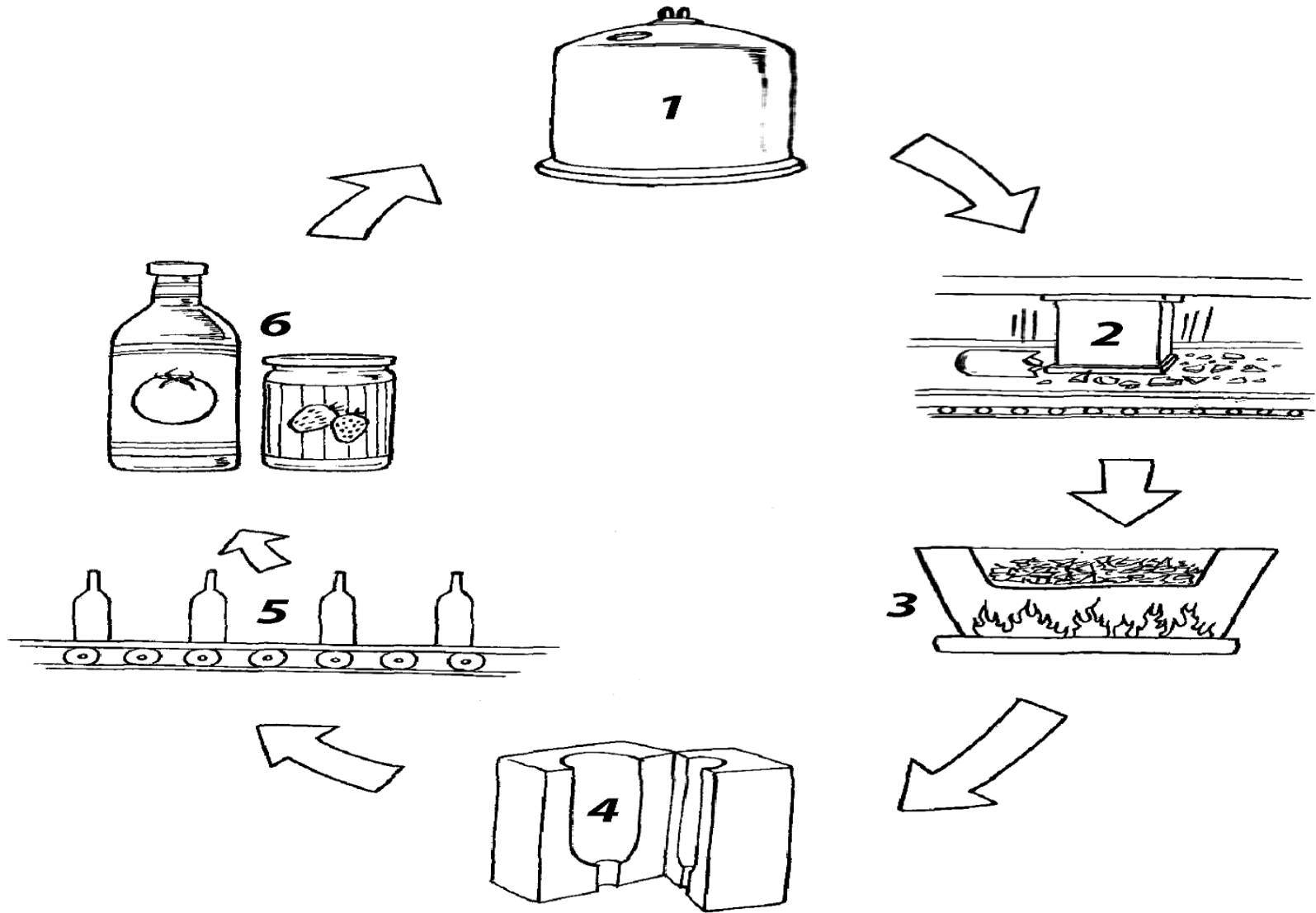


Steps during the recycling process of plastic:

(Write these steps in on the diagram of “Plastic recycling”)

- 1 Collecting of waste plastic
- 2 Sorting of waste plastic into similar types and compressed into bales
- 3 Cutting up into small pieces
- 4 Cleaning and removal of “other” stuff
- 5 Heating/Melting and Extraction into long strips like “spaghetti”
- 6 Cut recycled plastic strips into “pellets”
- 7 Recycled pellets to be used in manufacturing of new products

Recycling of glass



Following steps during the recycling process of glass:

(Write these steps in on the diagram of “Glass recycling”)

- 1) Collection and sorting (determined by colour)
- 2) Crushed into small pieces and removal of “other” stuff
- 3) Heating/Melting (temperature 1500 °C)
- 4) New glass products in moulds as required
- 5) Quality Control / Inspection (cracked pieces removed and back to “2”)
- 6) Recycled containers to be filled with products

TERN 2

UNIT 2:

Cams

Mechanisms that change the direction of movements

Cams, cranks and **cam followers** are very important mechanisms in modern machines. They provide for the conversion of movement in opposite directions. We need cams and cranks to make modern machines perform multiple tasks in the quickest possible time.

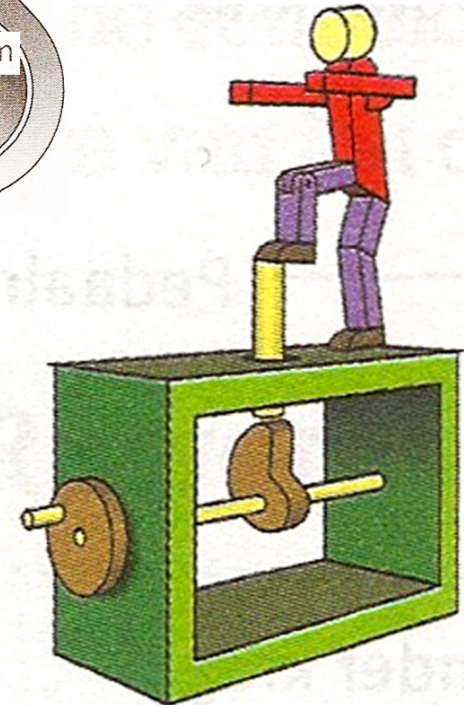
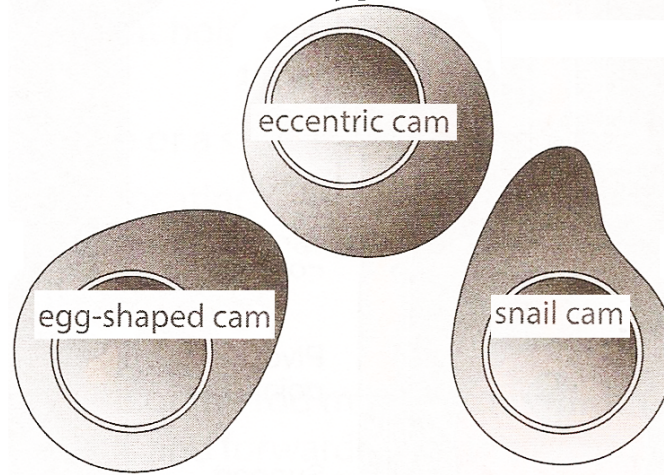
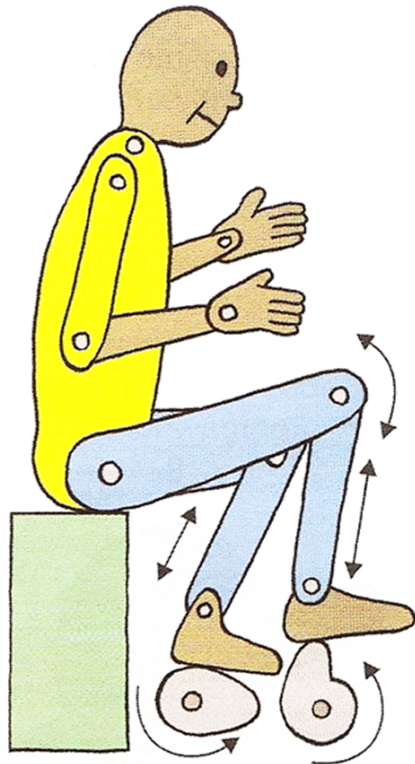
What do we mean by **reciprocating movement**?

It is a movement going:

- up and down or
- backward and forward.

How cams are used in Mechanisms

Different types of cams



Cam

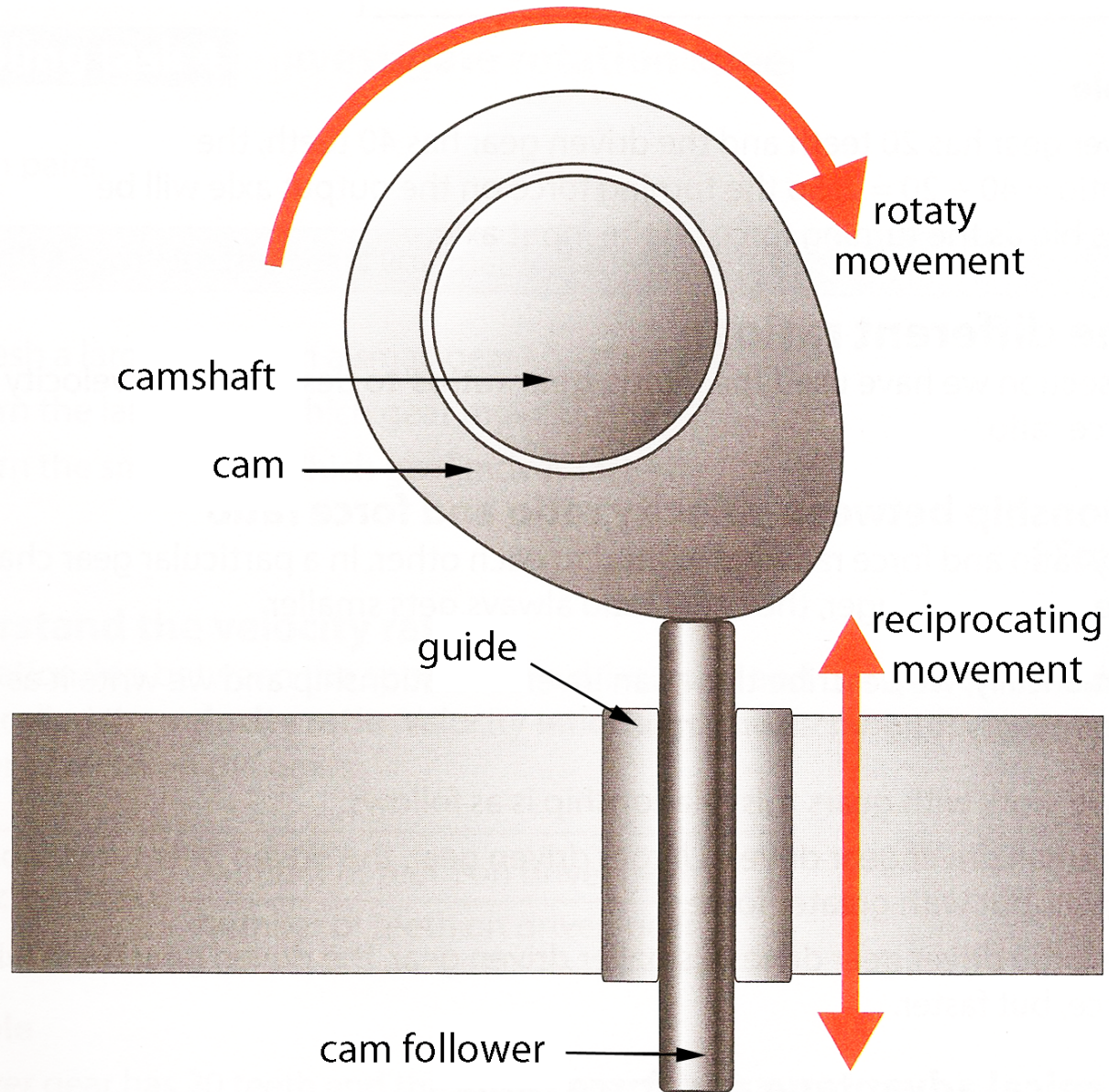
Cams change the rotary input movement to reciprocating movement of the cam follower.

How the follower must move determines the shape of the cam.

Snail cams convert rotary movement into reciprocating movement. A snail cam will let the follower move up slowly and then drop suddenly.

Eccentric cams do not have an axis placed centrally (in the middle of the cam). This allows for the follower to move up and down at a constant rate.

A "Cam" Mechanism

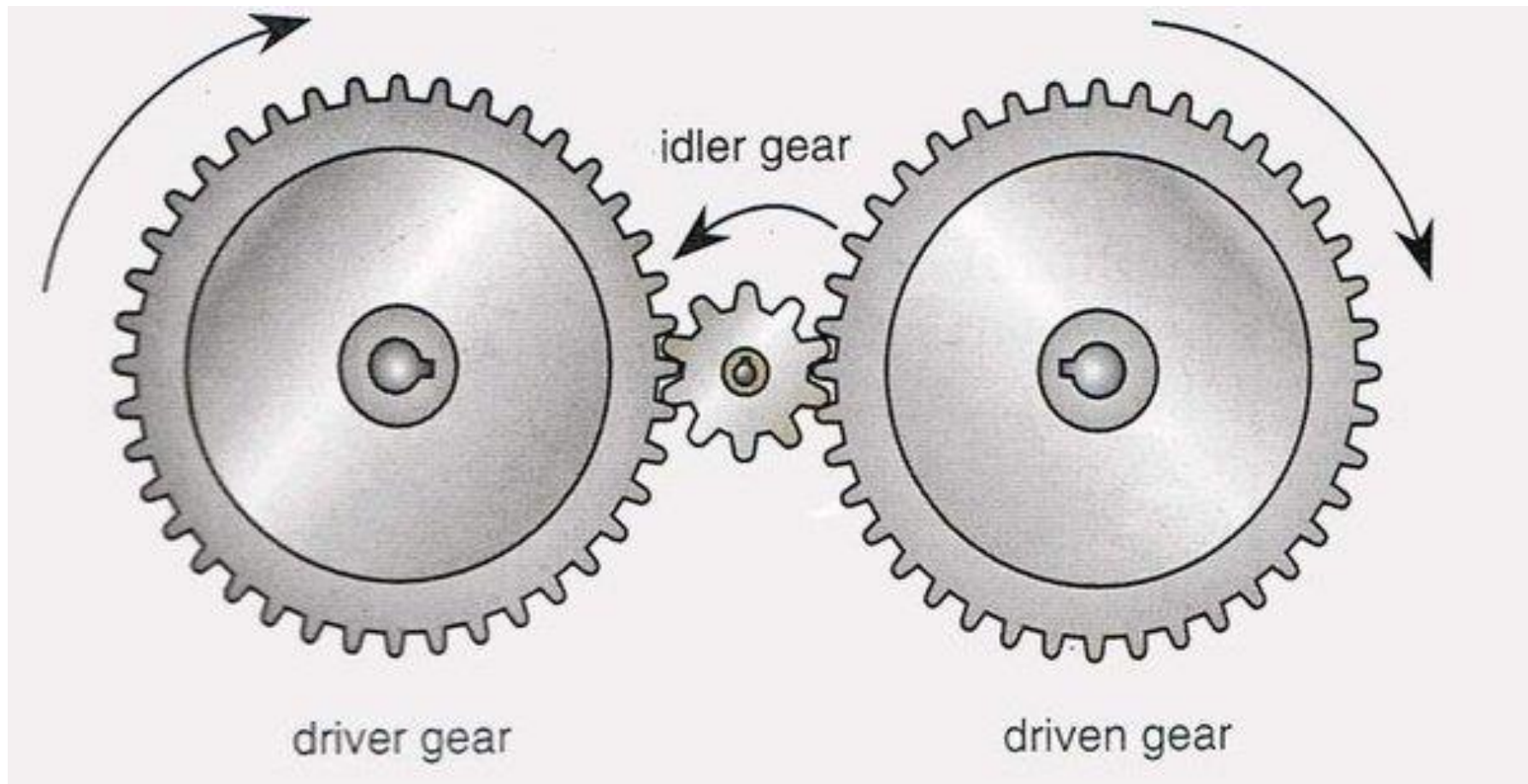


A detailed close-up photograph of a complex mechanical gear train. The image features numerous gears of various sizes, colors, and materials, including brass and steel. The gears are interconnected, creating a dense and intricate pattern of teeth and shafts. The lighting is dramatic, highlighting the metallic textures and the precision of the engineering. The word "GEARS" is prominently displayed in the center in a bold, yellow, sans-serif font.

GEARS

SPUR GEARS

- Are the simplest type of gear.
- Cylinder or disk with teeth
- Smallest gear is called the pinion gear.
- Bigger gear is called the wheel.
- The gear turned by the motor is called the driver gear.
- Second gear is called the driven gear.



- Spur gears are not the same size.
- Gears are counter-rotating.
- Counter-rotating : one gear will rotate in a clockwise direction, driving the other gear to rotate in an anti-clockwise direction.

- When two gears of different size and therefore unequal number of teeth are combined, a mechanical advantage is produced.
- The smaller gear will rotate faster than the larger gear.
- That is why a mechanical advantage is produced. MA of $<$ or > 1

- Gear ratio is also called a velocity ratio.
- The ratio is determined by the number of teeth on each gear wheel.

Gear ratio (velocity Ratio)

- Gear ratio = number of teeth of driven gear
number of teeth of driver gear
= 60 / 15
= 4 / 1
= 4: 1 (driven gear: driver gear)

