Stepping Stone:

You need to know ...

- Belts and how it could make a system that transport objects through the sorting process.
- Different types of belts (flat, V-belt, toothed belt) based on their appearance and applications.
- The concept of tension and its role in belt operation.
- Newton's laws of motion and how forces affect object movement.
- Describe the basic components of a cam and follower mechanism.

You will be able to...

- Identify the components of a belt drive system (pulleys, shafts, belt).
- Choose the best belt type for your system.
- Figure out how to reduce it through searching.
- Managing the flow of objects through the system to prevent jams and ensure smooth operation.
- Understand liner cams and rotary cams.

let's Think

What factors should we consider to ensure the belt moves smoothly?

What is our plan for designing the most effective belt?

How will we maintain the system?

Explore

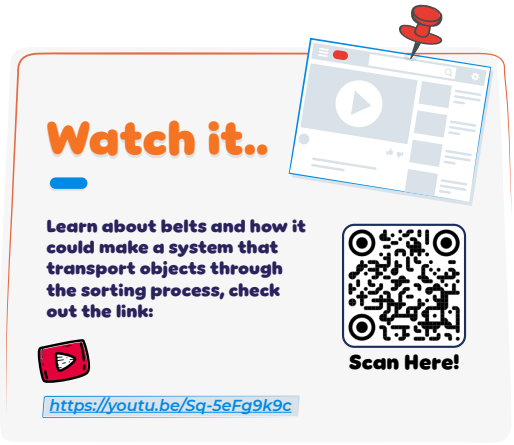
Try to memorise as many items from the conveyor belt as you can.

Then you have 45 seconds to see how many of the items you can recall.

Scan Here!

Click here to play the "Guess the Number Challenge"

https://www.youtube.com/watch?v=WbRuo5jKkC8add



You may notice that the conveyor belt consists of:

The Belt: This is the long, rubbery part that actually moves. It's like a giant, endless loop.

The Rollers: These are cylinders that support the belt and help it move smoothly.
They're placed along the length of the conveyor.

The Drive System: This is the motor that powers the conveyor belt. It makes the rollers turn, which moves the belt.

The Frame: This is the structure that holds everything together, keeping the belt and rollers in place.

Assessment

Focus

Which type of conveyor is specifically designed for transporting goods under special circumstances?

A) Special belt conveyor.
B) Trough belt conveyor.
C) Flat belt conveyor.
D) Inclined belt conveyor.

What are the key differences between a cleated belt conveyor and an inclined belt conveyor?

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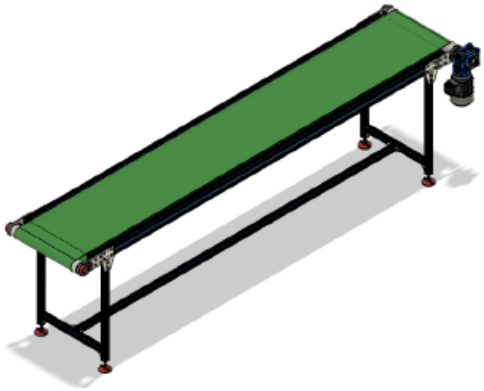
Practice

Choose the type of conveyor belt that best suits your machine, choose your materials and start to build it.



Challenge

Each of you and your friends has created a different types of conveyor belts with different materials. Now, each group will test their belt through the transmission process to determine which one works best for your project. After testing, be sure to complete the observation form.

Conveyor Belt Testing Observation Sheet

Project Name: .....
Group Members: .....
Date: .....

1. Conveyor Belt Details

- **Type of Conveyor Belt:** .....
- **Materials Used:** .....
- **Design Features:** .....

2. Testing Process

- **Tested by:** .....
- **Date of Test:** .....
- **Duration of Test:** .....
- **Speed of Transmission:** .....

3. Performance Evaluation

- **Stability of Belt (Was it steady during operation?):**
  - ◯ **Very Stable.**
  - ◯ **Stable.**
  - ◯ **Unstable.**
  - ◯ **Very Unstable.**

- **Efficiency in Sorting Colors:**
  - ◯ **Very Efficient.**
  - ◯ **Efficient.**
  - ◯ **Moderate.**
  - ◯ **Inefficient.**

- **Accuracy of Sorting:**
  - ◯ Highly Accurate.
  - ◯ Accurate.
  - ◯ Moderately Accurate.
  - ◯ Inaccurate.

- **Speed of Sorting:**
  - ◯ Very Fast.
  - ◯ Fast.
  - ◯ Moderate.
  - ◯ Slow.

- **Durability (Any wear and tear?):**
  - ◯ No Damage.
  - ◯ Minor Wear.
  - ◯ Significant Wear.
  - ◯ Major Damage.

- **Accuracy of Sorting:**
  - ◯ Very Easy.
  - ◯ Easy.
  - ◯ Moderate
  - ◯ Difficult.

4. Observations:

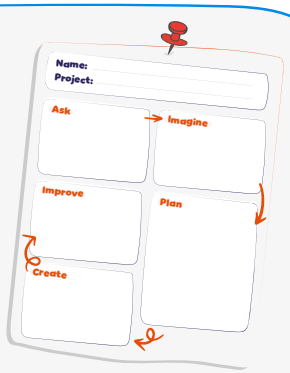
- **What worked well during the test?**
- **What issues were encountered?**
- **Suggestions for Improvement:**

5. Conclusion:

- **Overall Performance Rating:of Sorting:**
  - ◯ Excellent.
  - ◯ Good.
  - ◯ Fair.
  - ◯ Poor.

- **Is this conveyor belt suitable for the project?**
  - ◯ Yes.
  - ◯ No.

After we learned what are the parts we need for our machine, let's go back to our EDP paper and add these parts to the planning part..



Have you heard about Cams and Followers?

Watch these videos to understand more about it:

Scan Here!

https://youtu.be/EXeKyTGLmzo

Scan Here!

https://youtu.be/vRnA5mdia40

Showcase..

Make the body for the color sorting machine.

Now I can...

- Identify the components of a belt drive system (pulleys, shafts, belt).
- Choose the best belt type for your system.
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