

Key Question: Can you make an invention with a mechanism that can solve an everyday problem?

Investigating Mechanisms 1: Cams (Cam board / cam toys in DT room).

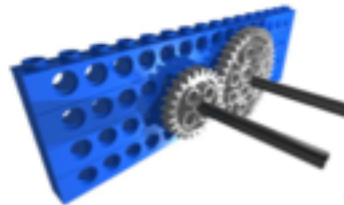
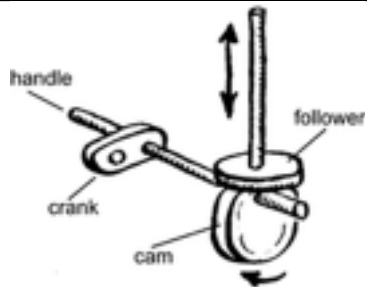
- Predict what will happen when different cams are turned. Describe the movement that occurs. (circular / eccentric / ellipse / egg / snail)
- Study cam toys. Label diagrams of the toys to identify the crank / shaft / follower.

Investigating Mechanisms 2: Gears

- Using gears kit (located in DT resource room), build a frame and examine investigate different gear combinations. Make a note of speeds / direction / rotations / ratio of rotations. Label diagrams to record the information.
- Understand terms driver / follower / idler.
- Consider how this mechanism could be used in an invention.

Investigating Mechanisms 3: Pulleys

- Lift a bucket using rope over the stairwell discuss ease / difficulty. Add a pulley - describe the difference.
- See Pulley videos.
- Investigate using 2 pulleys. Describe the difference. Consider how this mechanism could be used in an invention.



Investigating inventions:

- In small groups look at how a bicycle bell works. Label and explain the mechanism used.



Design:

- Design their own invention in groups using a mechanism. What is the need they are trying to meet?
- Plan it out with labels - what will they use? What tools will they need?

Make:

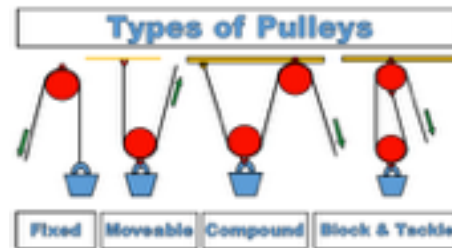
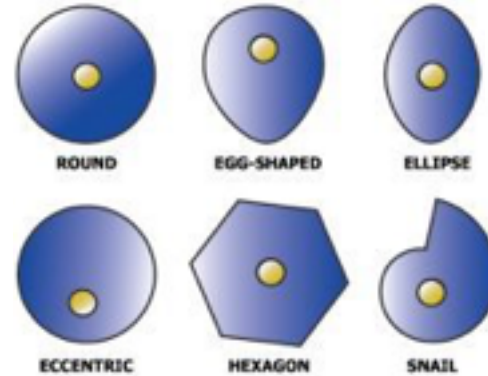
- Follow their design and make their invention prototype.
- Work together using enterprise skills.
- Adapt the mechanisms to ensure success.

Test and Evaluate:

- Test the final product - did it meet the criteria?
- What worked well?
- What adjustments were needed?
- How could it be improved?

Using construction kits, ask children to explore gear ratio using combinations of two gears e.g.

No. teeth	Ratio
8, 16	2:1
8, 40	5:1
8, 24	3:1
40, 40	1:1



Electric Circuit: Using a motor

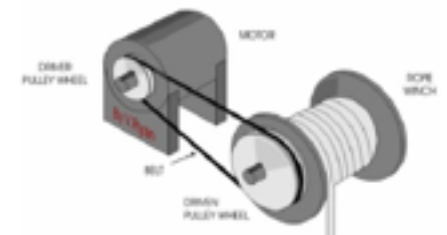
(link to science)

- Revise making a simple circuit.
- Include a motor.
- Add cam belt to motor - what could this turn?
- Invent something from junk that uses a motor to turn e.g. fairground ride



Vocabulary:

- crank
- shaft
- follower
- Cam: round / eccentric / egg shaped / snail / lever.
- Gears / driver / follower
- rotation / rotation ratios
- Pulleys: fixed / moveable / compound
- Motion
- direction
- circuit
- cam belt
- prototype



Pulleys: <https://www.youtube.com/watch?v=itk2V0M6k3M>
https://www.youtube.com/watch?v=z6XyLQC_RRQ