**Lesson:** 3-1  
**Unit:** Pulleys and Gears  
**Topic:** Introduction

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| - Provide small groups with picture showing pulley/gear use.  
- Instruct groups to quickly read the paragraph at the top of the page.  
- Groups then work to make a list of all the pulleys and gears they can find in the picture.  
- Have groups take turns supplying answers to record on chart paper.  
- Ask groups to add their own ideas to the list of other things that use pulleys or gears (add to chart paper).  
- Give students a blank piece of paper and have them make a title page for the unit to include the words "pulleys" and "gears" as well as pictures. |

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<th>Reminders</th>
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<th>Supplies Needed</th>
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</table>
| - Picture  
- Chart Paper  
- Blank Paper |

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Lesson:
- Handout worksheet and read about picture
- Discuss activity, read through procedure
- Show students how to use a spring scale - don't pull
- Students begin activity
- At the end of class students clean up and place apparatus in a safe place.

Reminders

Supplies Needed
- String
- Empty thread spools
- Tape
- Ruler
- Scissors
- Skewers
- Paper clips
- Wheelbead
- Weights
- Straws
- Dowels

Homework

Notes
Lesson: 3-3  Unit: Pulleys and Gears  Topic: Pulleys - Questioning

Lesson

- Students are reminded of their task: build an apparatus that uses a pulley to lift.
- Students finish building and testing apparatus.
- Students then document their experiment using their worksheets.

*) If students finish early, they can check their answers to verify that they have fully answered the questions.

*When done give students an additional challenge: To raise and lower mass without locking from floor to desk height.

Reminders

Supplies Needed

See previous lesson

Homework

Notes
Lesson: 3-4  Unit: Pulleys and Gees  Topic: Pulley Systems

Lesson

- Students document their work from the previous two classes (on their worksheet)

- When complete do a demonstration (direction of force)
  - Fixed pulley
  - Movable pulley
  - Two pulley system

- Show double + triple, but do not set up

Reminders

Supplies Needed

- String
- Mass
- Spray scale
- Two single pulleys
- Double pulley
- Triple pulley

Homework

Notes
# Grade 4 Science

**Lesson:** 3-5  
**Unit:** Pulleys and Gears  
**Topic:** Pulley Information

## Lesson

- Inform students that today they will be left to themselves to learn more about pulleys. The work is difficult, but they are encouraged to think their way through it.
  - It will not be marked
  - I will take it up at the end
- Hand out worksheets and instruct students to bring it to me when they are finished.
- Allow students to struggle a bit, providing some guidance to avoid frustration.
- Discuss answers at end of class.
- If students are done, challenge them to build pulley system on back of page.

## Reminders

## Supplies Needed

- Worksheets
- String
- Spring scales
- Pulleys
- Masses

## Homework

## Notes
<table>
<thead>
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<th>Lesson: 3-6</th>
<th>Unit: Pulleys and Gears</th>
<th>Topic: Pulleys</th>
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**Lesson**

- Show and explain worksheet to students
- Hand out worksheet
- Students work independently on worksheet
- When complete, students are to complete other work in their folders
- Take up answers at end of class

- As class works, set up a 3/3 pulley system. Show to class when done (use 1kg mass)

**Reminders**

**Supplies Needed**

- Worksheets
- 1000g mass
- 3 pulley x 2
- String

**Homework**

**Notes**
**Grade 4 Science**

**Lesson: 3-7**  **Unit: Pulleys and Gears**  **Topic: Pulleys in Action**

### Lesson
- Explain that we will be using the computer to look at some pulley systems today.
- Have each student log in and guide them to webpage.
- Read through instructions as a class.
  - Stress that they answer some 6 questions about all 5 pulley systems.
  - Stress importance of reading all info before picking.
  - No video today.
- Students work until ~15 minutes left in class (we will continue next class).
- Stop students, pick up.
- Hand out quiz review.
- Read through.
  - Discuss.

### Reminders
- Make sure webpage is set up.

### Supplies Needed
- Computers
- Review sheets
- Worksheets

### Homework

### Notes

Due (computer) → Show pulley pictures → Answer questions → Need help? Type of pulley? Direction? → in class.
### Lesson

- Ask students if they studied.
- Tell students to continue with their work.
- When done, students verify answers with web answers and me.
- IF done, students may watch video at bottom of wedge.
- Once video is over, students use remaining time to study for upcoming quiz.

### Reminders

- 

### Supplies Needed

- Computers

### Homework

- 

### Notes

- Play in pulleys
Lesson: 3-9  Unit: Pulleys and Gears  Topic: Playing With Pulleys

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<tr>
<td>- Inform students that today we will be &quot;playing&quot; with pulleys.</td>
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<td>- Inform students that they have two options:</td>
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<tr>
<td>① Make one of the pulley systems from last class.</td>
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<td>② Explore multiple pulleys (i.e., double fixed, double moving).</td>
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<tr>
<td>- Remind students that they need to respect the equipment.</td>
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<tr>
<td>- Students explore.</td>
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<td>- Clean up at end of class.</td>
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<tr>
<td>- Remind students of their next class.</td>
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<tbody>
<tr>
<td>- Variety of pulleys</td>
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<td>- Play clay</td>
</tr>
<tr>
<td>- String</td>
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<tr>
<td>- Popsicle sticks</td>
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<td>- Tape</td>
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<td>- Paper clips</td>
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Pulleys Quiz
Lesson:
- Review quiz writing procedures.
- Hand out quizzes
- When students are done they are to work quietly on final pop quiz.
- Ask students to bring in Lego men next class

Reminders

Supplies Needed
- Quiz

Homework

Notes

Grade 4 Science
Lesson: 3-10  Unit: Pulleys and Gears  Topic: Pulleys Quiz