



Automation & Robotics Virtual Learning

7th & 8th Gear Ratios Day 1

April 20th, 2020



PLTW: Automation & Robotics
Lesson: Gear Ratios Day 1 [April 20th]

Objective/Learning Target:

Students will review their knowledge of gear ratios and demonstrate their understanding of how gear ratios affect speed and torque in a mechanism.

*To complete the Warm-up, practice, and questions electronically, click [here](#)

Warm-up

This week and next week we will be reviewing our knowledge of Gear Ratios and unit 1.1 What is Engineering. We will alternate every other day.

Today we will be using our knowledge of gear ratios to determine what is happening to speed and torque in a given mechanism.

In our second lesson, Mechanisms Day 2 (April 7th), we learned four facts about speed and torque.

Can you recall one fact about Speed?

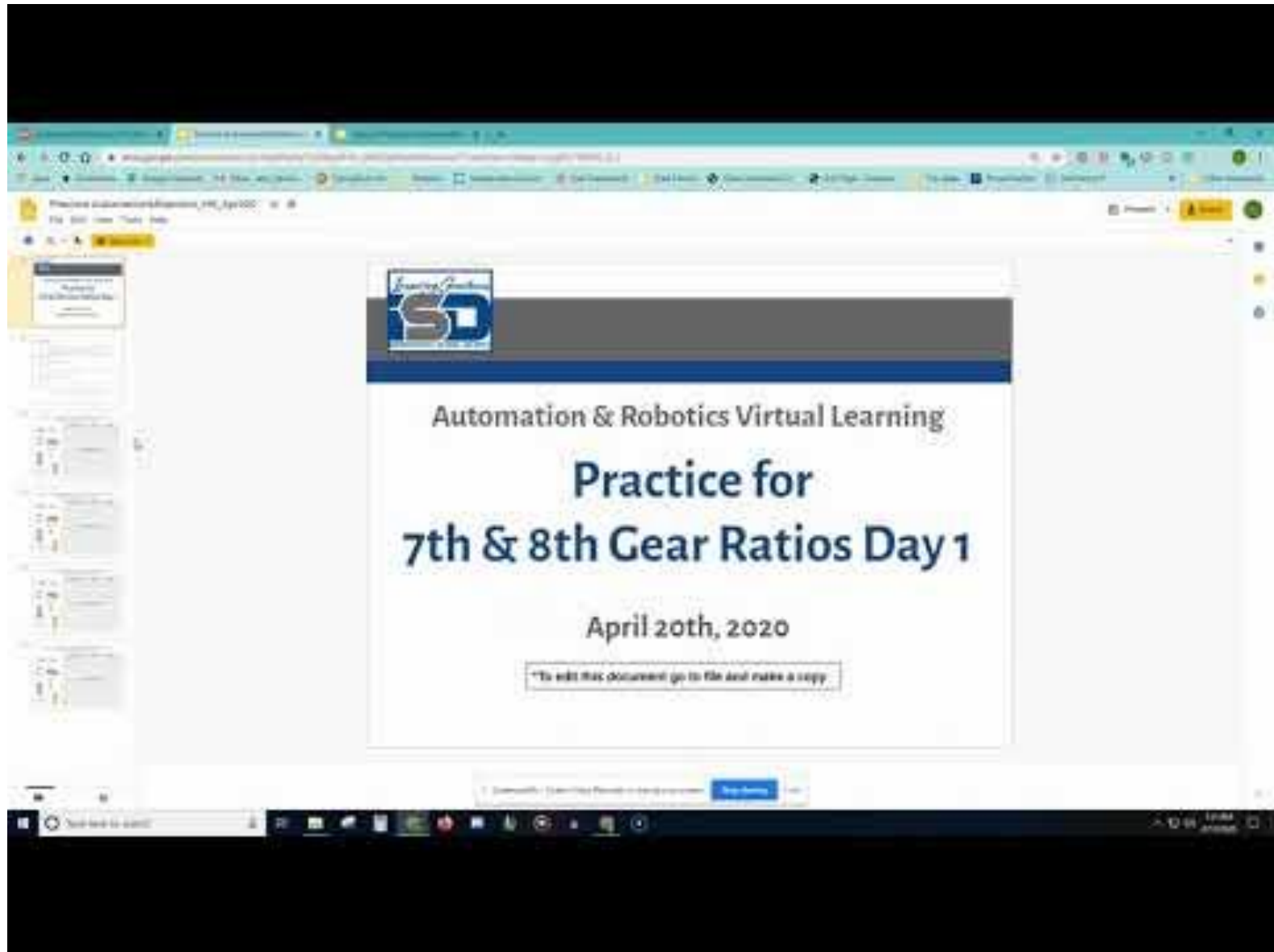
Your answer:

Can you recall one fact about Torque?

Your answer:

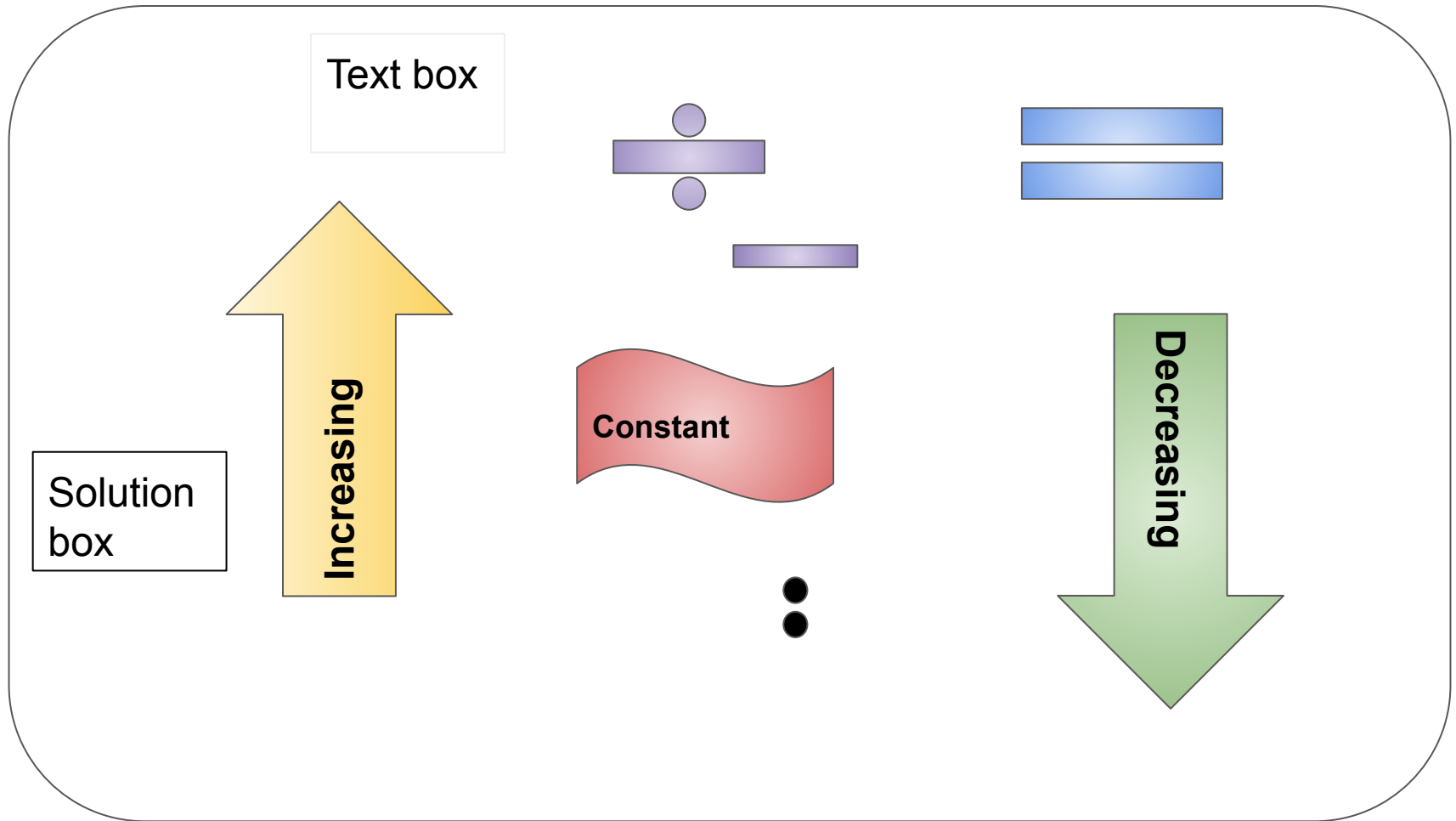
(If you need help here is the link to [Mechanisms Day 2](#))

Instructions

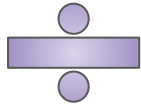


Link to [video](#)

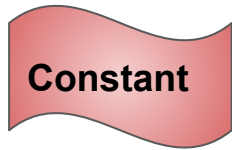
Needed tools



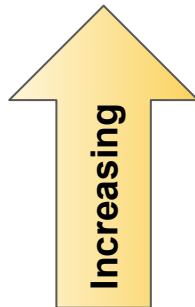
Practice What is the simplified gear ratio for 25:15 and what is happening to Speed and Torque?



Text
box



Solution
box



Input	Output	Speed	Torque

Show your work here:

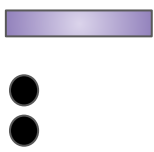
Practice Answer Key Option #1

What is the simplified gear ratio for 25:15 and what is happening to Speed and Torque?



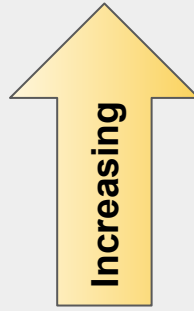
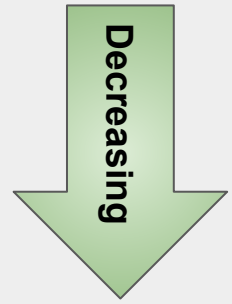
Text box

Constant



Solution box

Input	Output
25	15

Speed	Torque
	

Show your work here:

$$\frac{25}{5} : \frac{15}{5} = 5 : 3$$

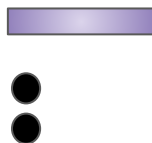
Practice Answer Key Option #2

What is the simplified gear ratio for 25:15 and what is happening to Speed and Torque?



Text
box

Constant



Solution
box

Input	Output
25	15

Speed	Torque

Show your work here:

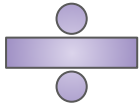
$$25 \div 15$$

$5 \div 3$

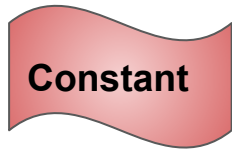
$$25 \div 5 = 5$$

$$15 \div 5 = 3$$

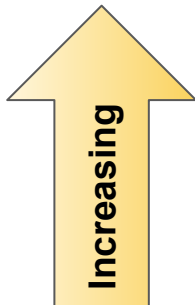
1. What is the simplified gear ratio for 100:100 and what is happening to Speed and Torque?



Text
box



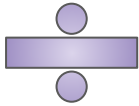
Solution
box



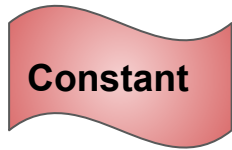
Input	Output	Speed	Torque

Show your work here:

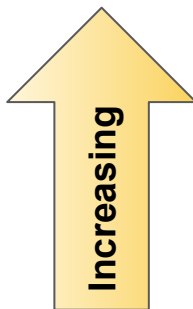
2.) What is the simplified gear ratio for 4:18 and what is happening to Speed and Torque?



Text
box



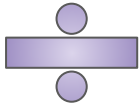
Solution
box



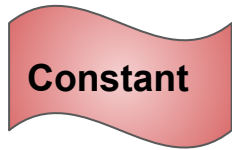
Input	Output	Speed	Torque

Show your work here:

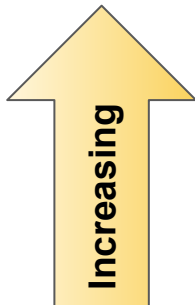
3.) What is the simplified gear ratio for 48:36 and what is happening to Speed and Torque?



Text
box



Solution
box



Input	Output	Speed	Torque

Show your work here:

Extend Your Learning

To learn more about Gear Ratios check this [video](#) out.