Industrial Technology
Virtual Learning

:measuring a bolt(part 1 of 2)

April 30, 2020

Lesson: April , 2020

Objective/Learning Target:

Students will properly measure a bolt and be able to identify different grades of bolts, both standard and metric.

Identifying Metric from Standard

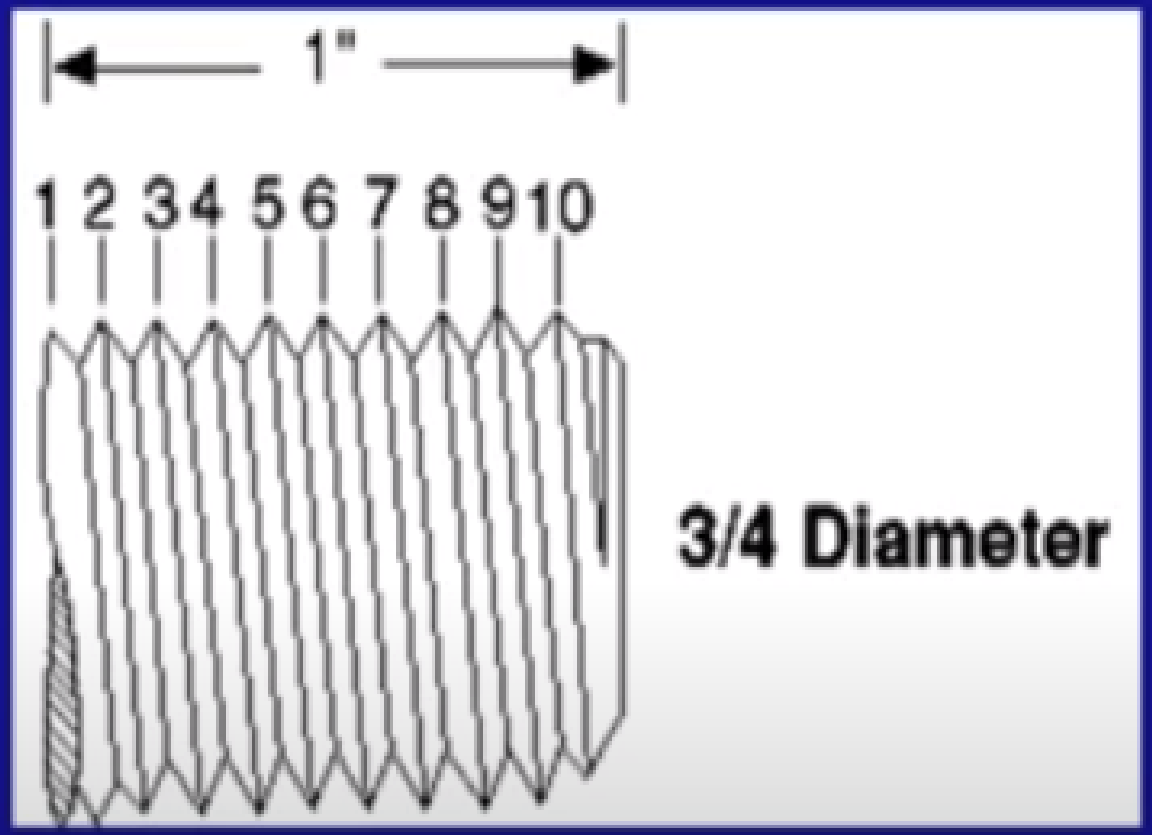
Size and Pitch

Head Markings

BOLT SIZE

Diameter x Thread Pitch x Length

SAE Bolt Size



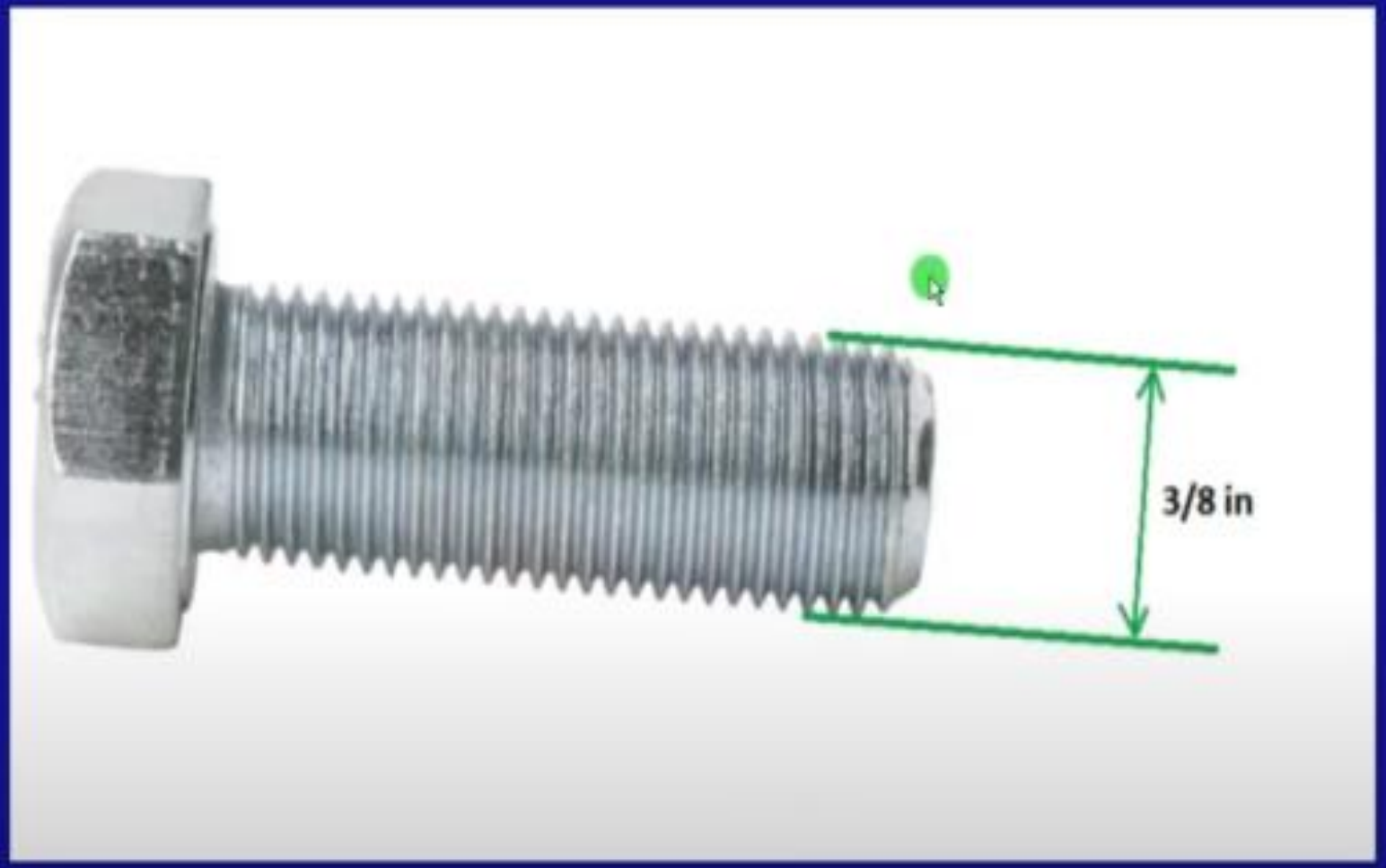
- Aka Standard Bolt
- Diameter
- Thread Pitch (threads per inch)
- Length

Written as :

Diameter x Pitch x Length

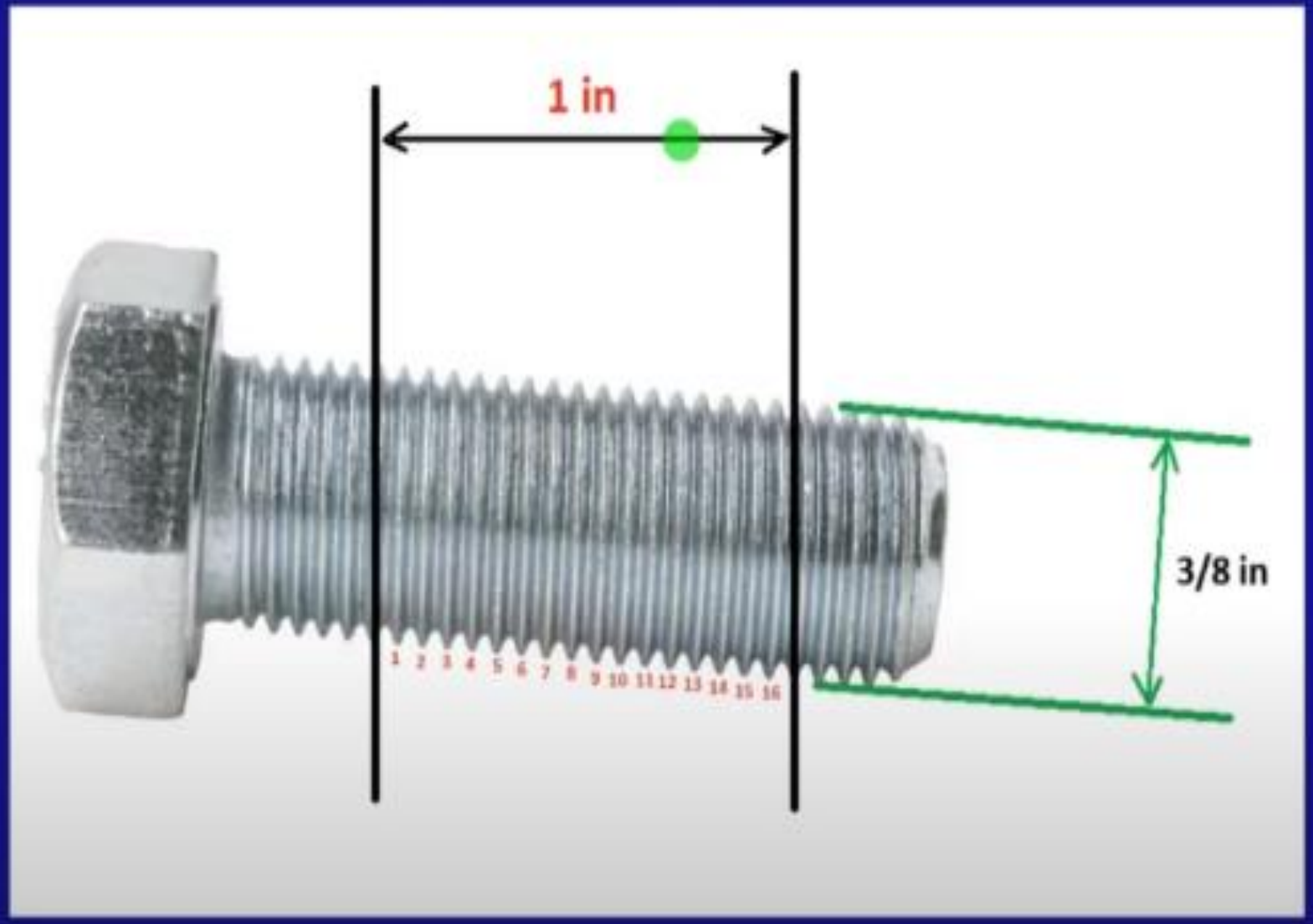
Example: 1/4 x 20 x 2 1/2

Diameter



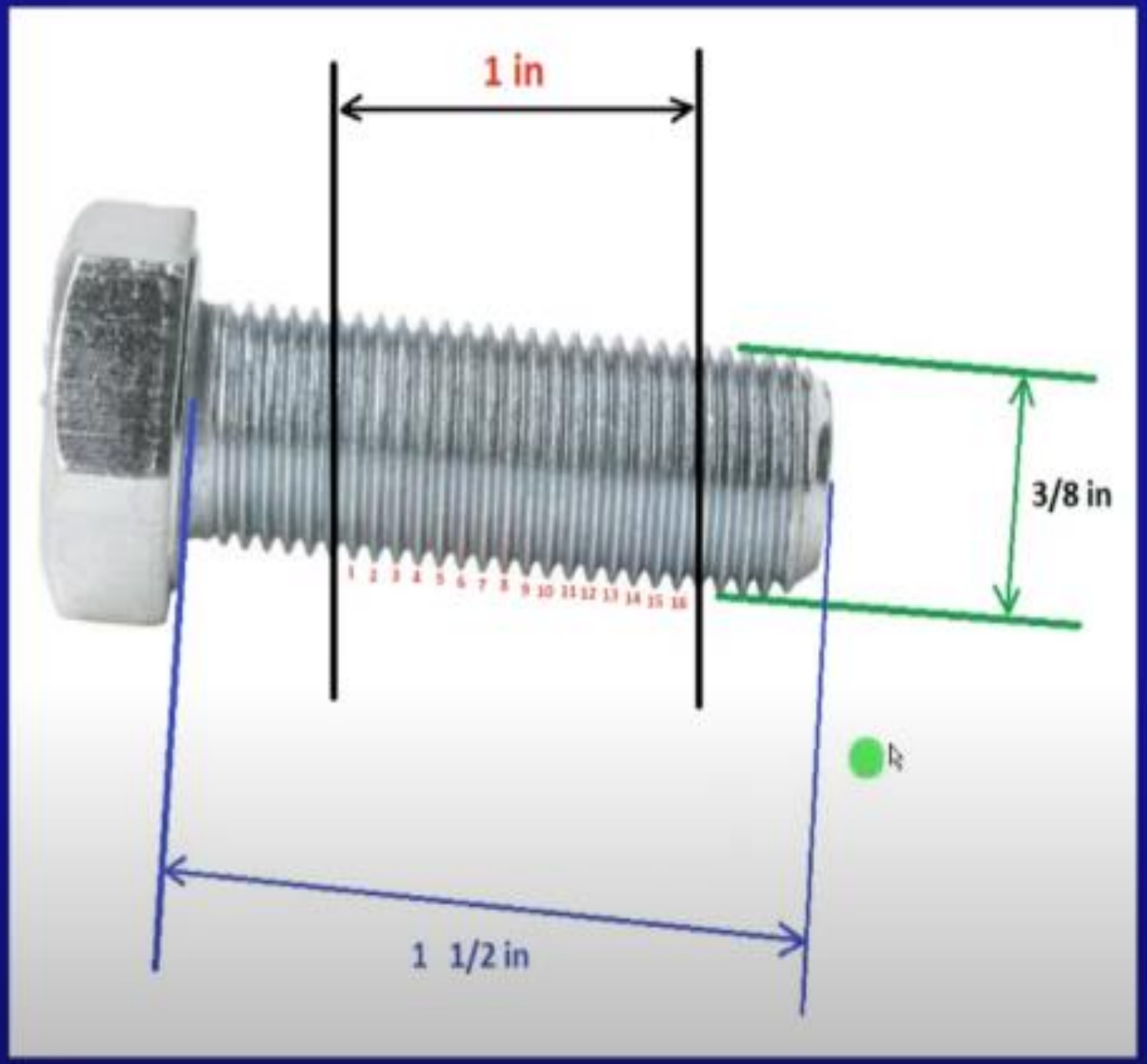
- Outside measurement of thread width.
- **NOT** the size of the wrench head.

STANDARD



Thread Pitch

- TPI (threads per inch)
- Number of threads found in each inch of length.
- NC National Course
- NF National Fine
- BPT Pipe Thread



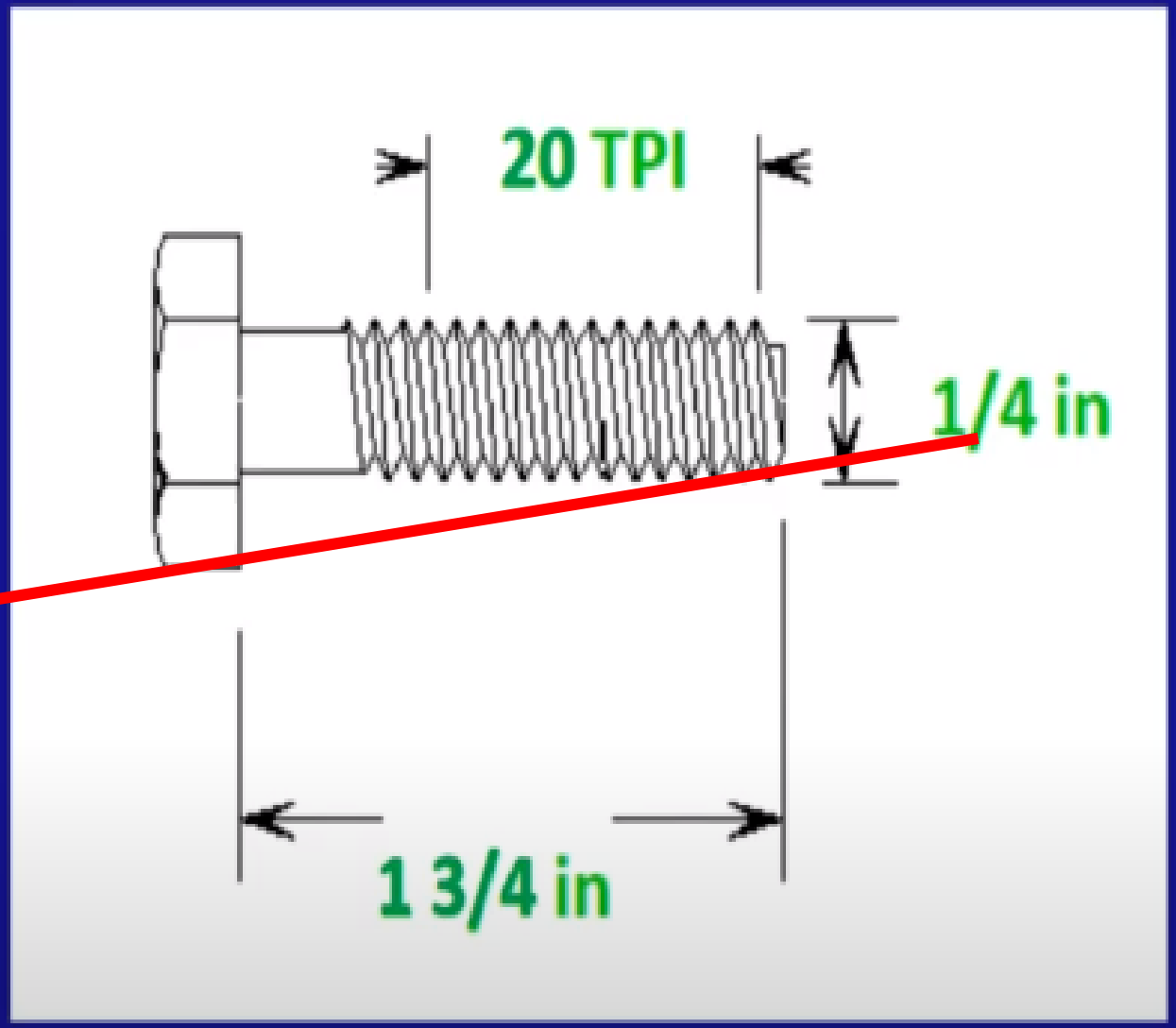
Length

- How long the bolt is.
- **DOES NOT** count the head.

Standard Bolt Size

- Diameter
- Pitch
- Length
- Dia. x TPI x Length

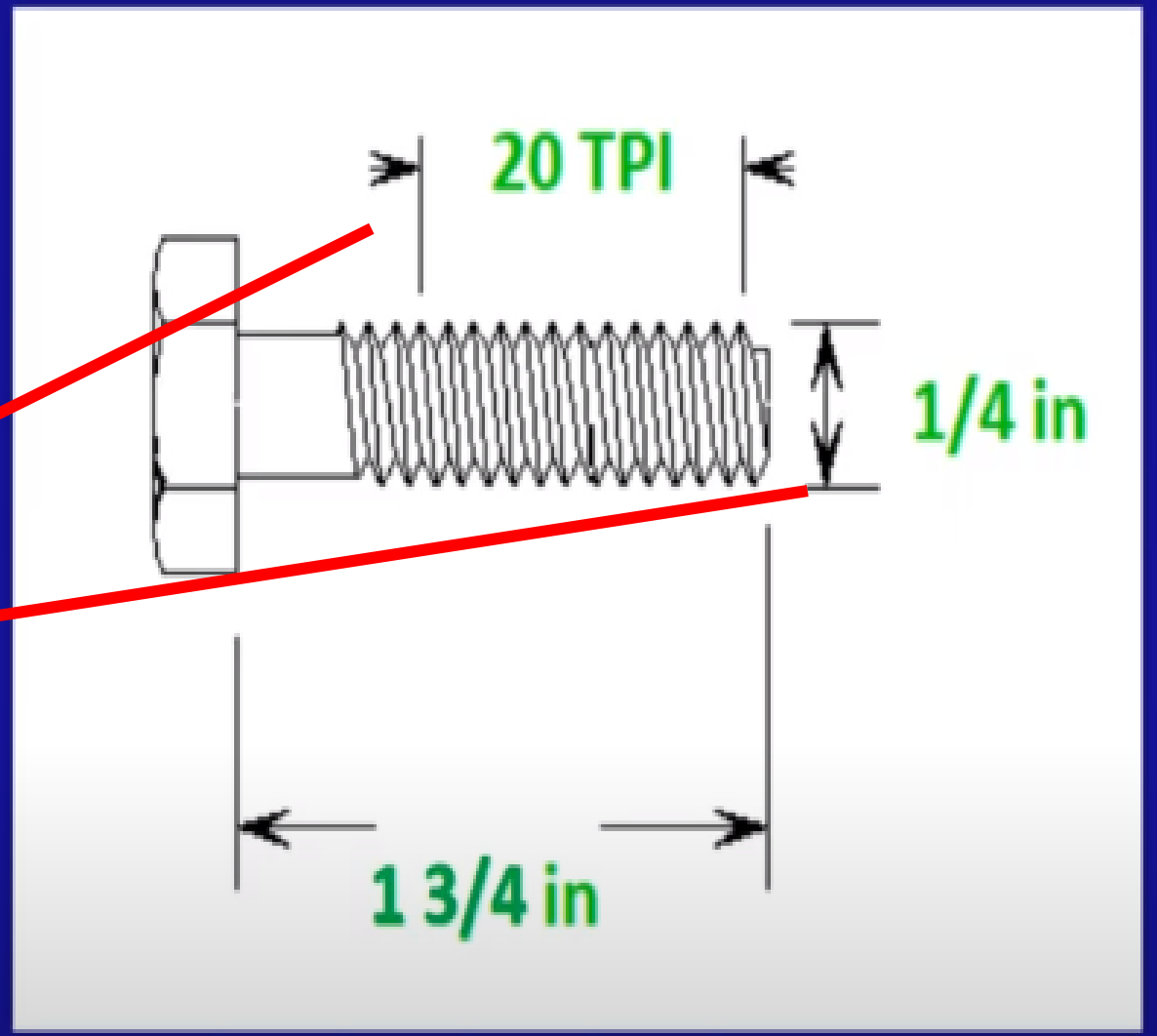
1/4 _____ x _____ x _____



Standard Bolt Size

- Diameter
- Pitch
- Length
- Dia. x TPI x Length

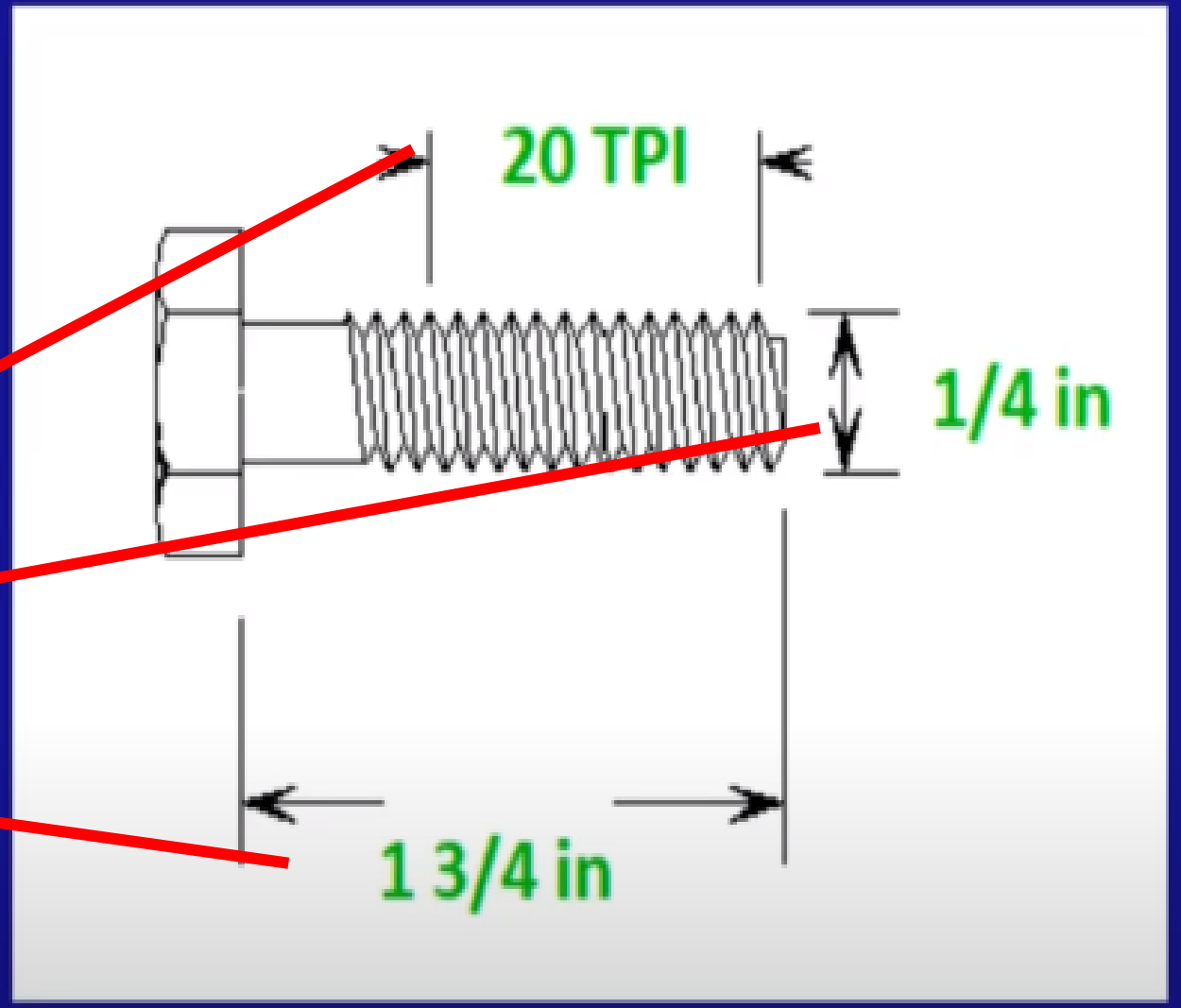
1/4 x 20 x _____



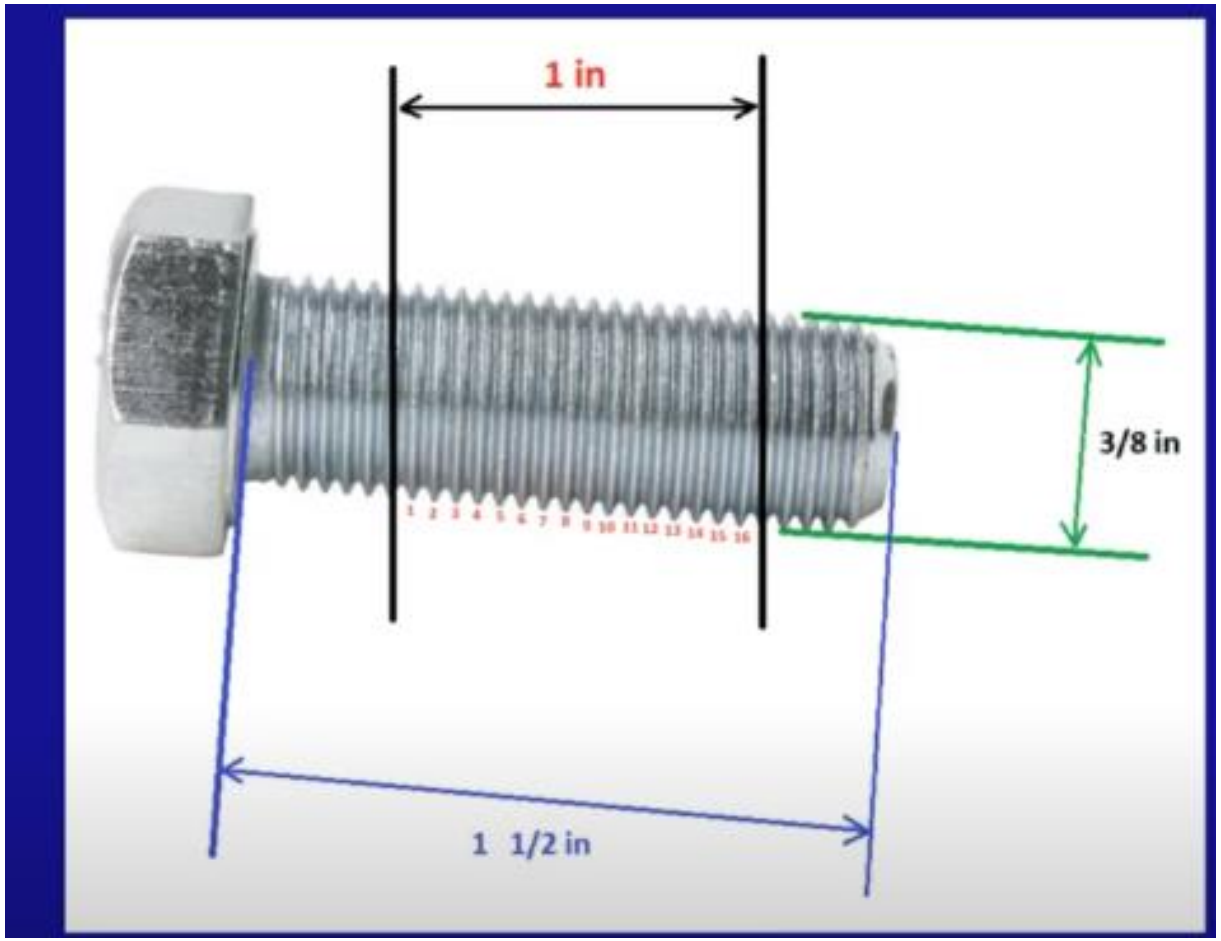
Standard Bolt Size

- Diameter
- Pitch
- Length
- Dia. x TPI x Length

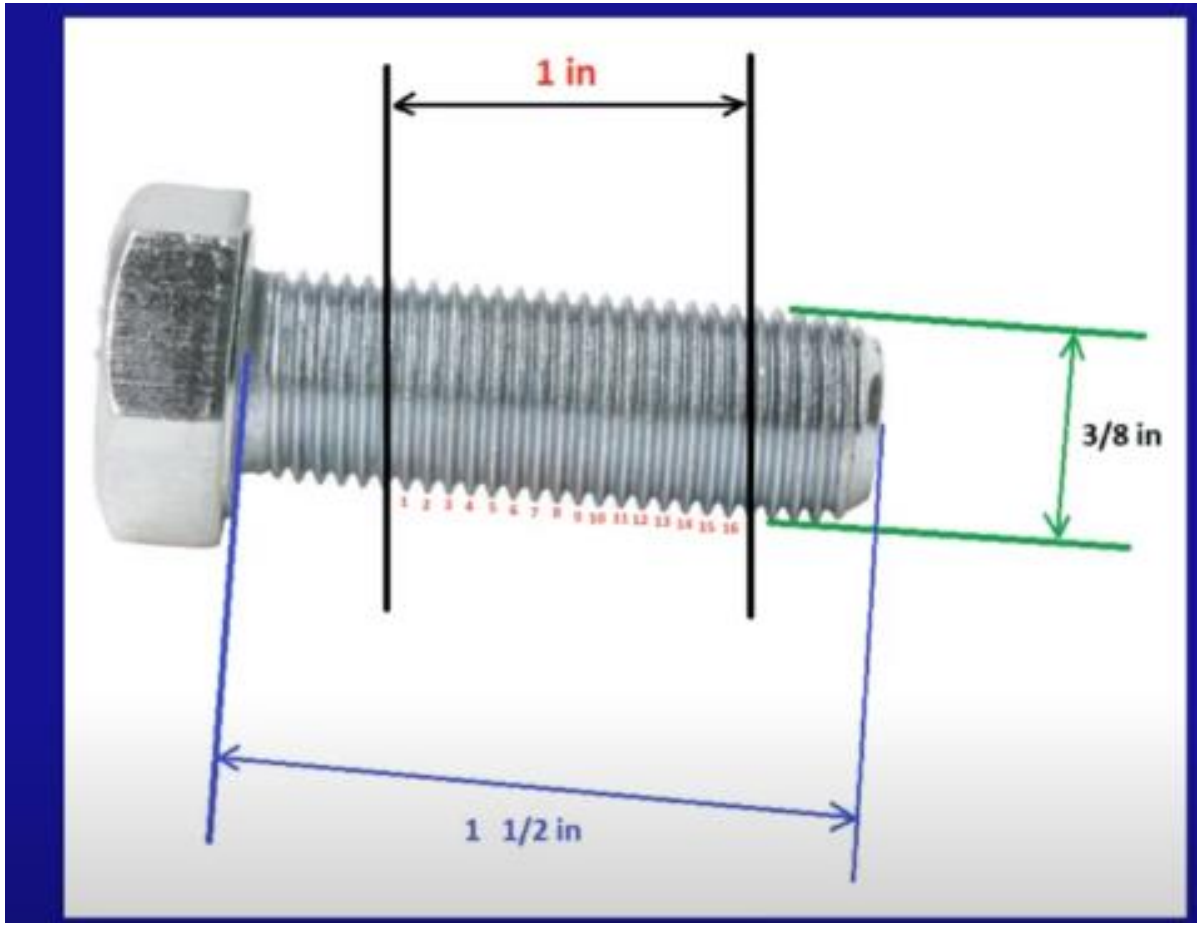
1/4 x 20 x 1 3/4



What size is this bolt?

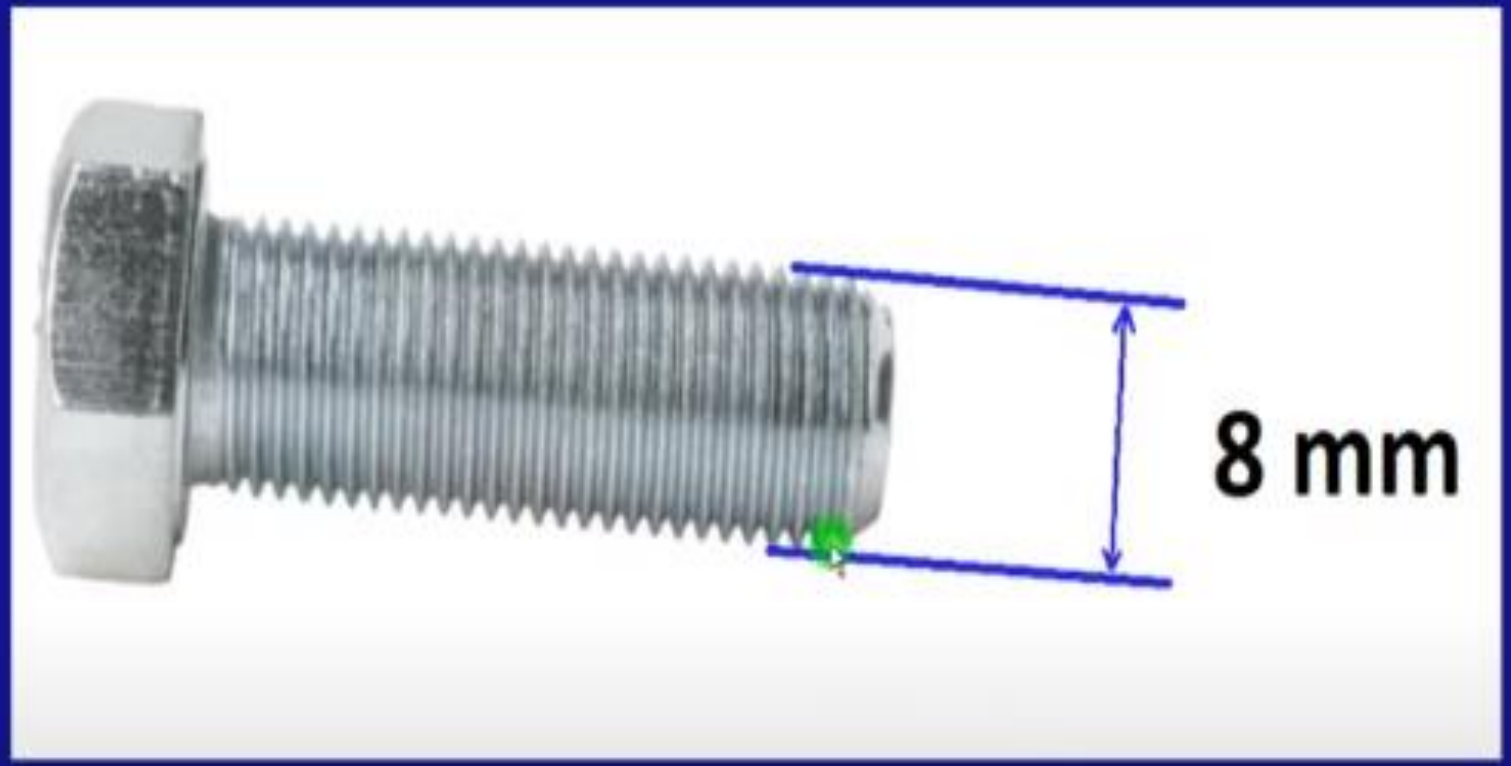


Remember it’s Dia x TPI x length



3/8x16x1 ½

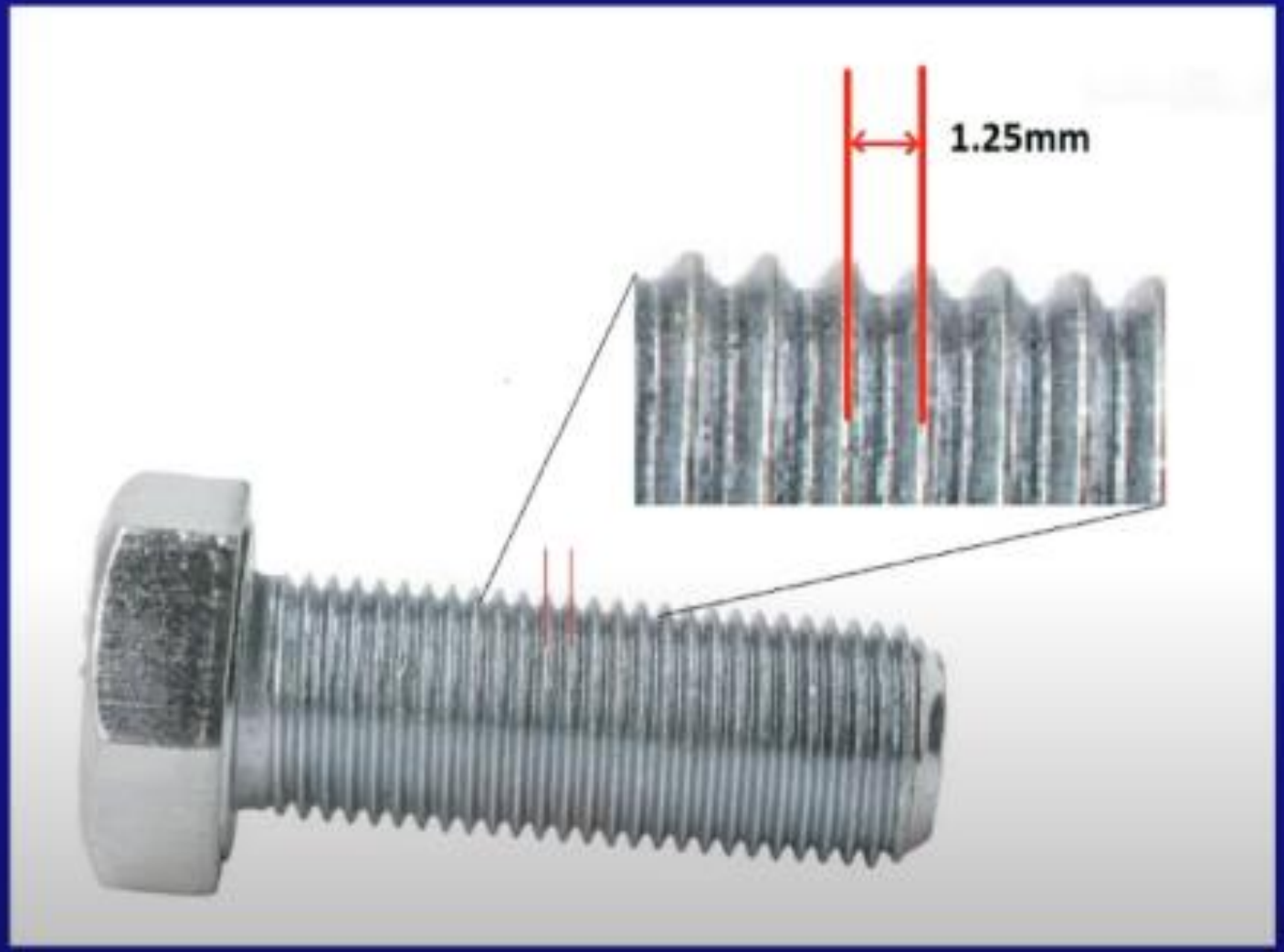
METRIC



Diameter (Metric)

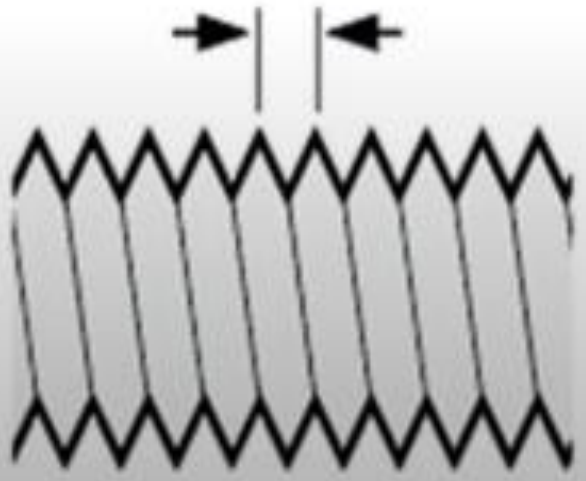
- Distance between outside of threads.
- Measured in millimeters.

METRIC



Thread Pitch (Metric)

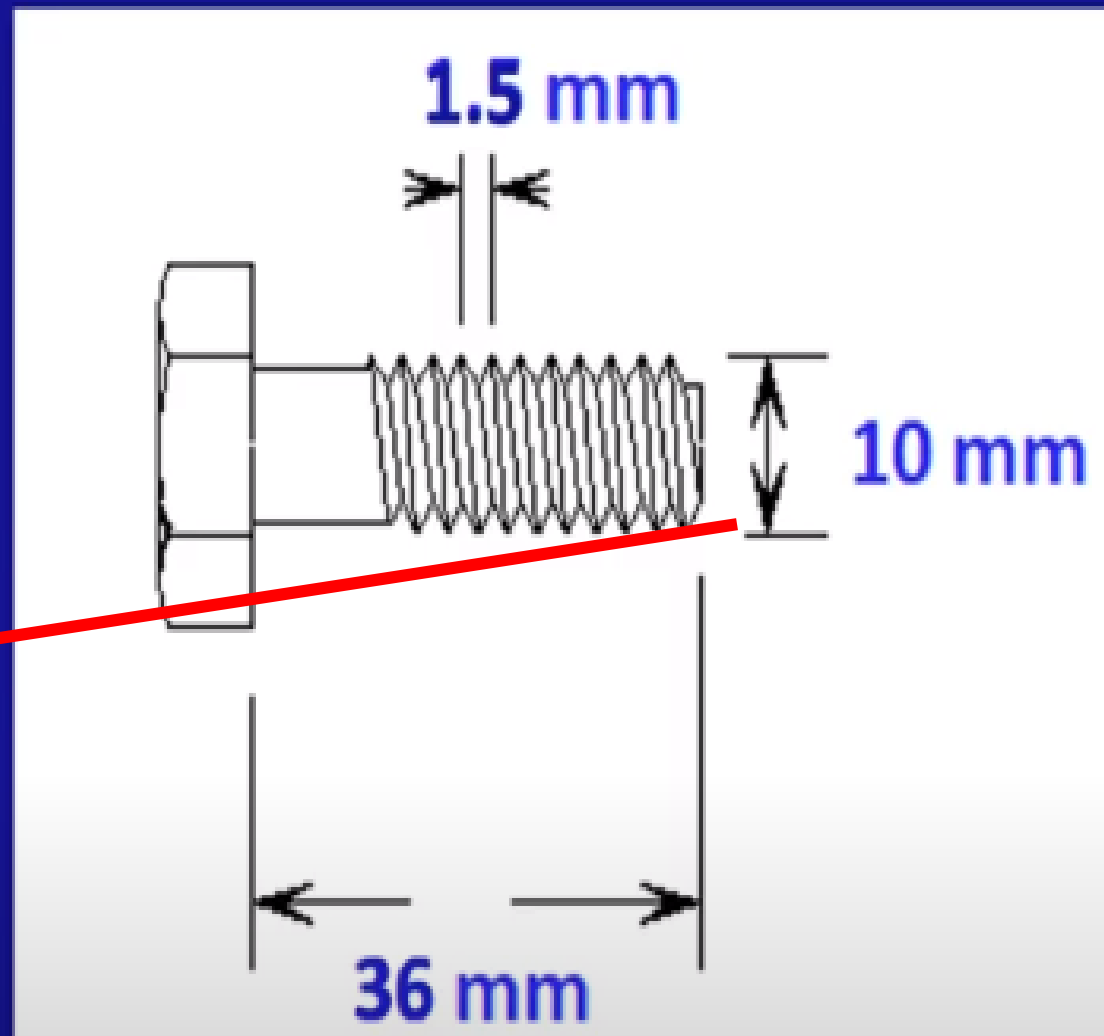
- Distance between threads.
- Measured in millimeters.



Metric Bolt Size

- Diameter
- Pitch
- Length
- Dia. x Pitch x Length

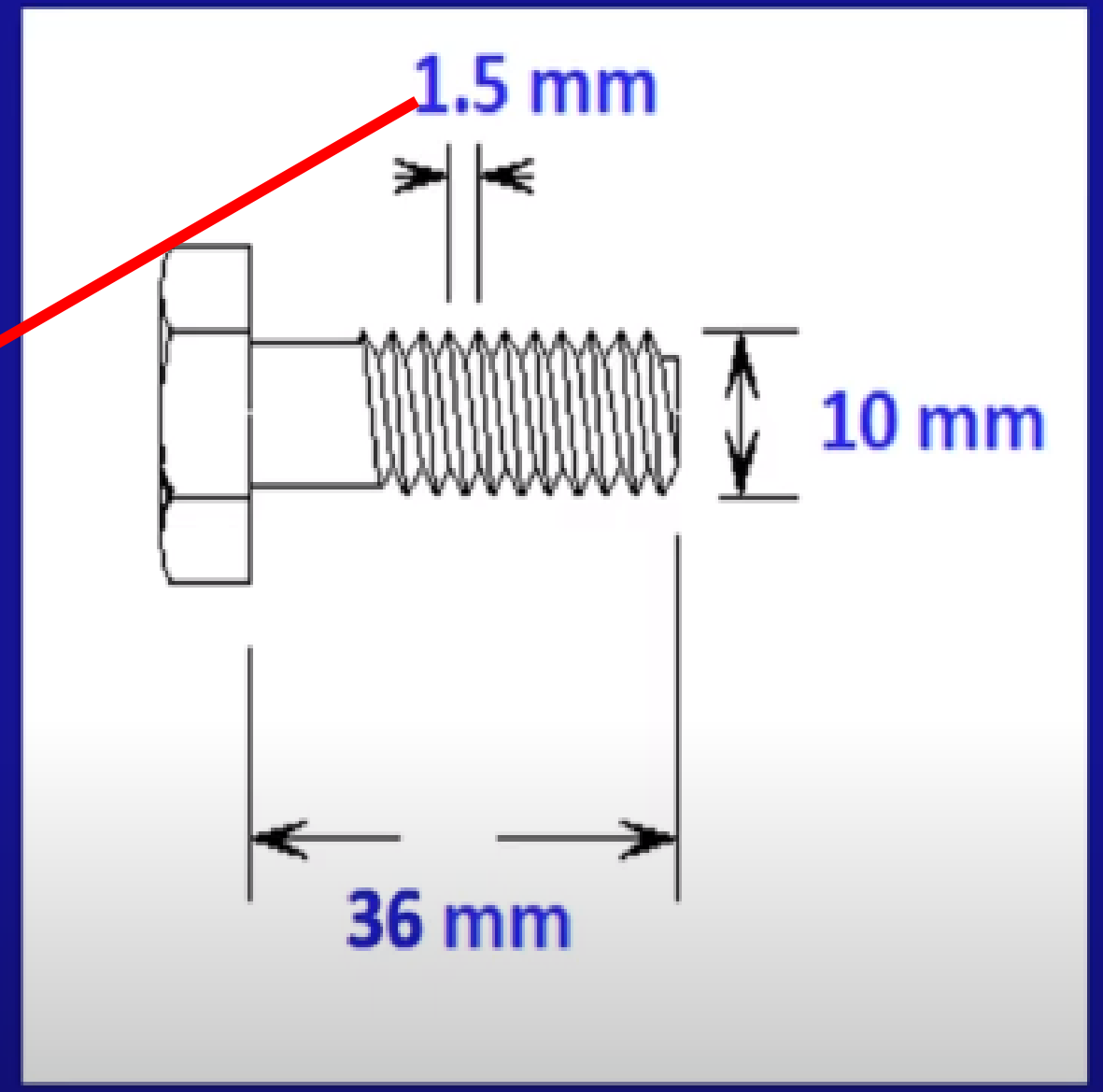
10 ____ x ____ x ____



Metric Bolt Size

- Diameter
- Pitch
- Length
- Dia. x Pitch x Length

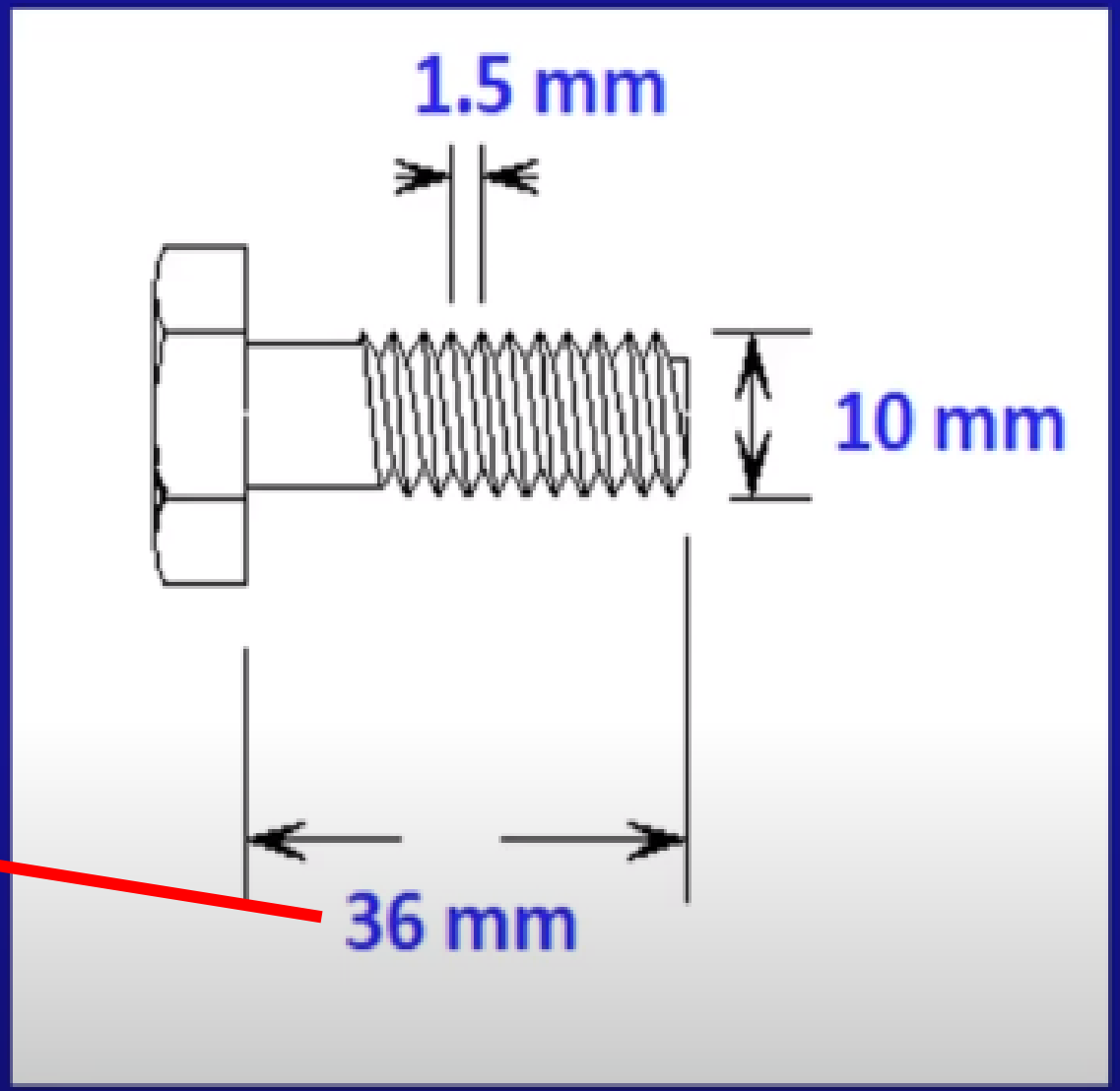
10 x 1.5 x ____



Metric Bolt Size

- Diameter
- Pitch
- Length
- Dia. x Pitch x Length

10 x 1.5 x 36

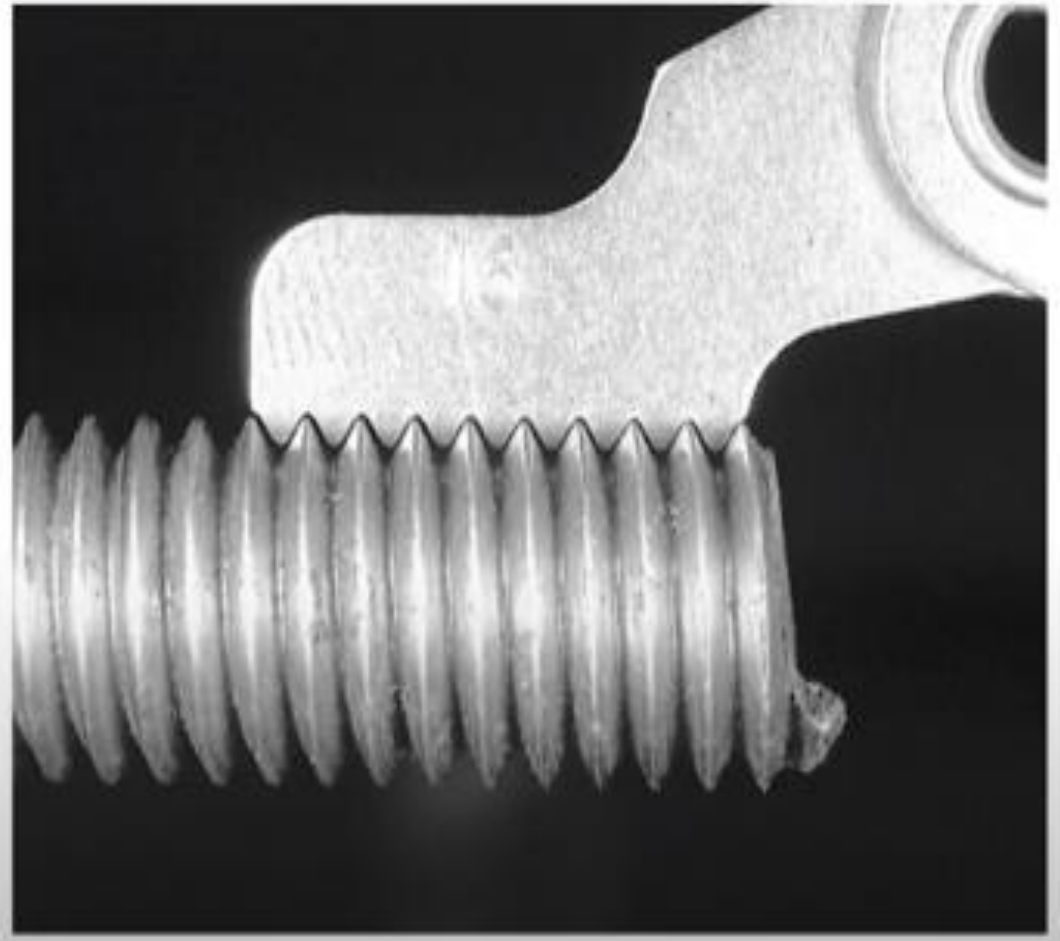


Thread Pitch Gauge

- Sample thread pitches
- Metric and Standard sizes

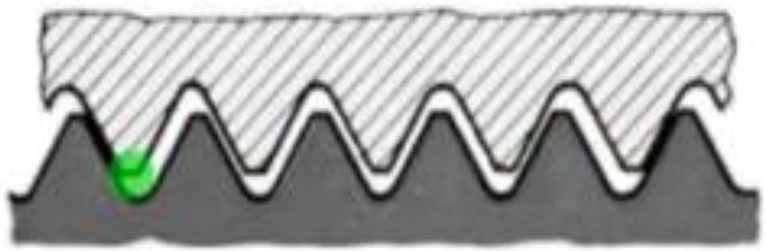
Metric Thread Gauge

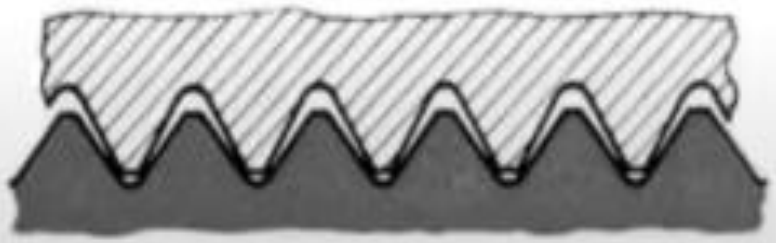
Using the Gauge



Carefull

- Some Metric and Standard pitches are really close.
- Hold it up to the light to make sure.

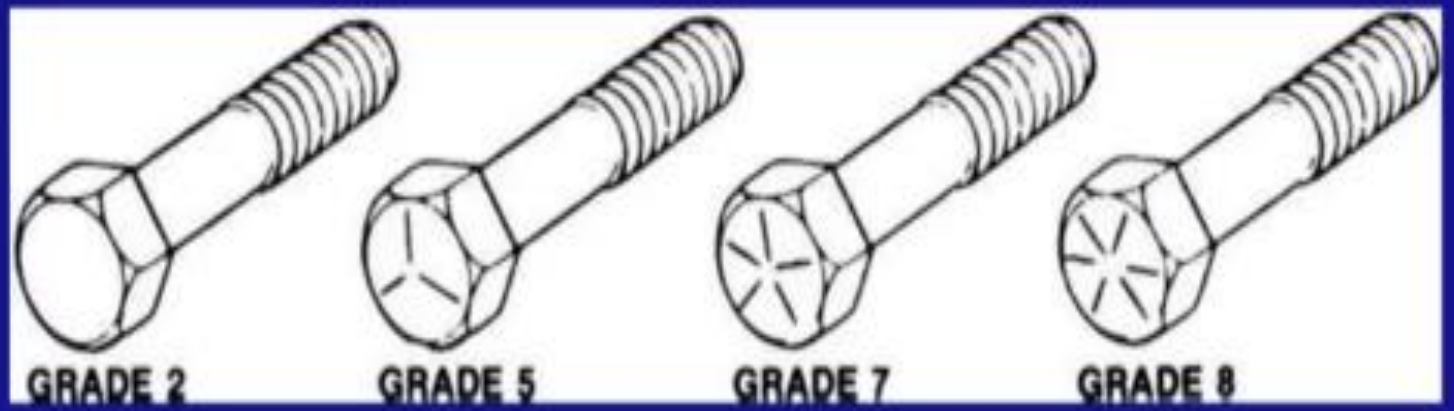




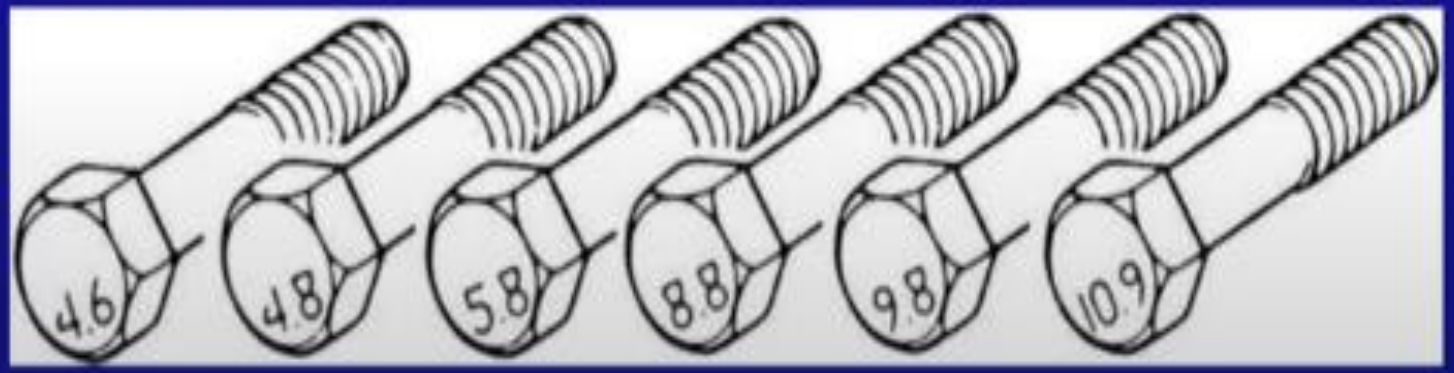
Bolt Head Markings

Head Markings

SAE



METRIC



- Identify Strength of Bolt
- Not required