Industrial Technology Virtual Learning

CTE

May 4th, 2020

Machine Technology 2

Measuring a Bolt 1
May 4th, 2020

Objective: 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

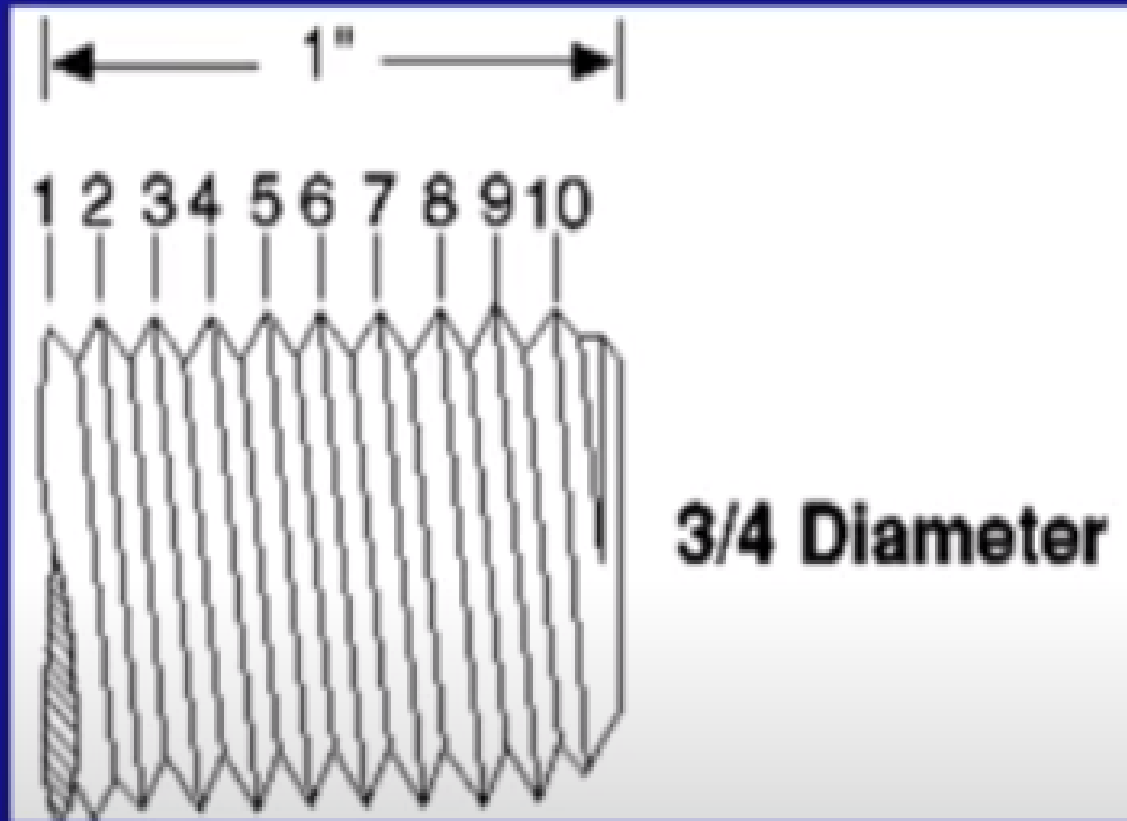# BOLT SIZE

Diameter x Thread Pitch x Length

SAE Bolt Size

1" — 1 2 3 4 5 6 7 8 9 10

3/4 Diameter

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

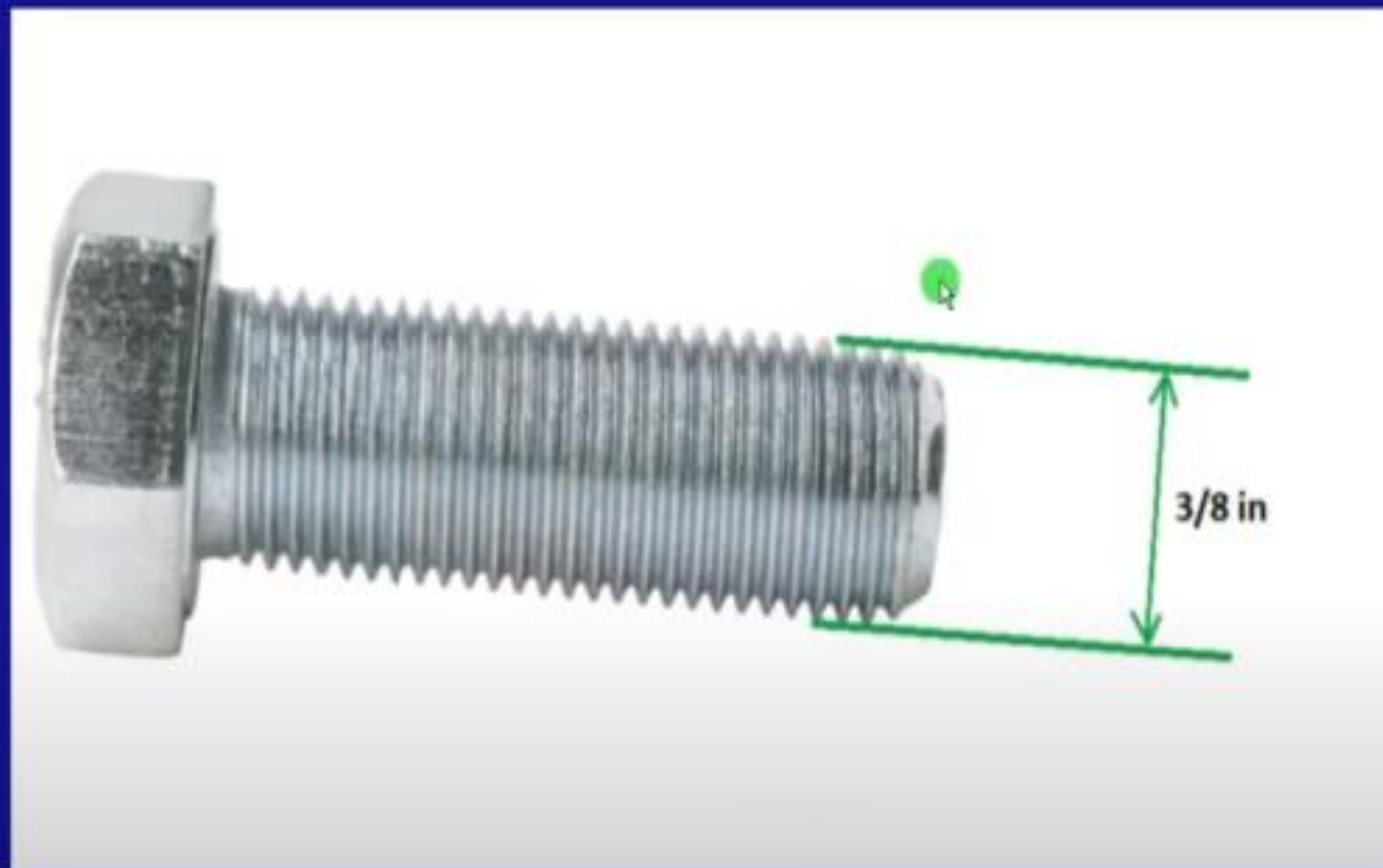Written as :
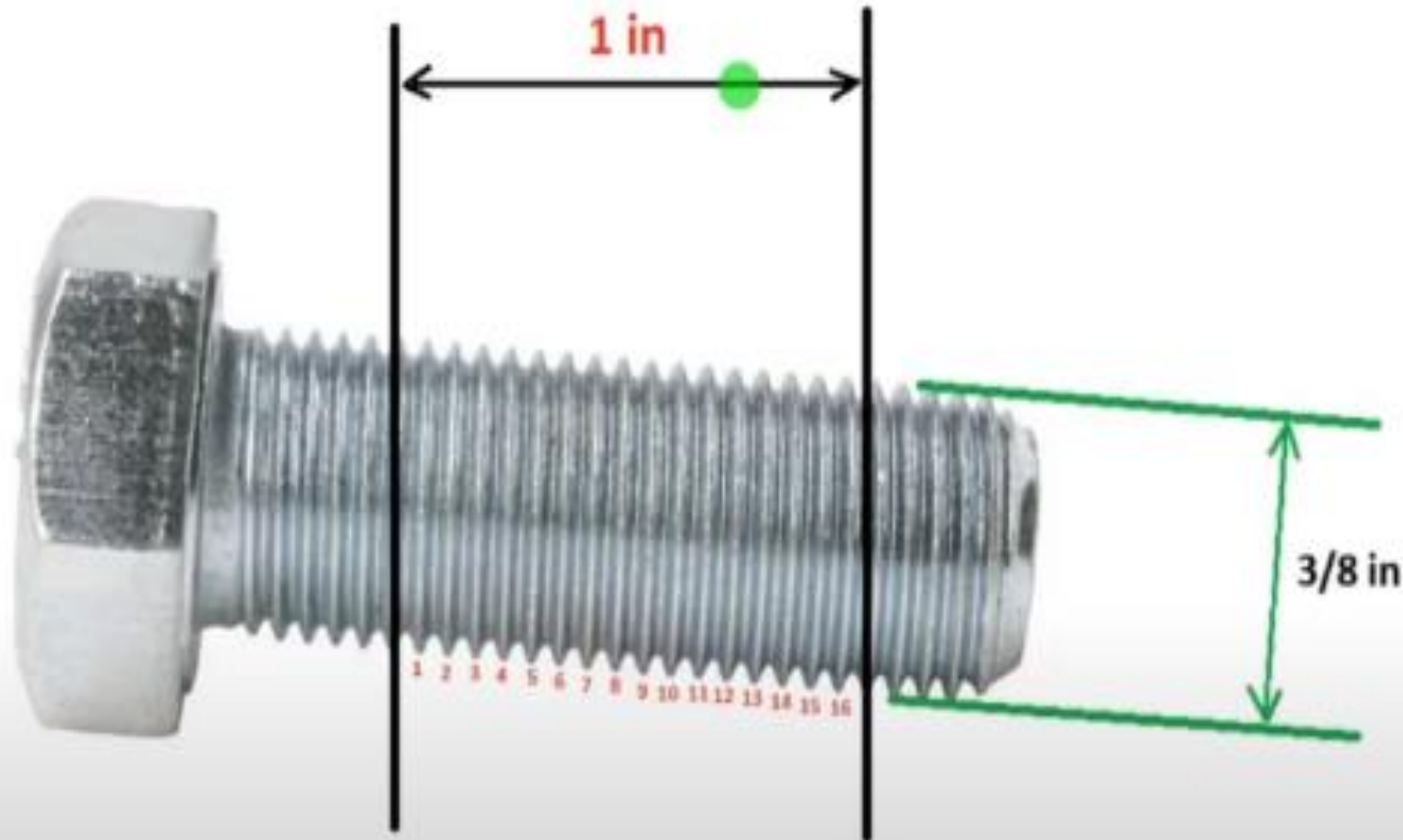
Diameter x Pitch x Length

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

Diameter

3/8 in

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

STANDARD

1 in

3/8 in

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
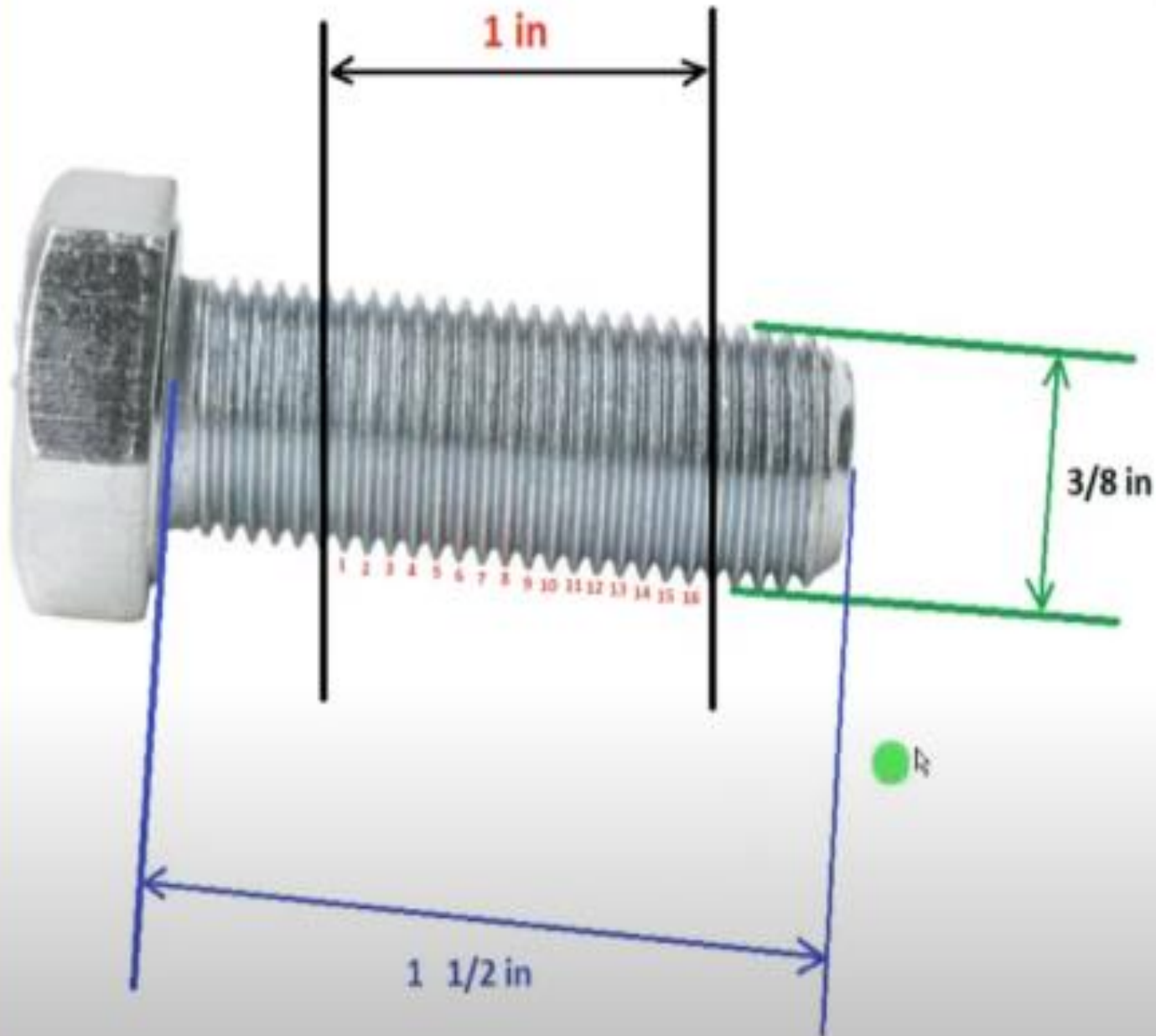
Thread Pitch

- TPI (threads per inch)

- Number of threads found in each inch of length.

- NC National Course

- NF National Fine

- BPT Pipe Thread

Length
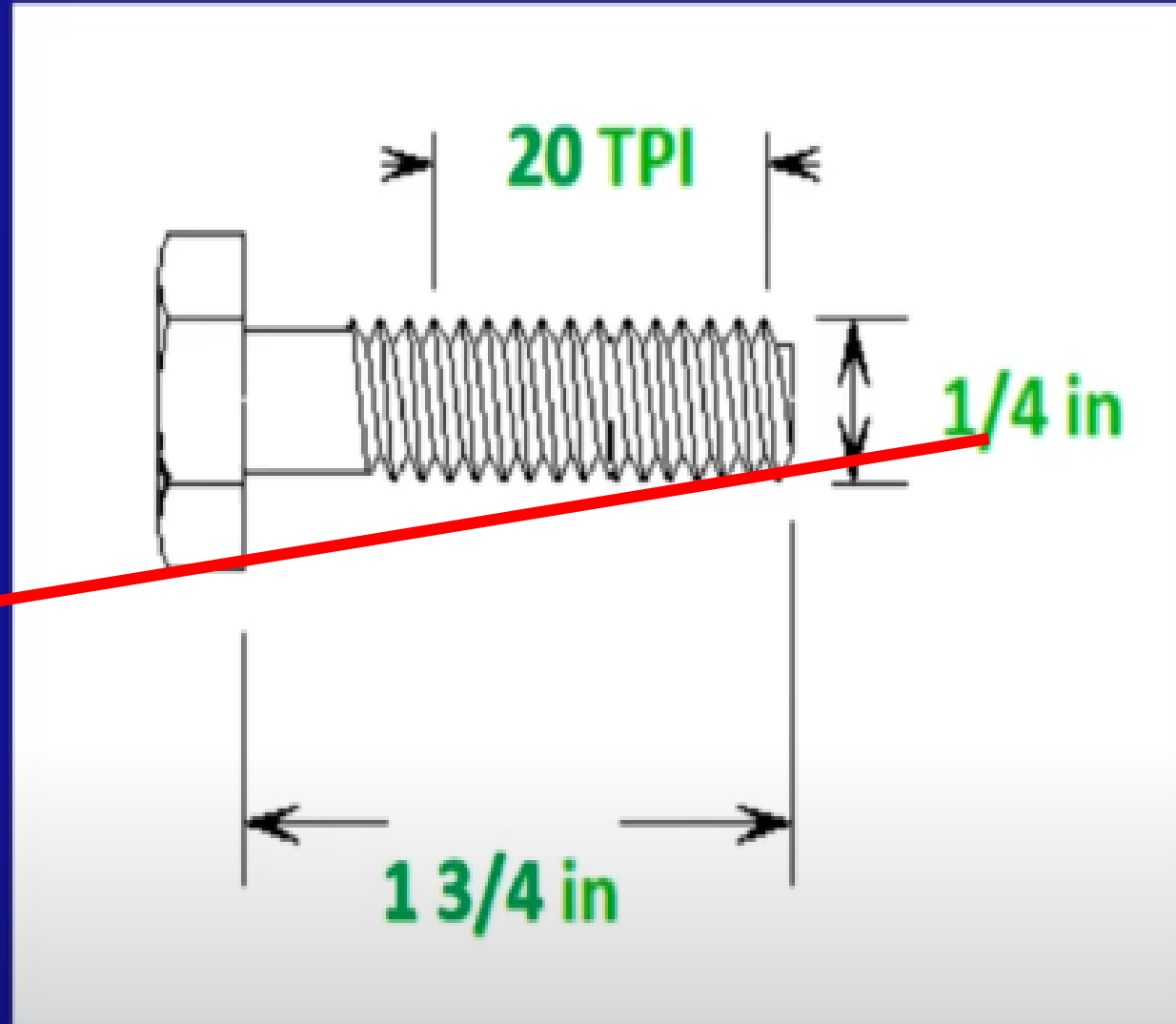
- How long the bolt is.

- **DOES NOT** count the head.

Standard Bolt Size
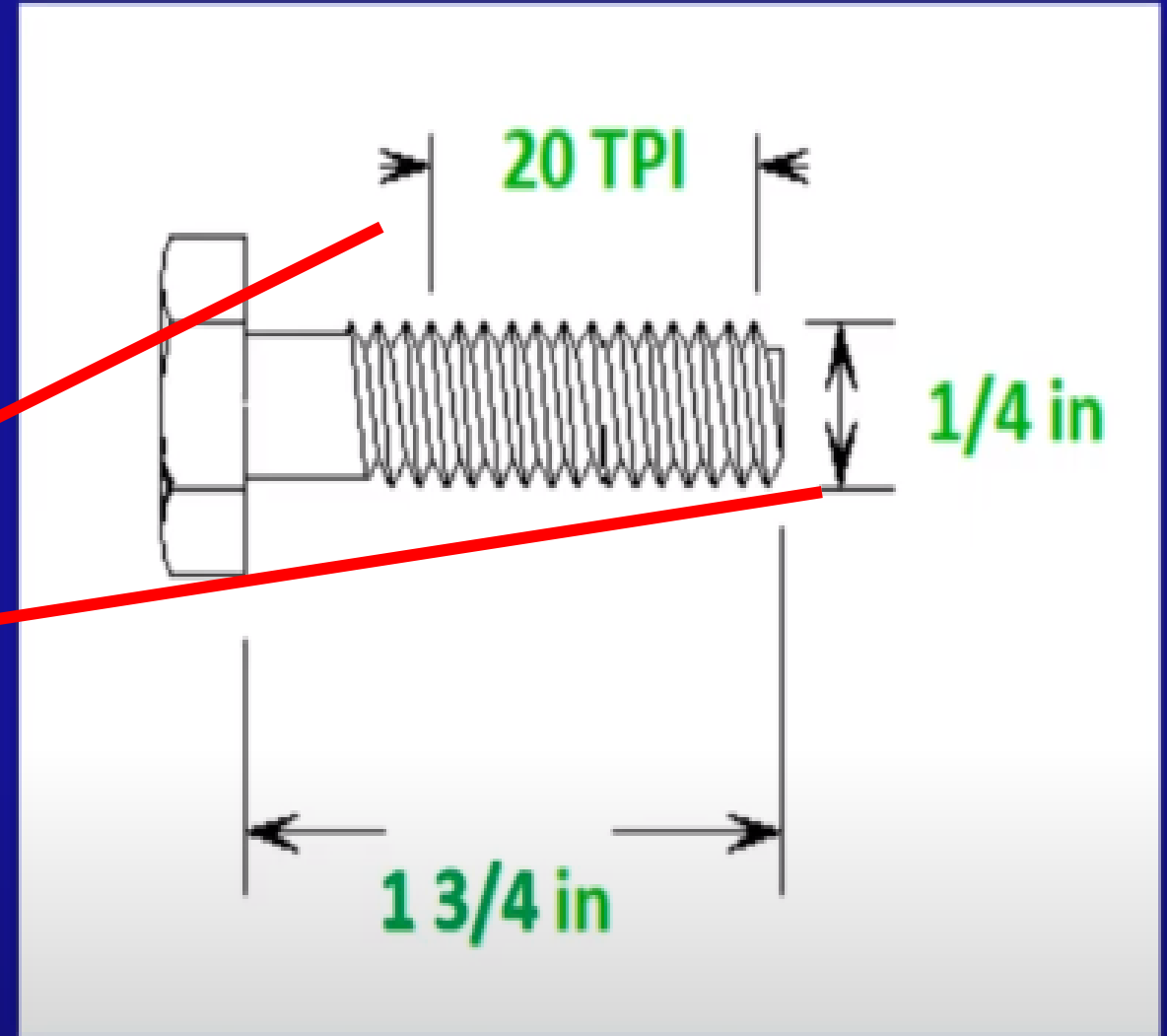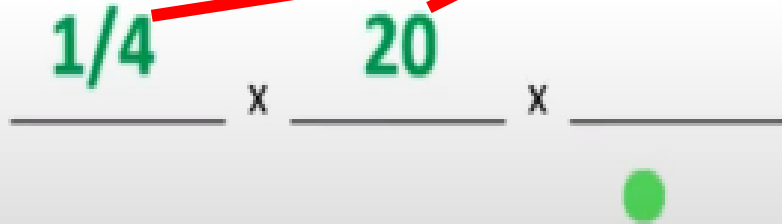
- Diameter
- Pitch
- Length
- Dia. x TPI x Length

1/4 _____ x _____ x _____

20 TPI

1/4 in

1 3/4 in

Standard Bolt Size

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

1/4   20

___ x ___ x ___

●

20 TPI

1/4 in

1 3/4 in

Standard Bolt Size

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

1/4 x 20 x 1 3/4

20 TPI

1/4 in

1 3/4 in
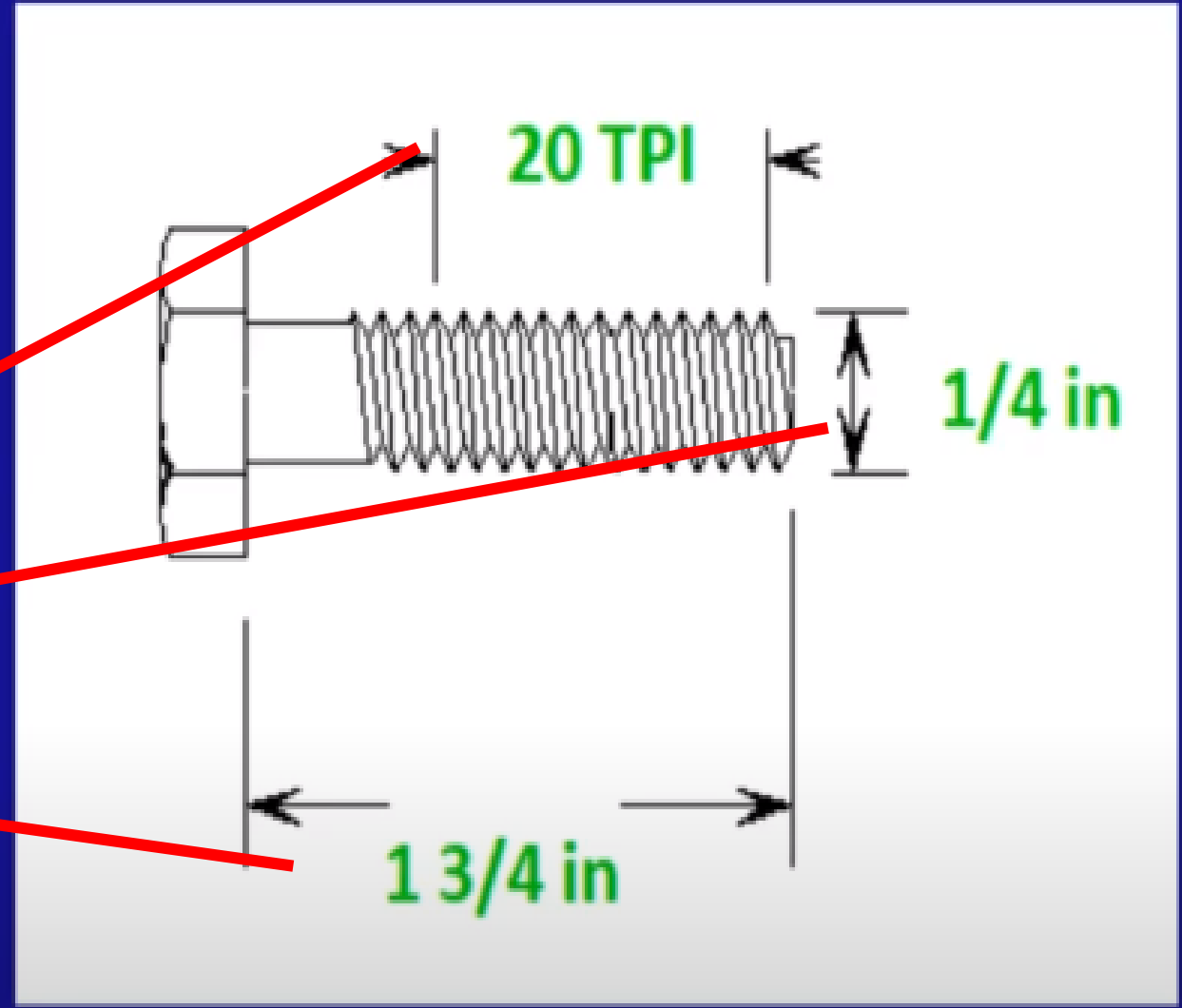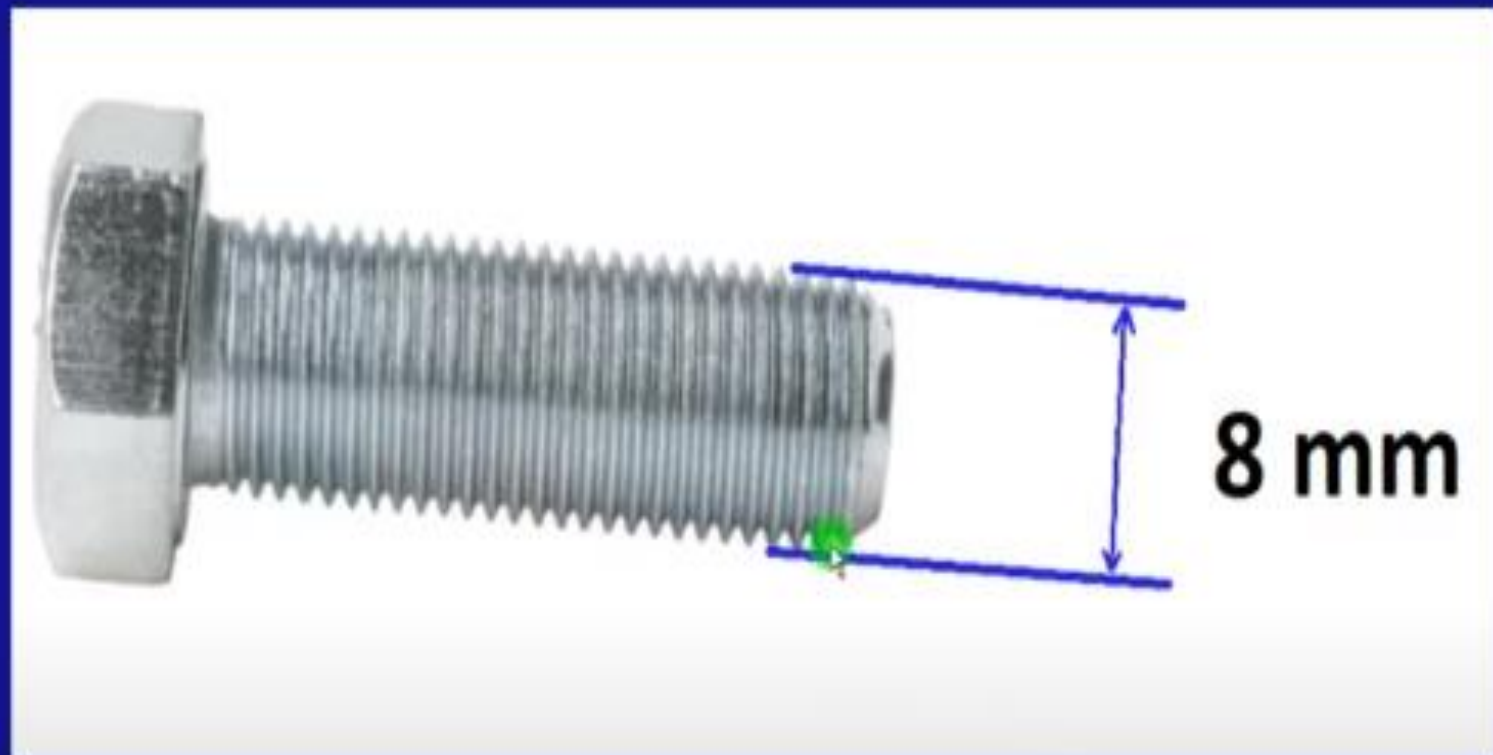
What size is this bolt?
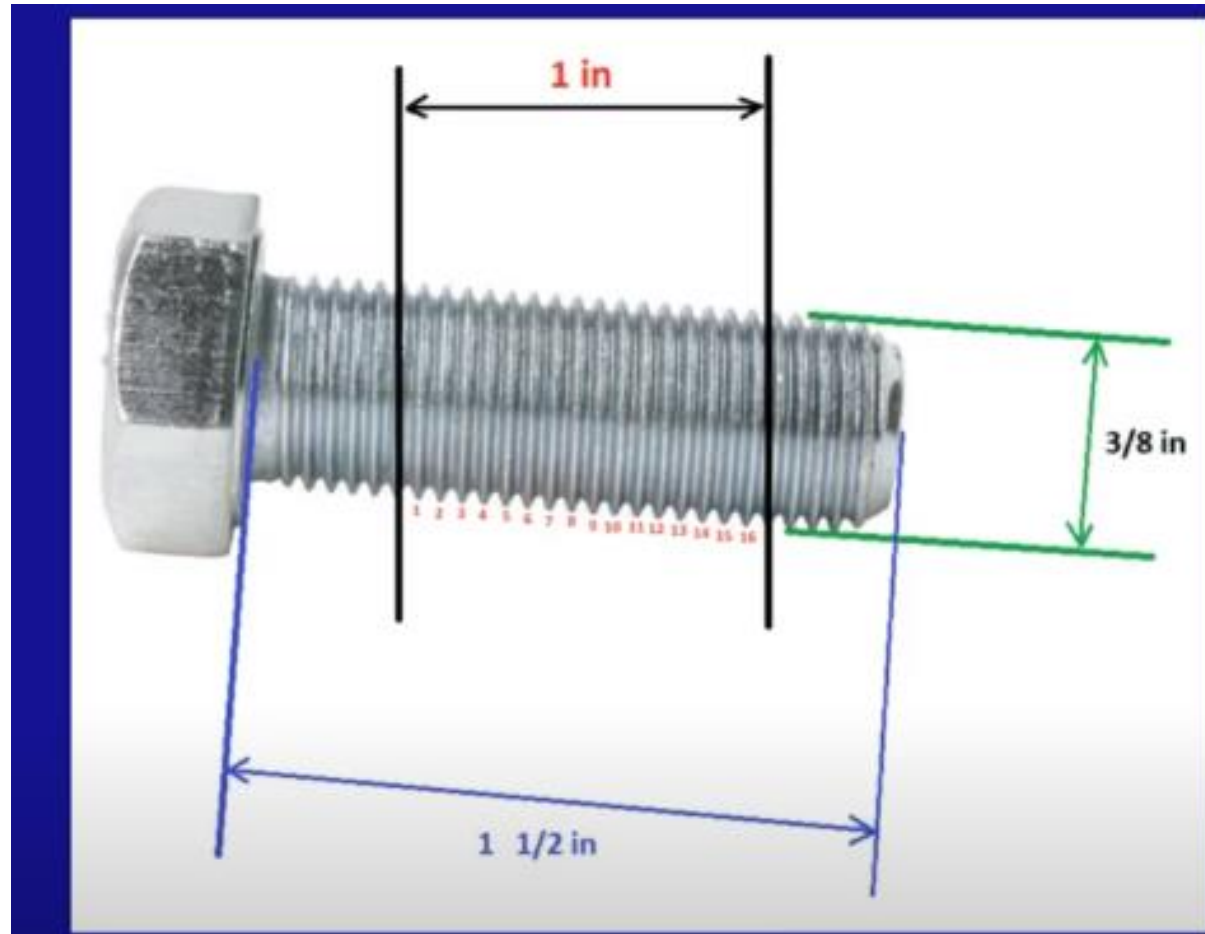
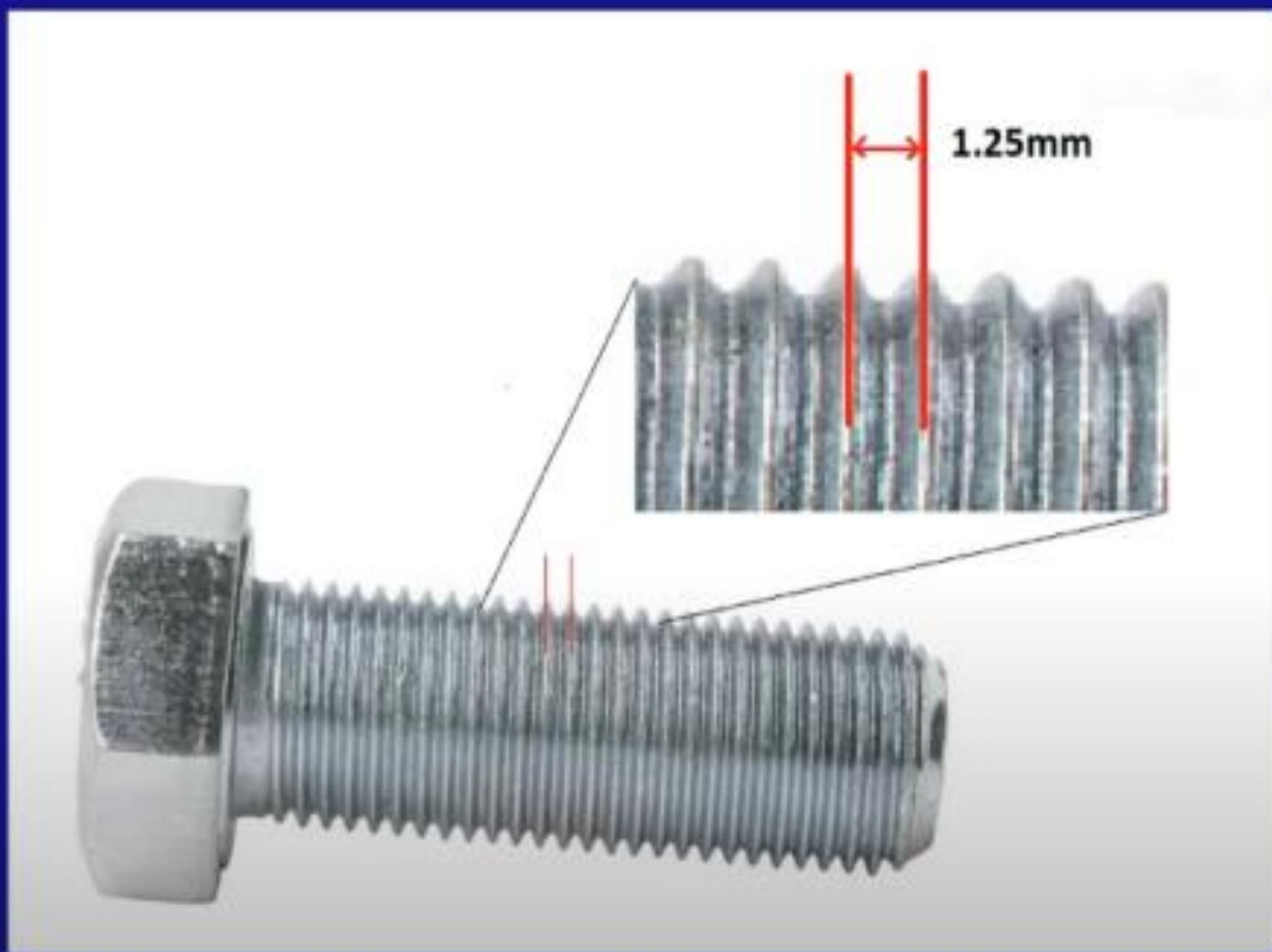# Remember it's Dia x TPI x length

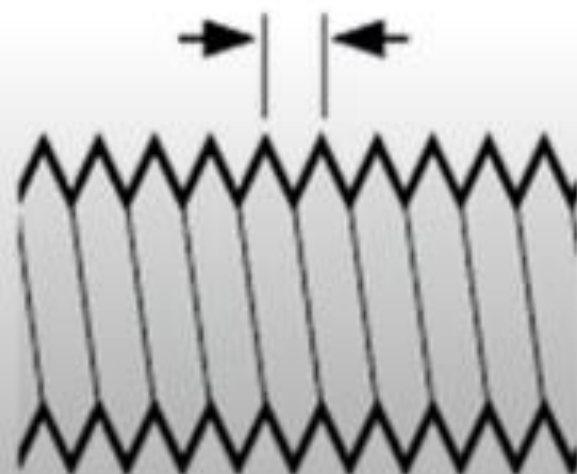3/8x16x1 ½

METRIC

8 mm
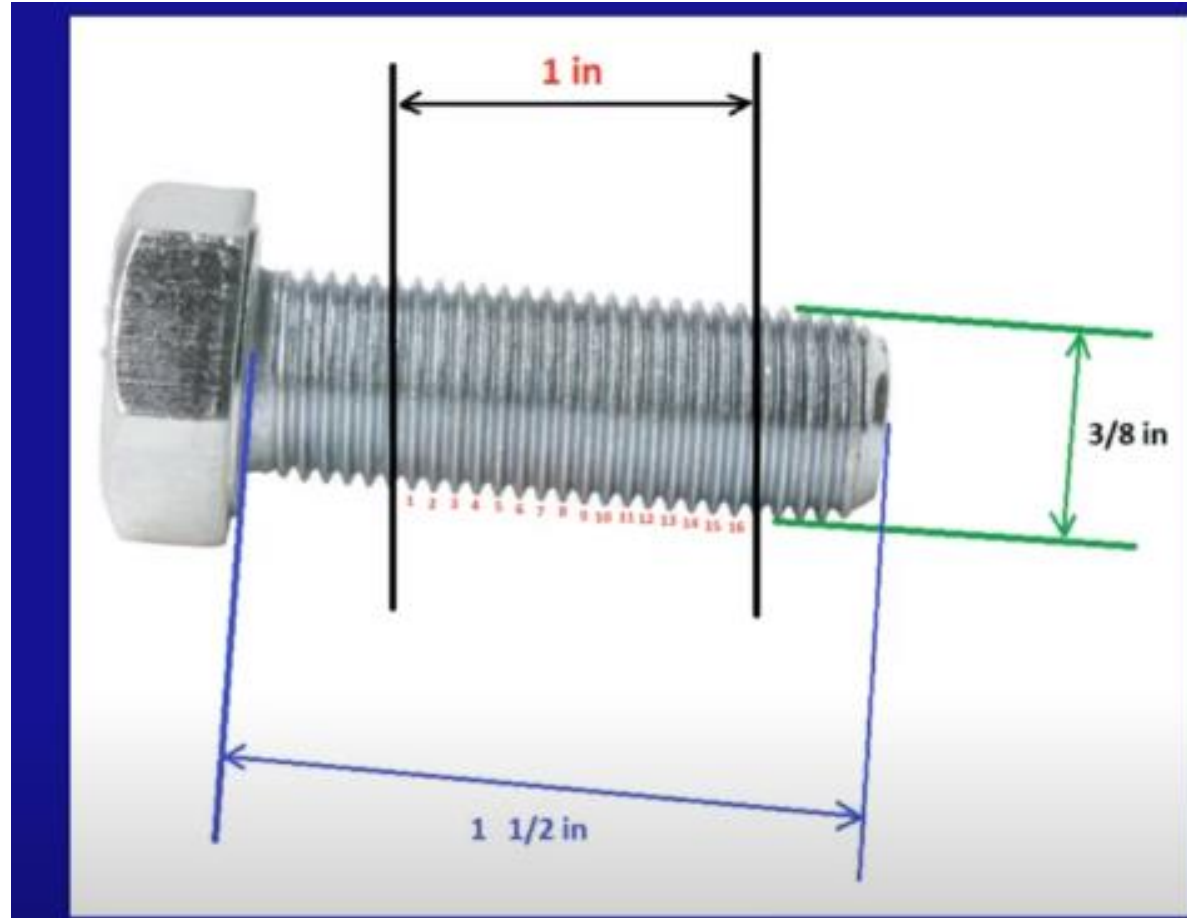
Diameter (Metric)

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

METRIC

1.25mm

Thread Pitch (Metric)

- Distance between threads.
- Measured in millimeters.

Metric Bolt Size

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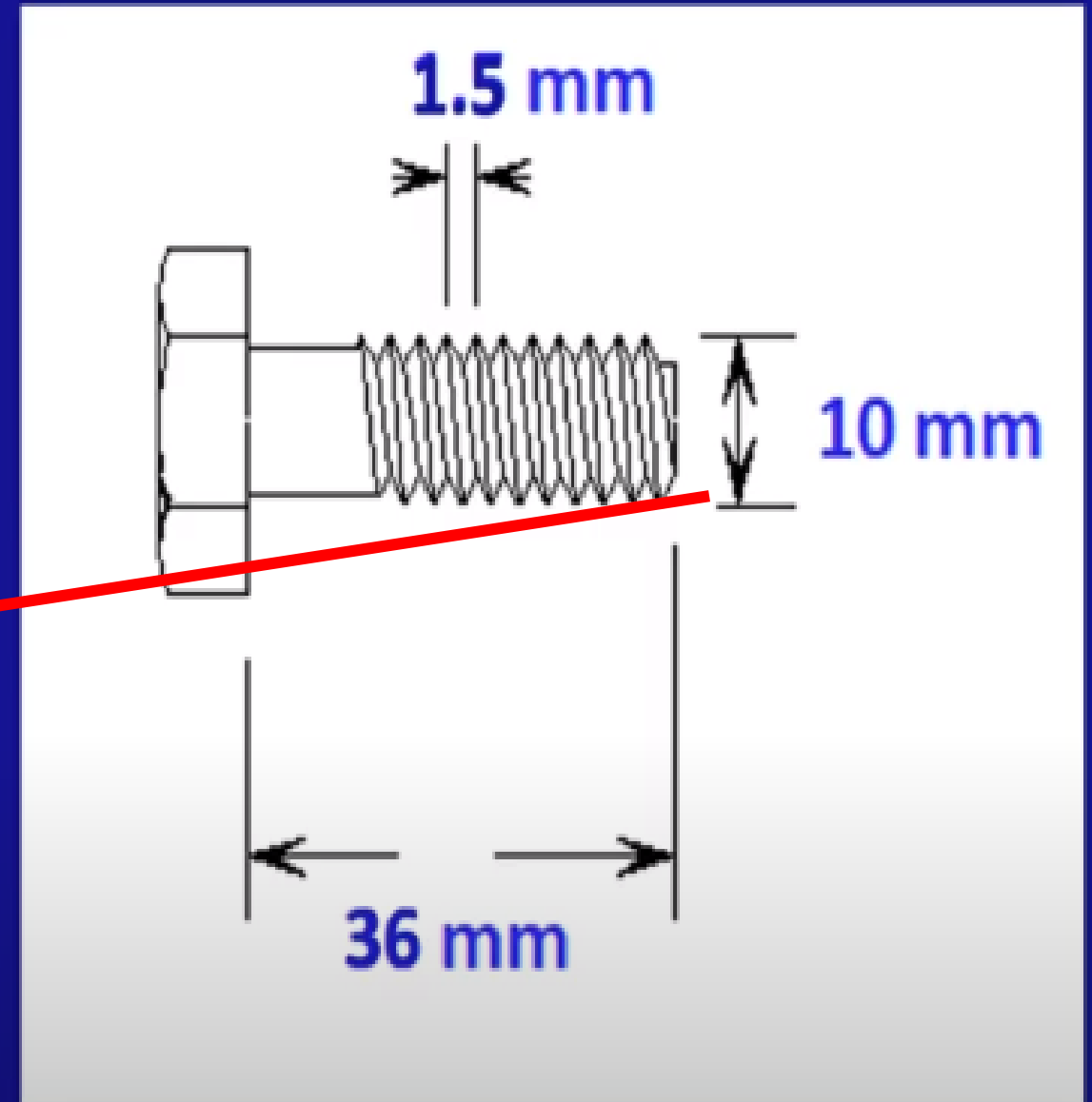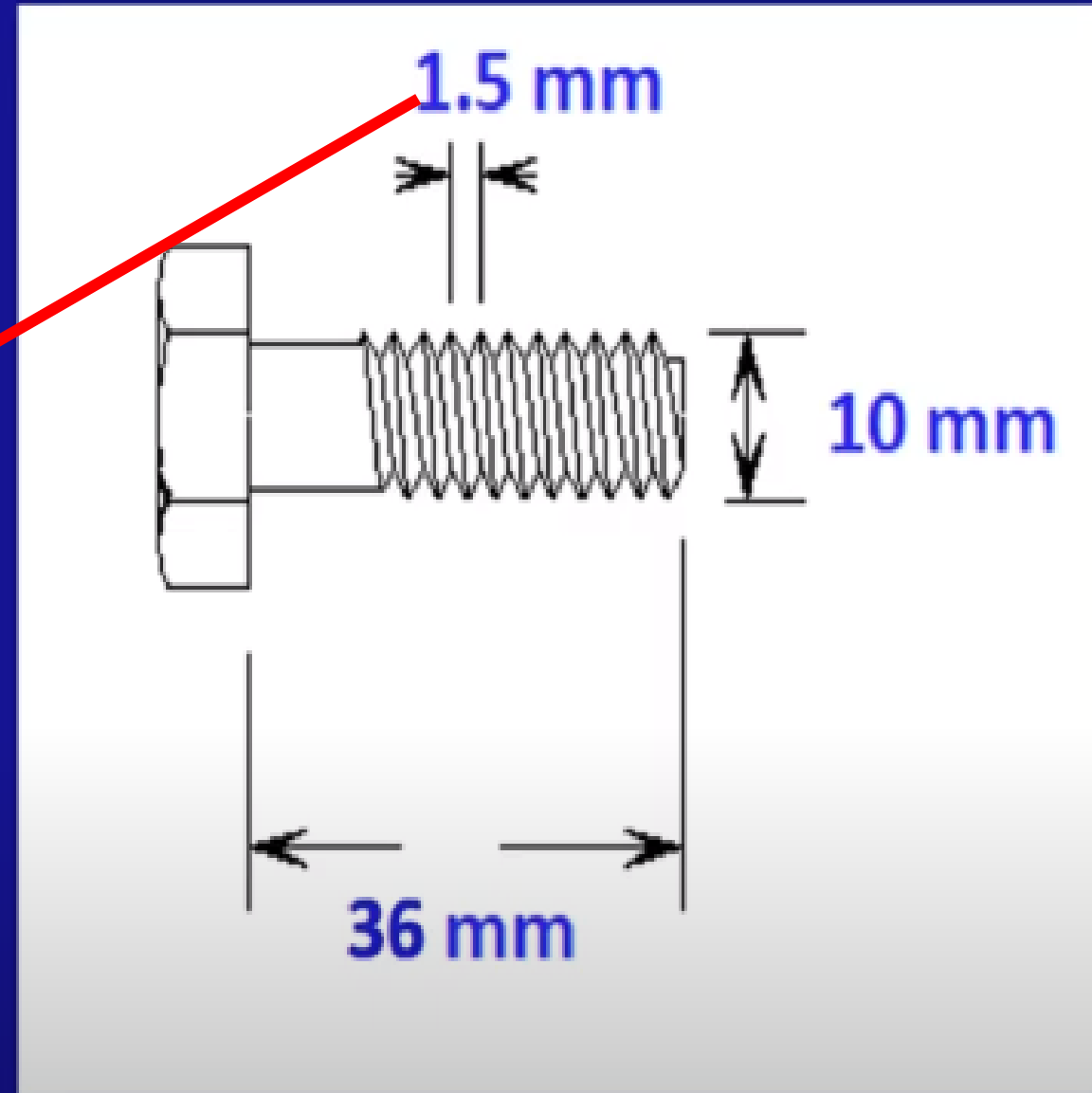- Dia. x Pitch x Length

10 ___ x ___ x ___

Metric Bolt Size
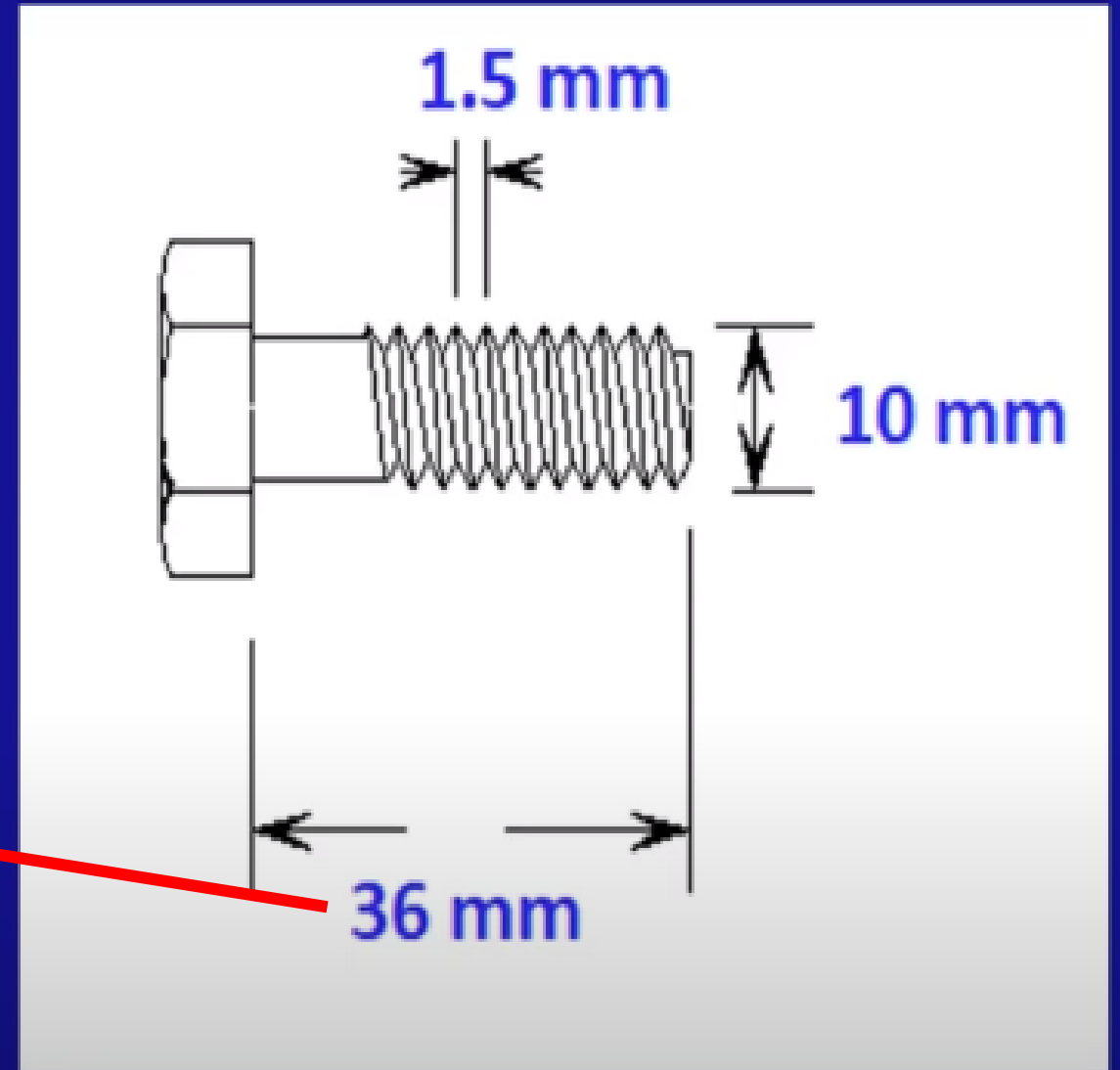
- Diameter
- Pitch
- Length
- Dia. x Pitch x Length

10 x 1.5 x

Metric Bolt Size

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

10 x 1.5 x 36

1.5 mm

10 mm
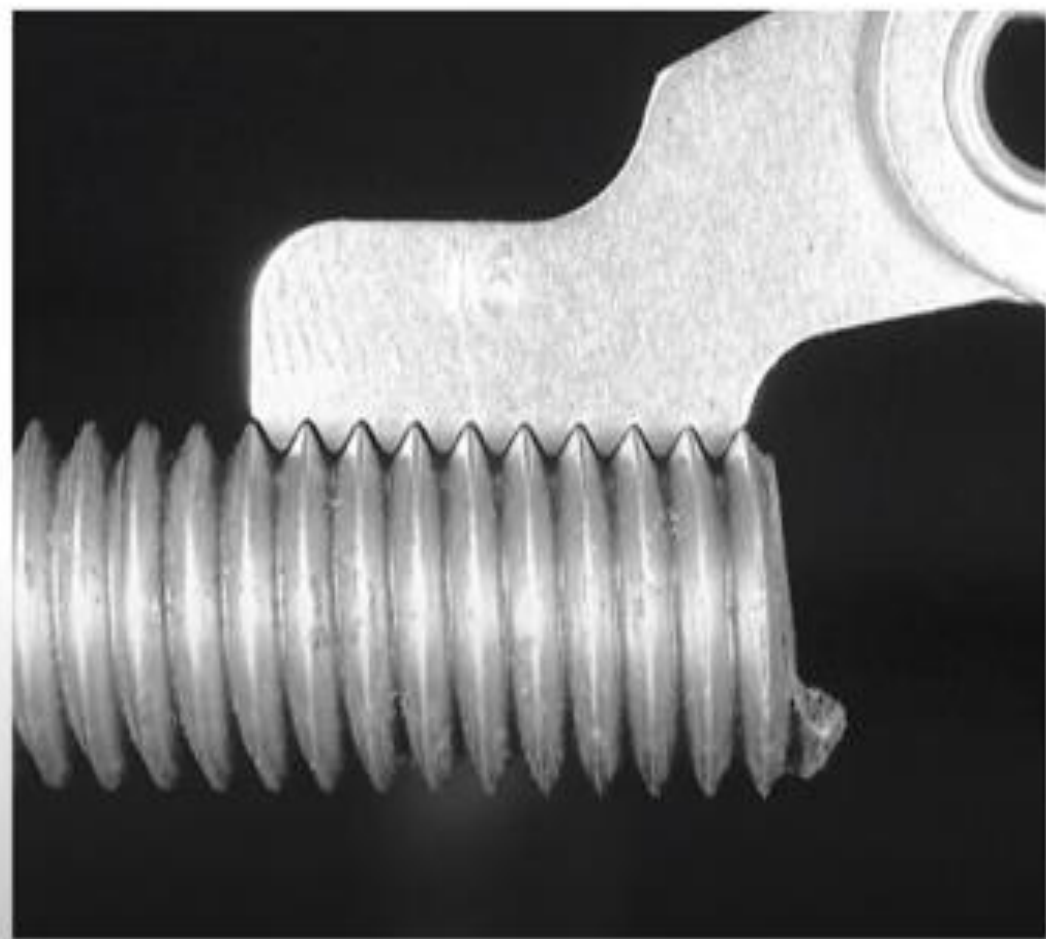
36 mm

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.