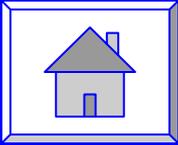


Micrometers

Learning to Read a Micrometer –
Quickly, Efficiently and
Accurately

Click [Here](#) for Answer Sheet



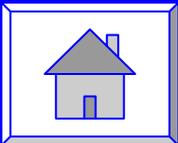
Automotive Measuring

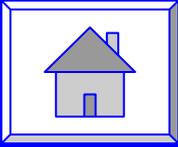
The two measuring systems used in the Automotive Repair Industry are:

- The U.S. Customary Units System (Standard)
- The Metric System

Some of the Measuring Tools Used in Automotive Repair

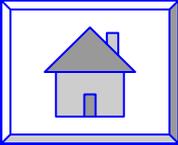
- Steel Rule
- Dividers
- Calipers
- Micrometer
- Feeler Gauges
- Dial Indicators
- Temperature gauges/Thermometers
- Torque Wrenches
- Tape Measure
- Tire gauge
- Pressure Gauges
- Vacuum Gauge





Some of the Values Measured

- Length: Inches (in), foot (ft), millimeter (mm)
- Pressure: Pounds per square inch (psi)
- Power: Horsepower (hp)
- Torque: Foot-pound (ft-lb), Newton-meter (N-m)
- Volume: Quart (qt), liter (L)
- Mass: Ounce (oz), pound (lb), gram (g)
- Speed: Miles (kilometers) per hour (mph/kph)
- Temperature: Degrees Fahrenheit/Celsius



The Micrometer

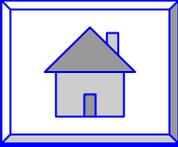


- Used to make very accurate measurements
- Can measure up to one-thousandth of an inch (0.001)

There Are Several Types of Micrometers

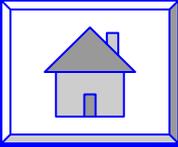
- Outside: For outside dimensions
- Inside: For internal measurements
- Depth: Measure the depth of an opening
- Telescoping: Measure internal bores
- Hole: Measuring very small holes





Micrometer Rules

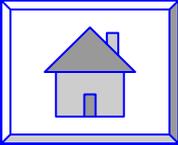
- Never drop or overtighten a micrometer
- Safely store where they cannot be damaged
- Grasp the micrometer frame in your palm and turn the thimble with your thumb and finger
- Hold the mic squarely with the work or false readings will result
- Always check the accuracy of a mic with a gauge block if it has been dropped or not used for a long time



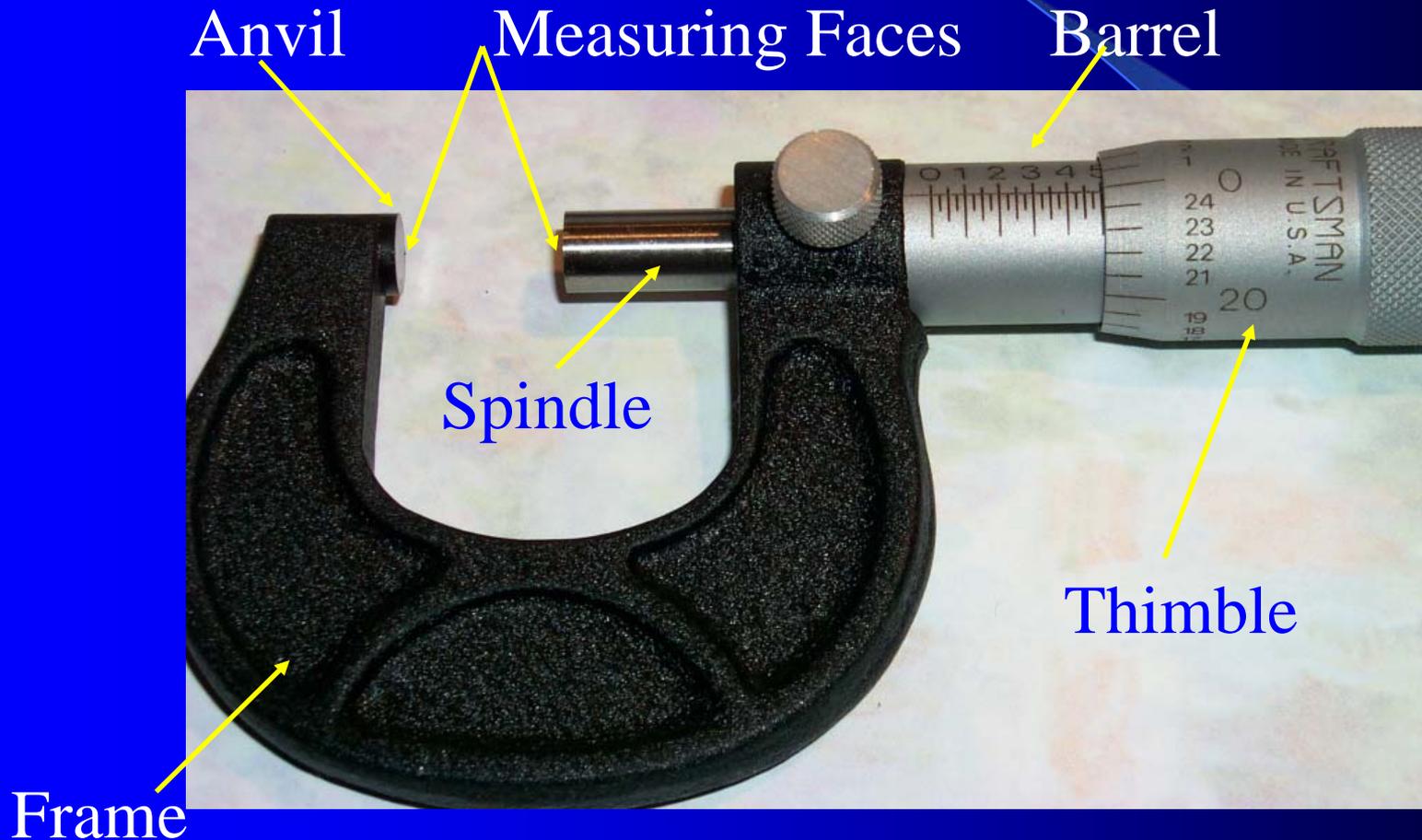
Holding a Micrometer Securely

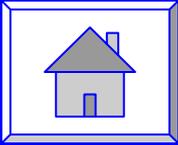
Grasp the micrometer frame in your palm and turn the thimble with your thumb and finger.





The Parts of a Micrometer





To read a Micrometer...

- First, read the **Barrel Number**
- Second, read the **Sleeve Graduations**
- Finally, read the **Thimble Number**
- Add these **Three Readings** together to obtain the correct reading
- To best way to practice using a micrometer is to measure the thickness of a feeler gauge blade



Reading a Micrometer

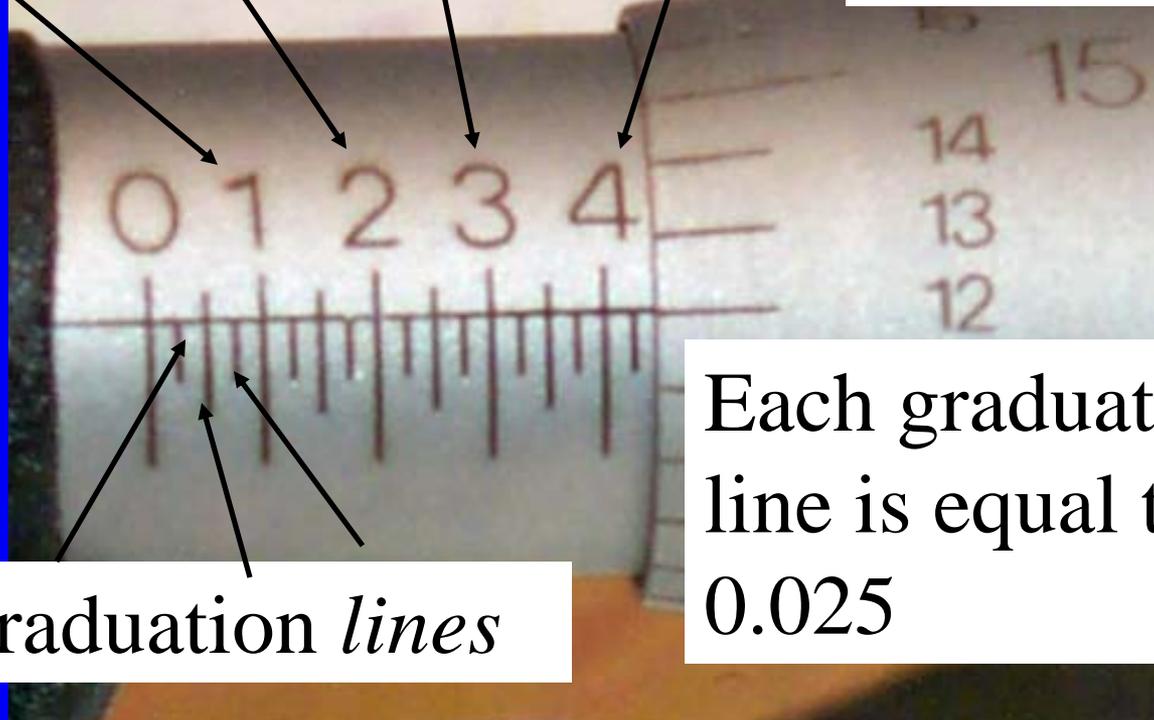
Equals
0.100

Equals
0.200

Equals
0.300

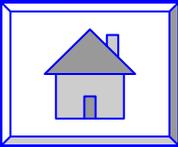
Equals
0.400

Each number on
the barrel = 0.100

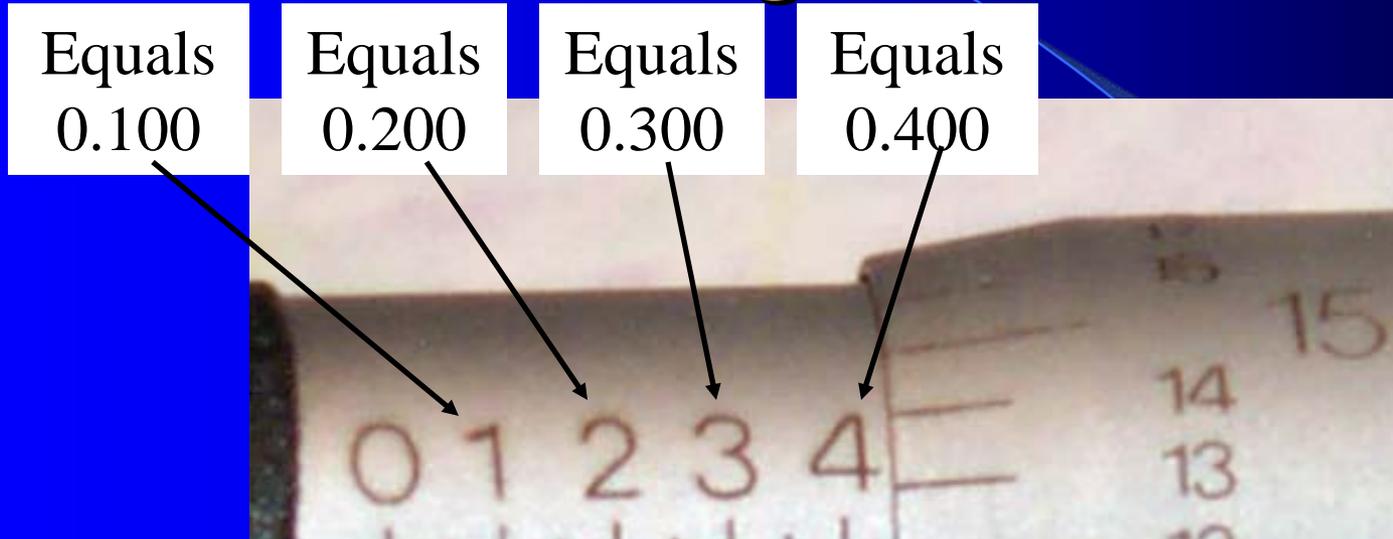


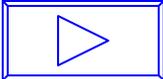
Graduation *lines*

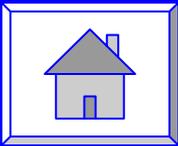
Each graduation
line is equal to
0.025



Reading the Barrel



Note the largest number visible on the micrometer barrel. Each number equals 0.010" (2 = 0.200, 3 = 0.300, 4 = 0.400. What would 9 = __.____? 



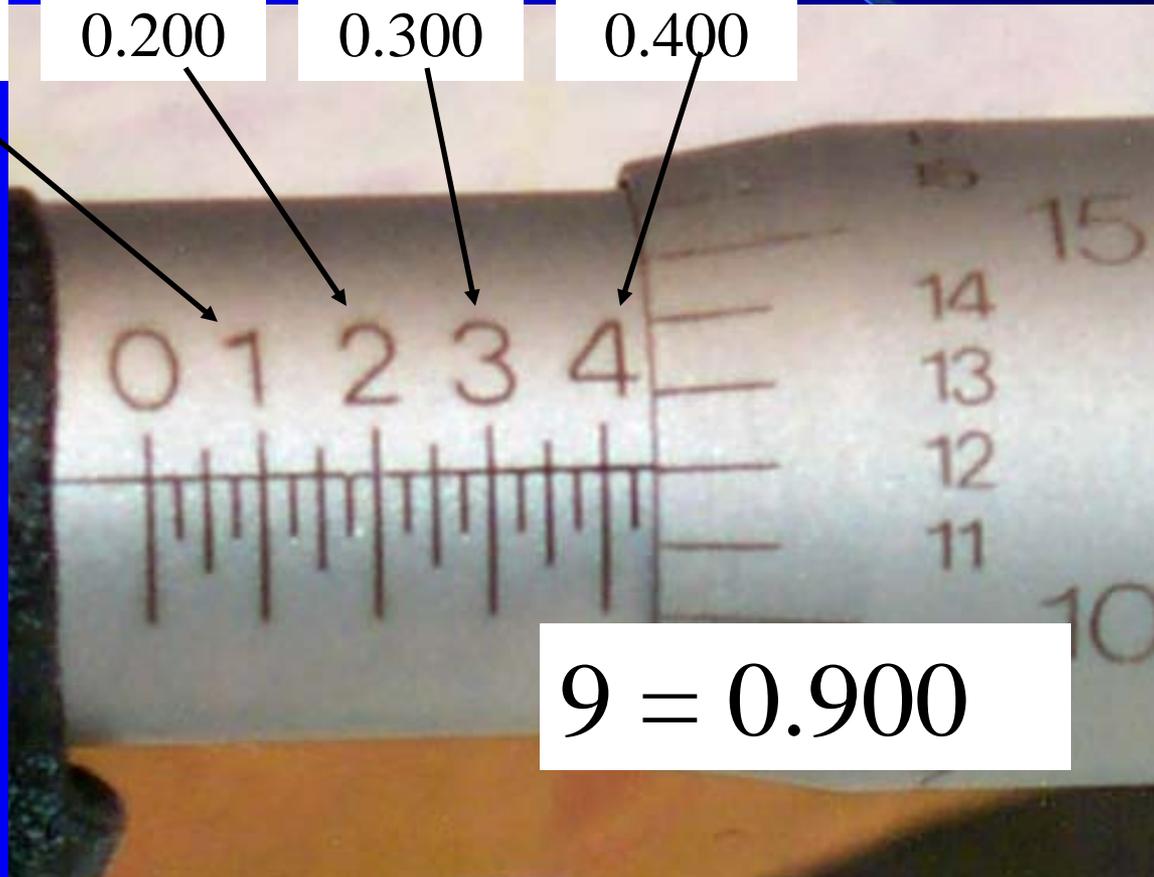
Reading the Barrel

Equals
0.100

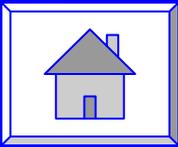
Equals
0.200

Equals
0.300

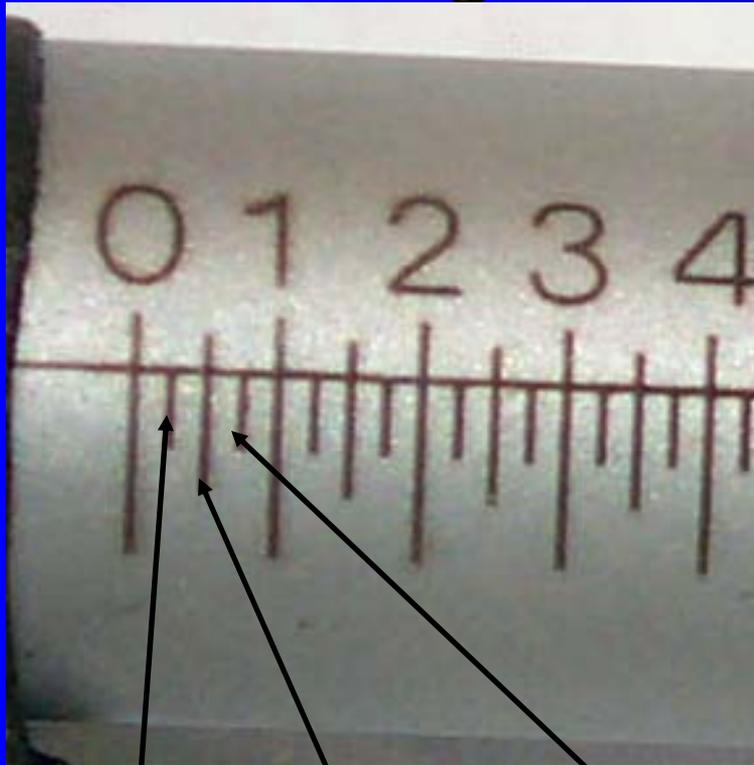
Equals
0.400



9 = 0.900



Reading the Graduation Lines



Count the number of graduation lines to the *right* of the barrel number. Each full sleeve graduation equals 0.025 (2 full lines = 0.050, 3 = 0.075)

Equals
0.025

Equals
0.050

Equals
0.075



Reading the Thimble

Note the thimble graduation aligned with the **Horizontal Sleeve Line**. Each thimble graduation equals 0.001. The number 1 = 0.001, 2 = 0.002, 12 = 0.012, 13 = 0.013

Horizontal Sleeve Line



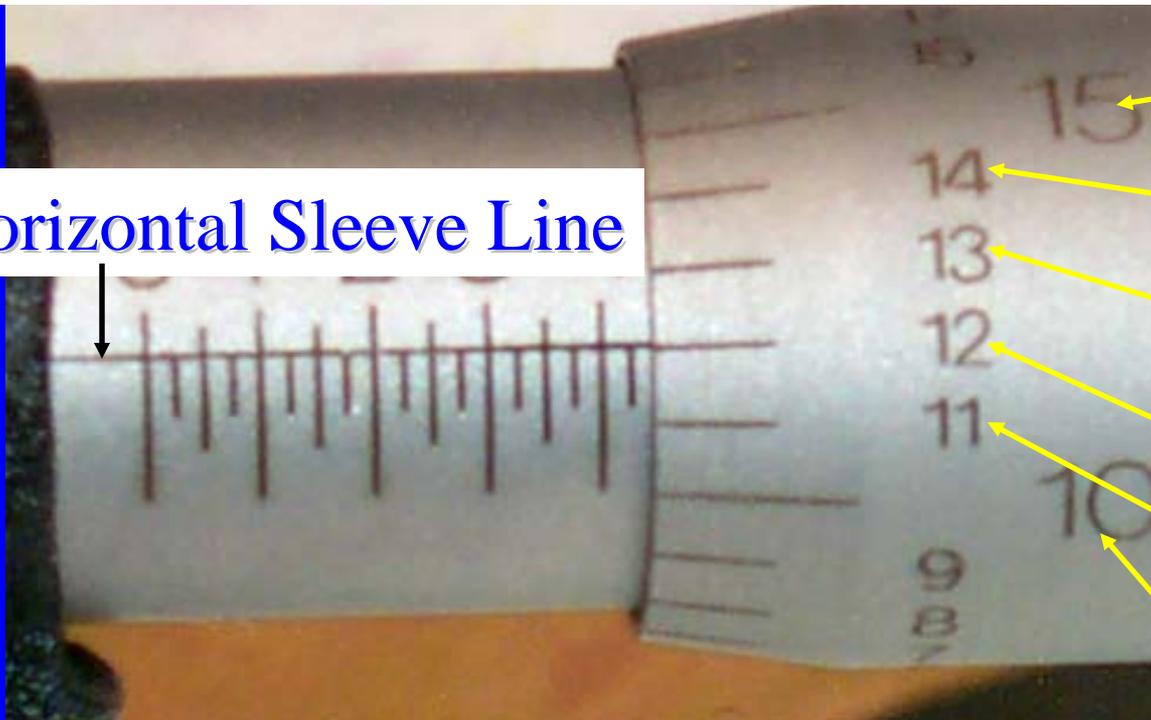
- 15 = 0.015
- 14 = 0.014
- 13 = 0.013
- 12 = 0.012
- 11 = 0.011
- 10 = ▶ ?



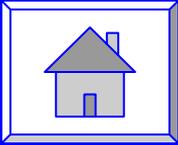
Reading the Thimble

Note the thimble graduation aligned with the **Horizontal Sleeve Line**. Each thimble graduation equals 0.001. The number 1 = 0.001, 2 = 0.002, 12 = 0.012, 13 = 0.013

Horizontal Sleeve Line

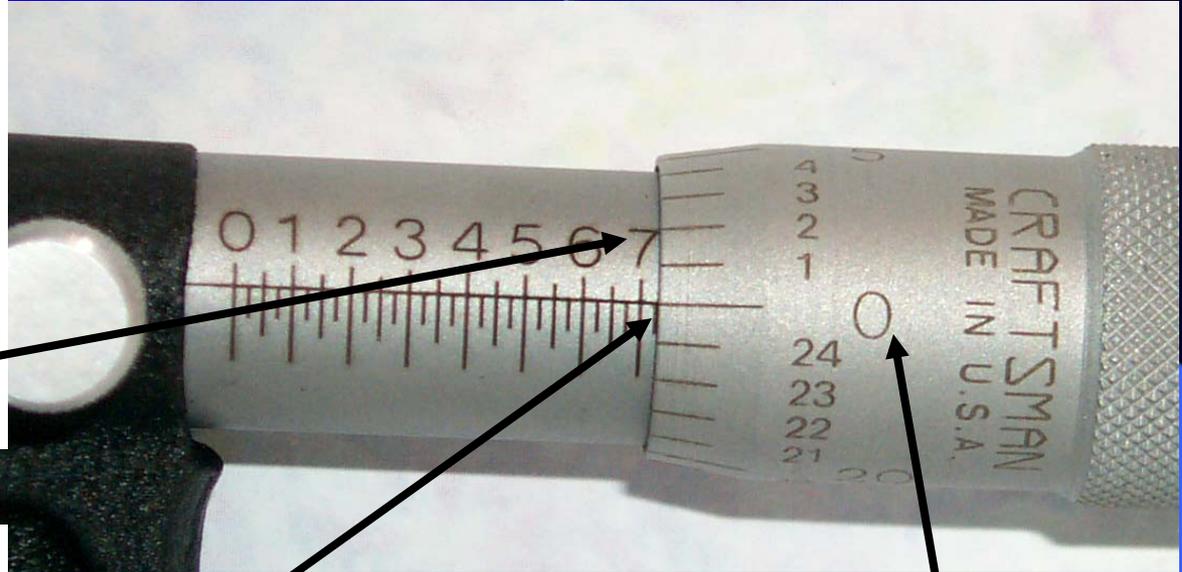


- 15 = 0.015
- 14 = 0.014
- 13 = 0.013
- 12 = 0.012
- 11 = 0.011
- 10 = 0.010 ?



Reading a Micrometer

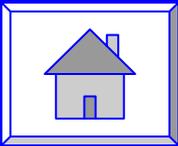
What is the largest number visible on the micrometer barrel ? 7



How many graduation lines to the *right* of the sleeve number 1

What is the thimble graduation aligned with the Horizontal sleeve line? 0





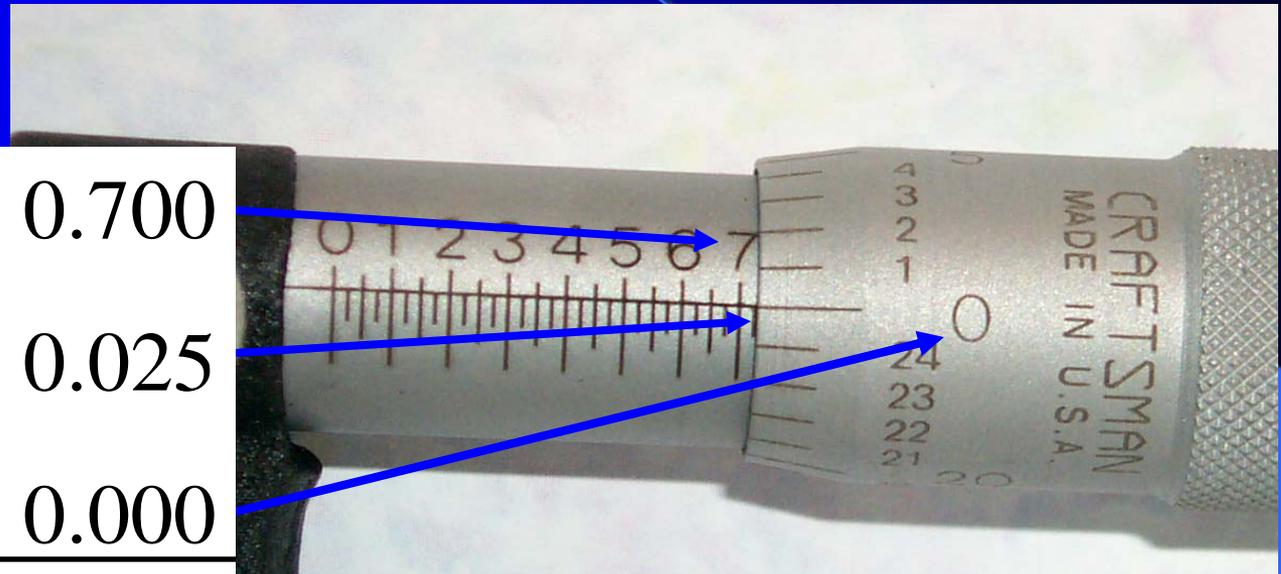
What is the Reading?

$$7 = 0.700$$

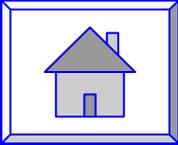
$$1 = 0.025$$

$$0 = 0.000$$

$$\text{Total } 0.725$$



The correct answer is 0.725!



What is the reading?



Barrel sleeve number?

$$1 = 0.100$$

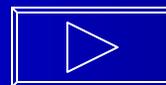
Graduation lines?

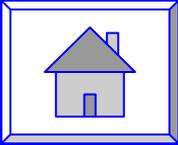
$$3 = 0.075$$

Thimble graduations?

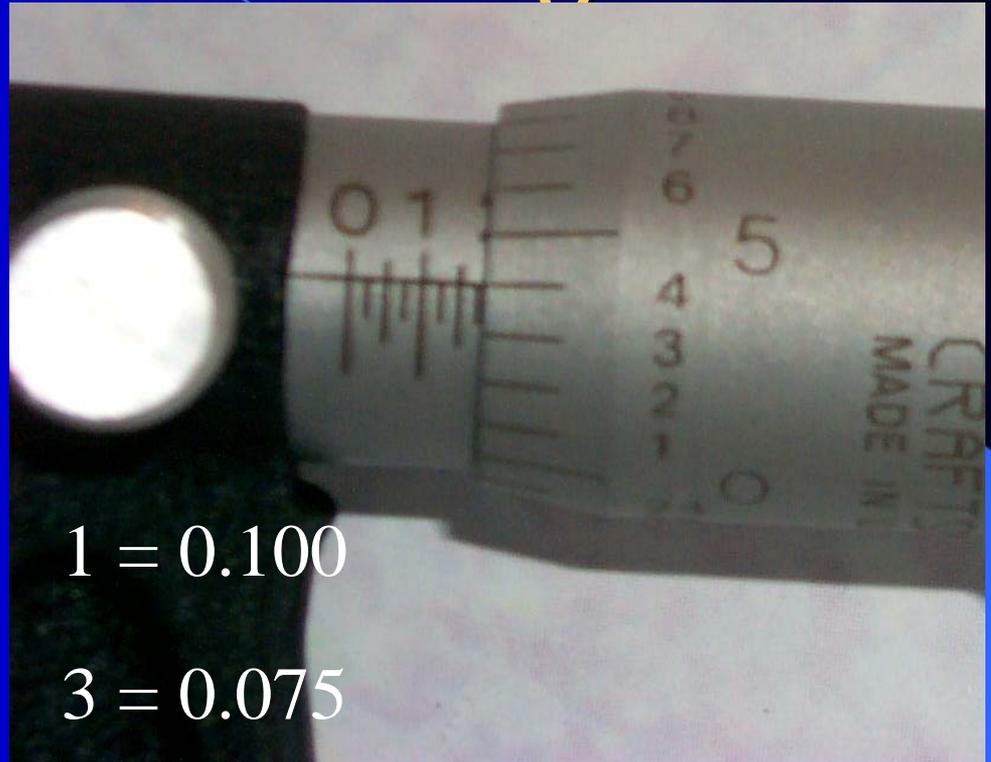
$$4 = 0.004$$

The correct answer?





What is the reading?



Barrel sleeve number?

$$1 = 0.100$$

Graduation lines?

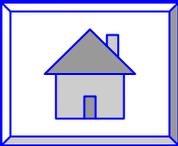
$$3 = 0.075$$

Thimble graduations?

$$4 = 0.004$$

The correct answer?

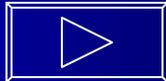
$$.179$$

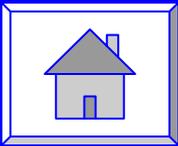


What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 



What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

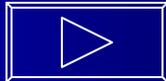
The correct reading is: .302



What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 



What is the Reading?

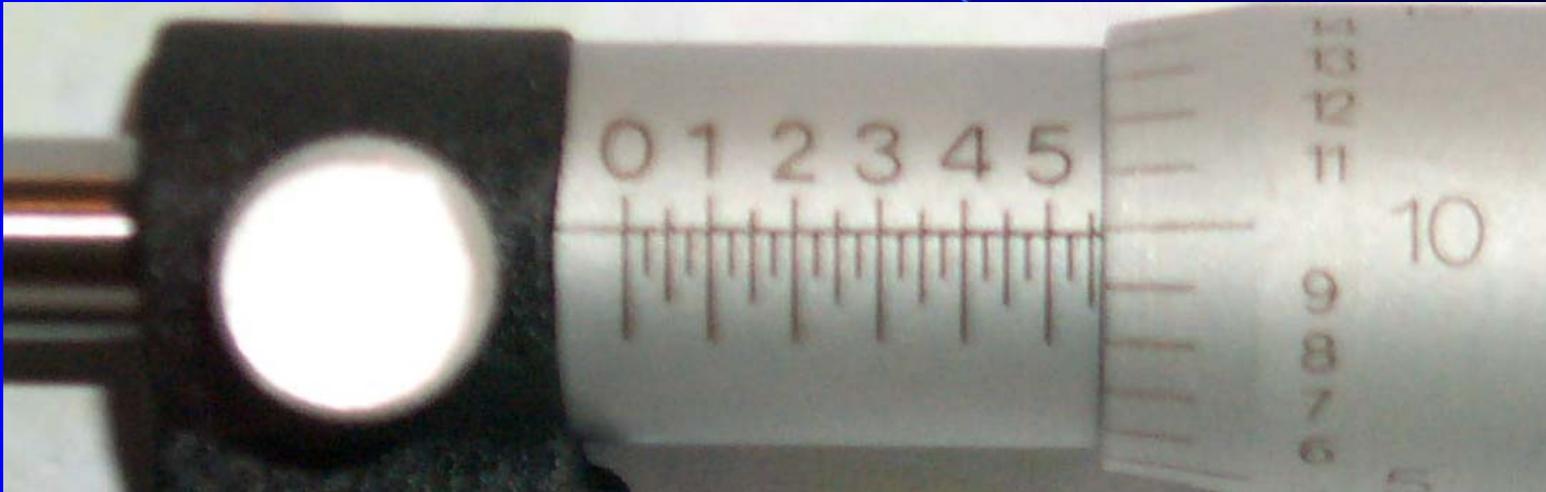


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

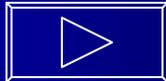
The correct reading is: 0.022

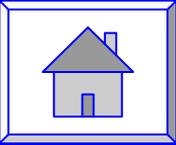


What is the Reading?

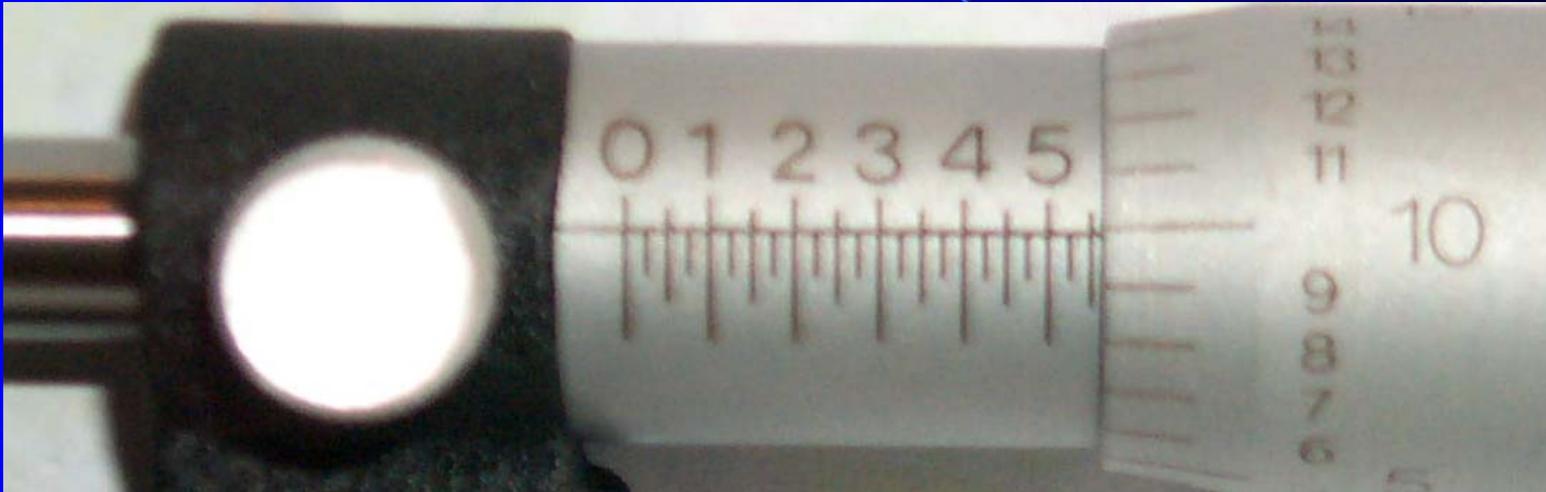


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 



What is the Reading?

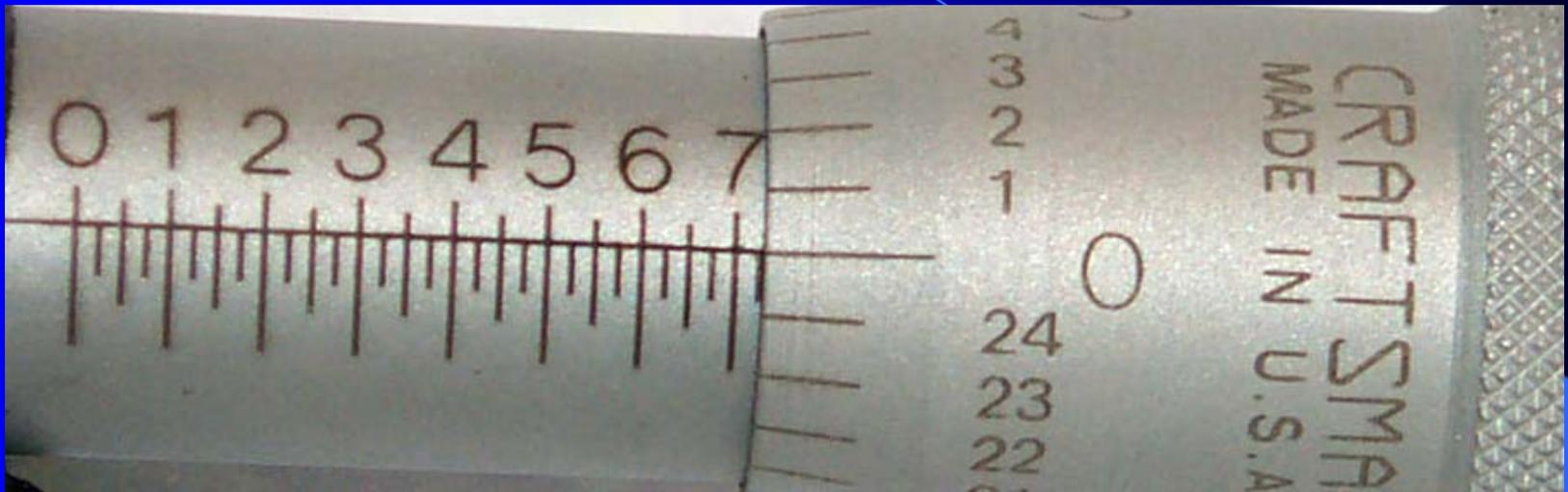


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

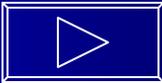
The correct reading is: 0.560



What is the Reading?

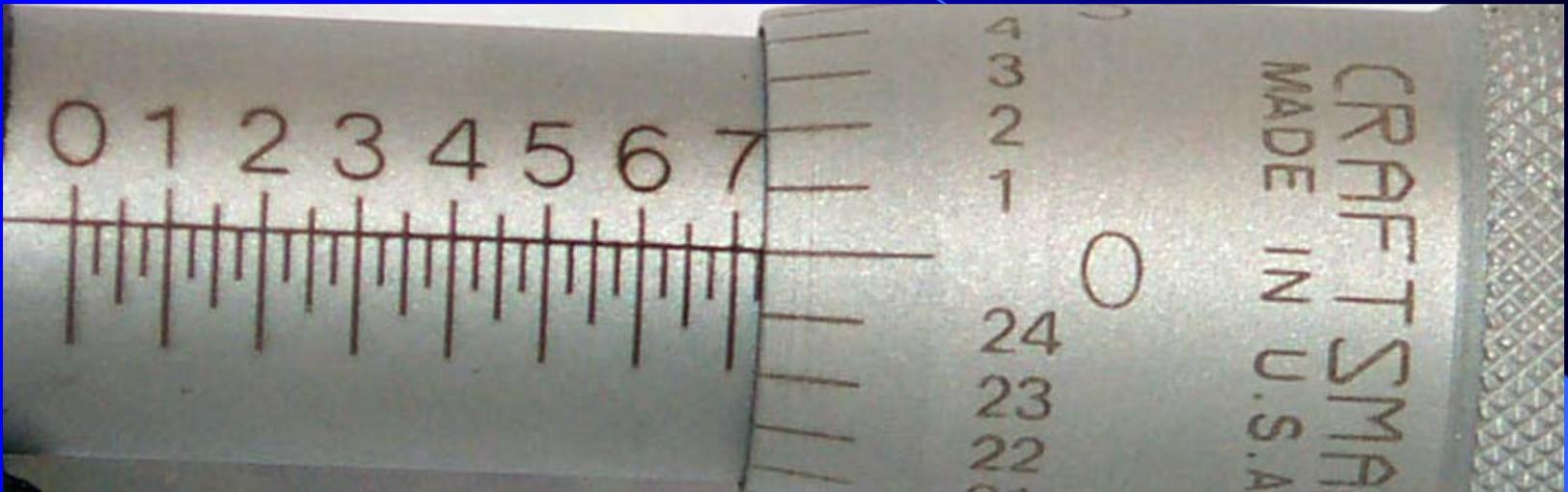


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 



What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

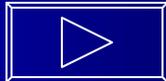
The correct reading is: 0.725



What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 

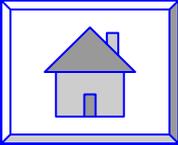


What is the Reading?

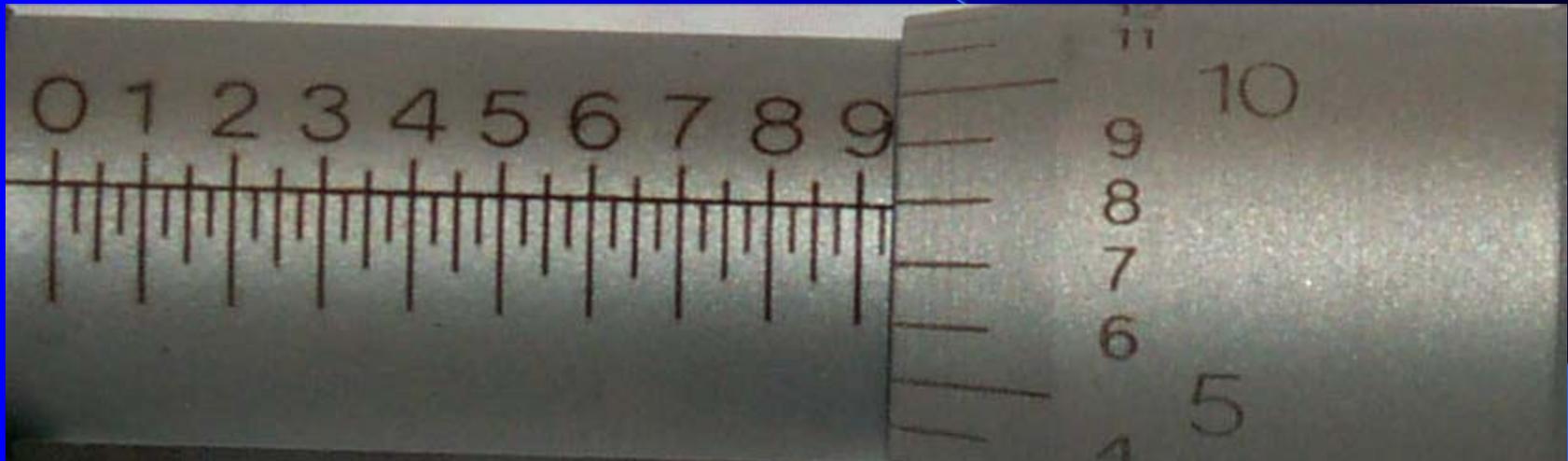


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

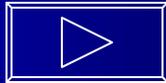
The correct reading is: 0.873



What is the Reading?

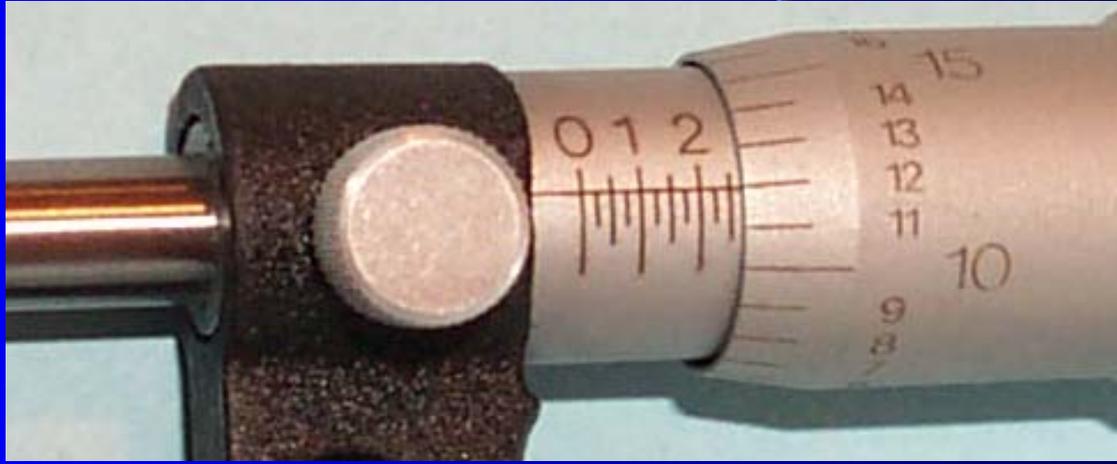


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 

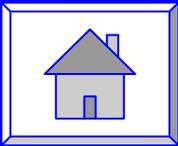


What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

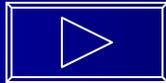
The correct reading is: 0.262

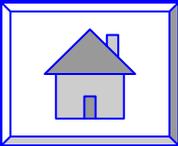


What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 

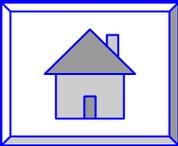


What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

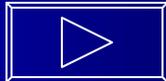
The correct reading is: 0.091

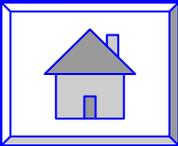


What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 

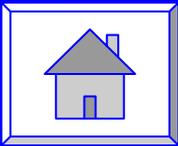


What is the Reading?

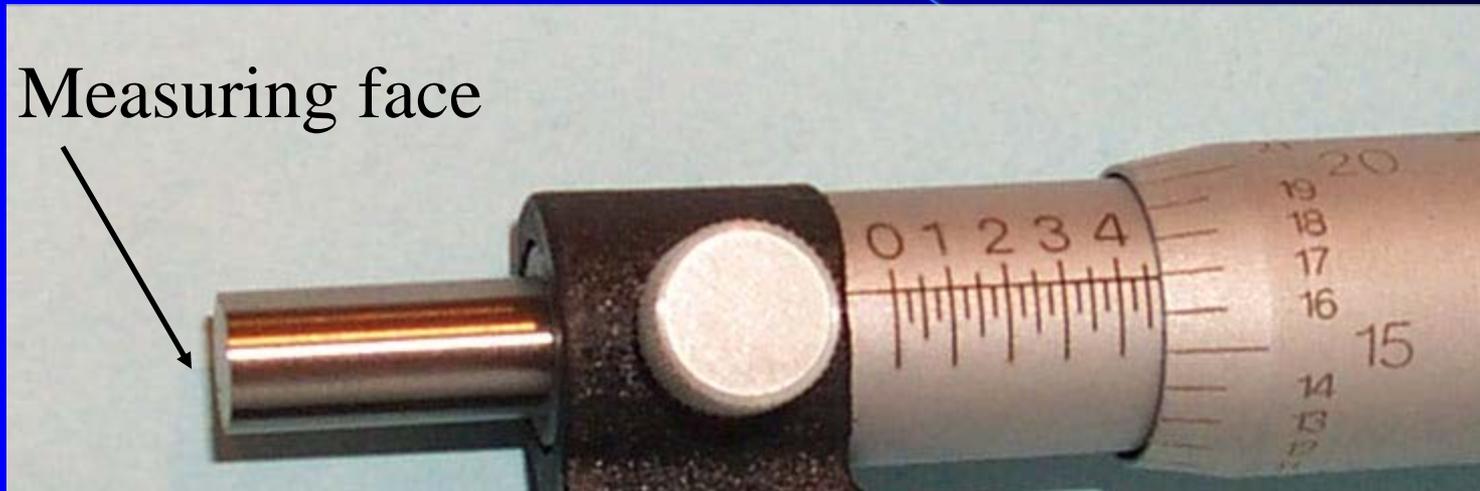


What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

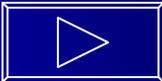
The correct reading is: 0.353

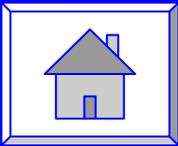


What is the Reading?



What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: 

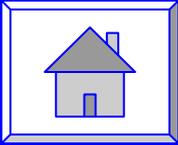


What is the Reading?



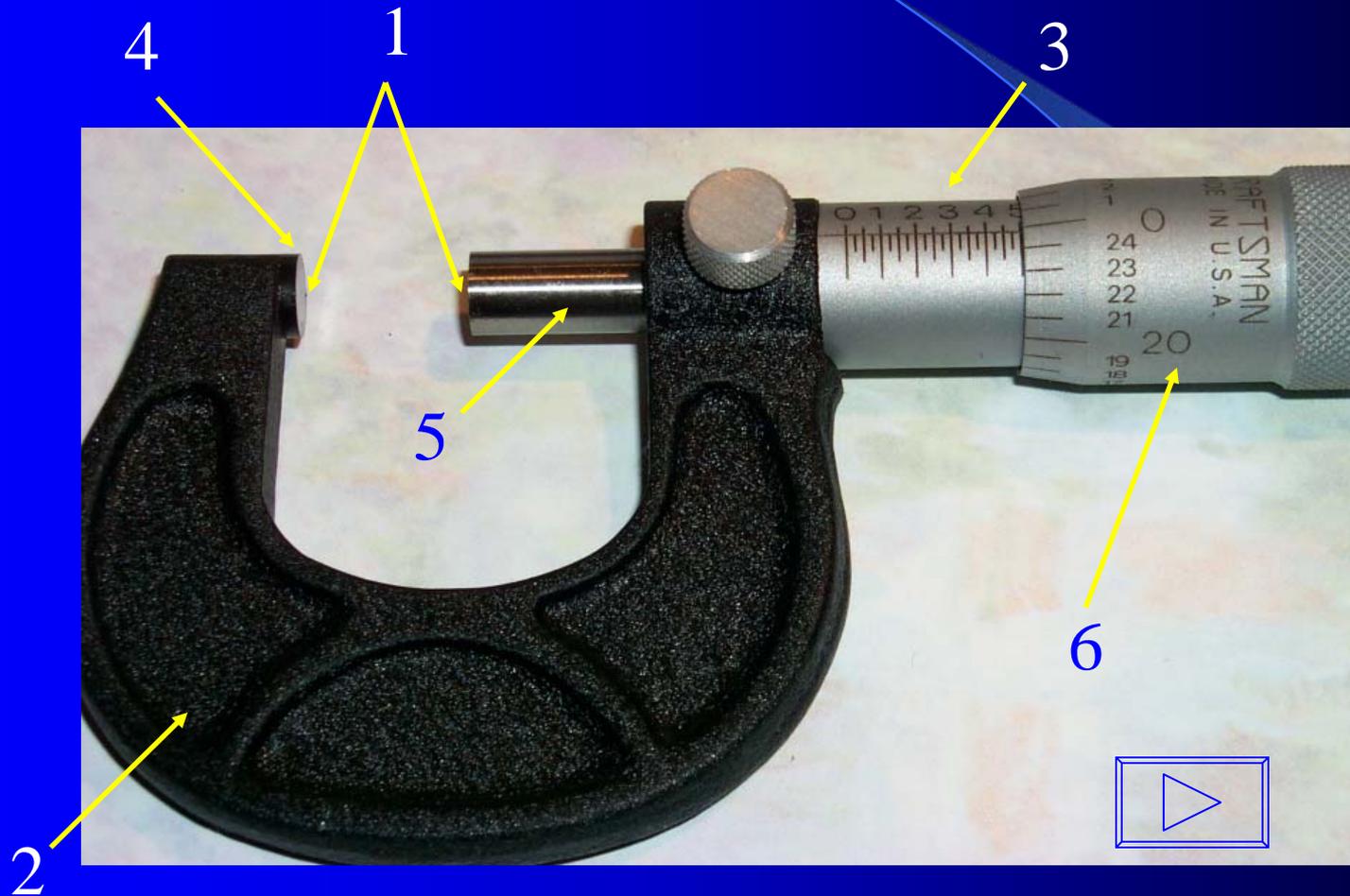
What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings...

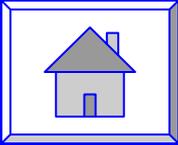
The correct reading is: 0.467



Review:

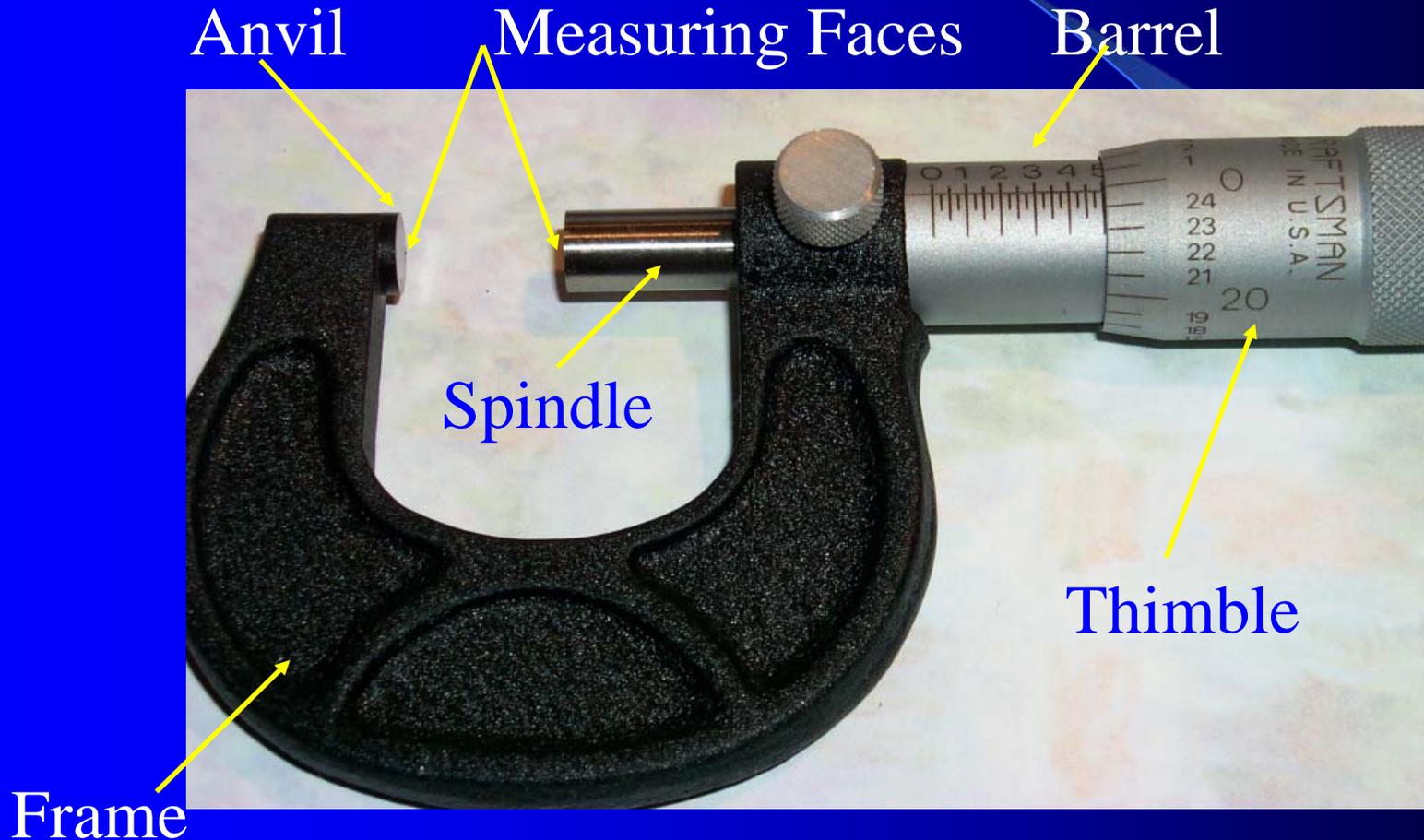
The Parts of a Micrometer

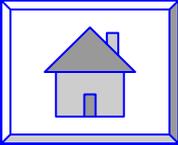




Review:

The Parts of a Micrometer





Remember: To Read a Micrometer...

- **First**, read the **Barrel Number**
- **Second**, read the **Sleeve Graduations**
- **Finally**, read the **Thimble Number**
- Add these **three readings** together to obtain the correct reading
- To best way to practice using a micrometer is to measure the thickness of a feeler gauge blade