The background of the slide features a faded, grayscale image of bicycle gears. The gears are arranged in a cluster, with some overlapping, and are positioned behind the main text. The overall aesthetic is technical and mechanical.

Bicycle Mechanics and Repair Decal

Mechanical Engineering 98/198

Spring 11

Lecture 2

Aleksey Shepelev

Jim Gao

Nick Koo

Henry Yi

Allen Gurdus

Logistics

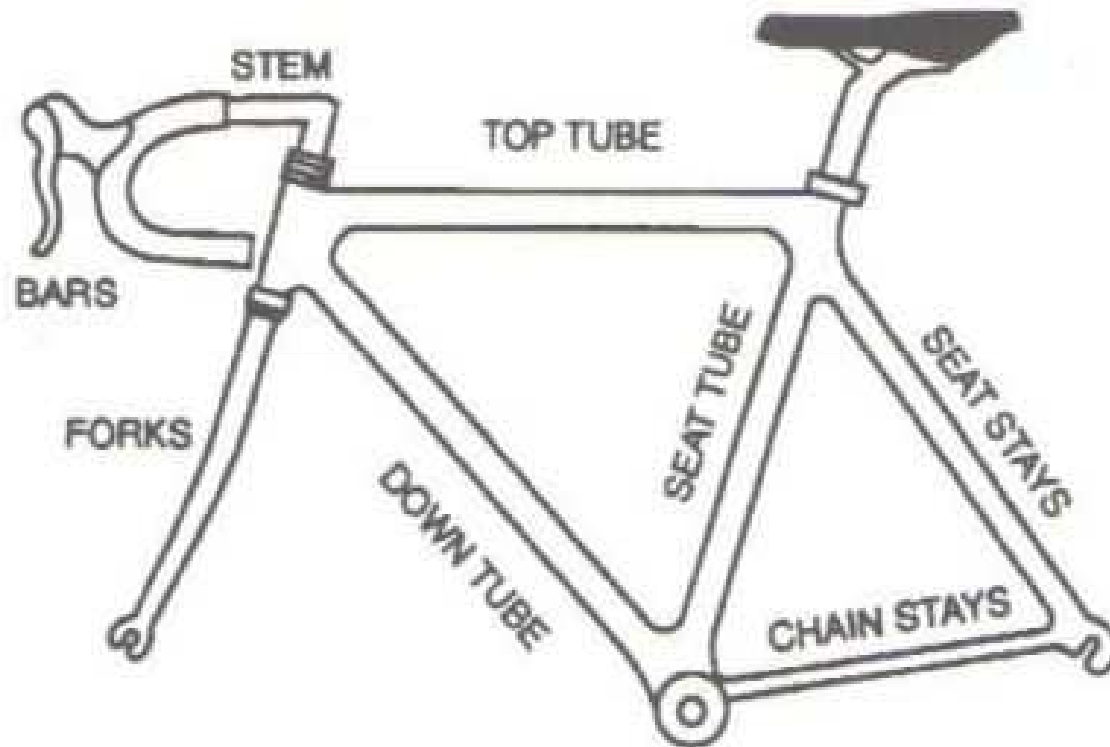
- Please sign in!
- Pick up a syllabus
- Bike Day Schedule
 - Mon 11-2
 - Fri 11-1
- Sign up for your slot at Bike Day
- First day Friday Feb 4th

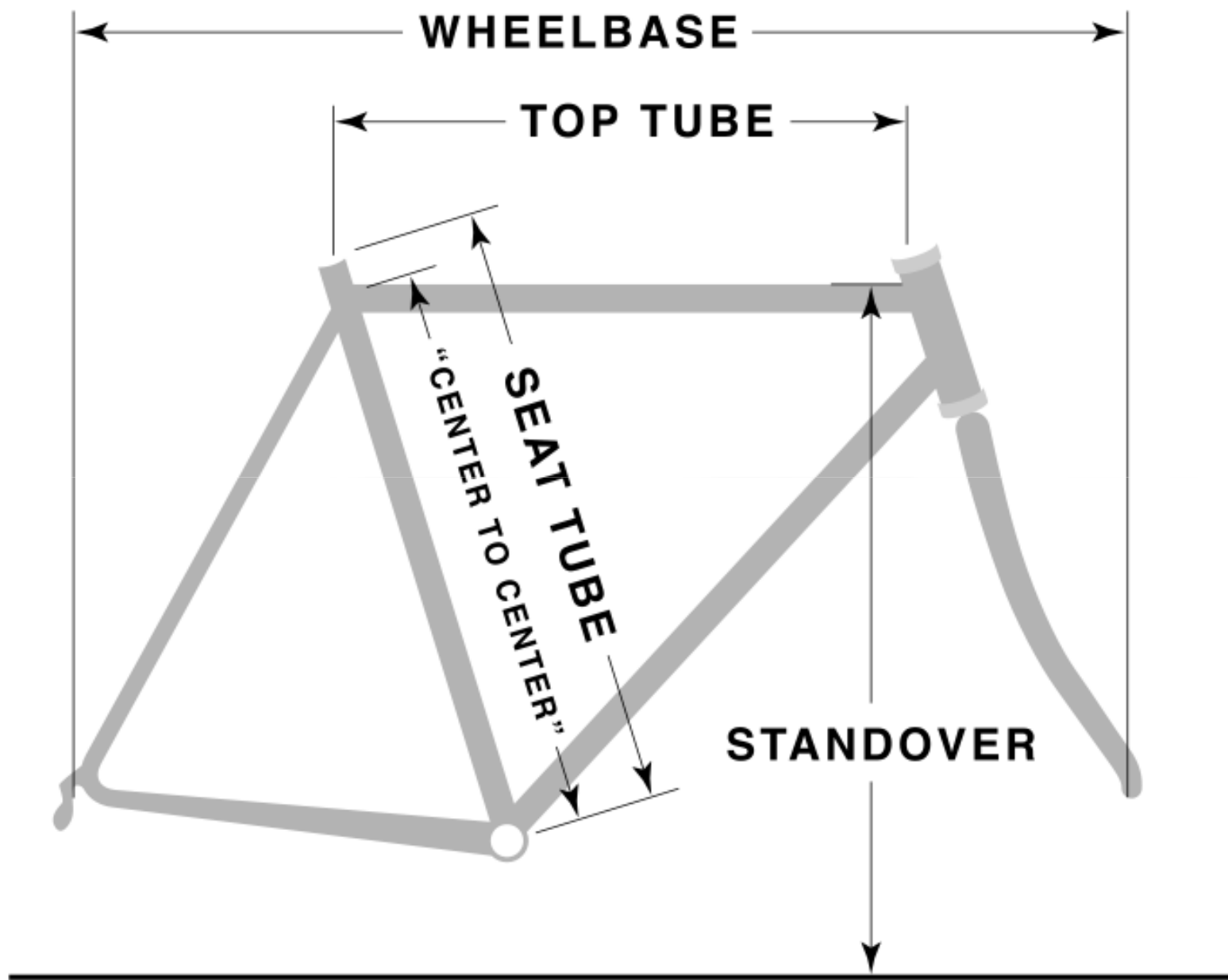
Survey Results

“I want to own my bike, not let it own me”

- I ride a lot and know little about repairs
- The only thing I know is how to pump my tires
- I want to help my friends with the problems they have
- I spend a lot of money on repairs and want to become self-sufficient
- I'm going on a very long ride and need to be able to rely on myself
- I'm on Cal Cycling/ Triathlon and want to be my own mechanic
- I'm a senior and want to do something fun during my last semester

Bike Frames





Different Fits for Different Bikes

- Mountain Bikes
 - Upright position
- Road Bikes
 - Aggressive position



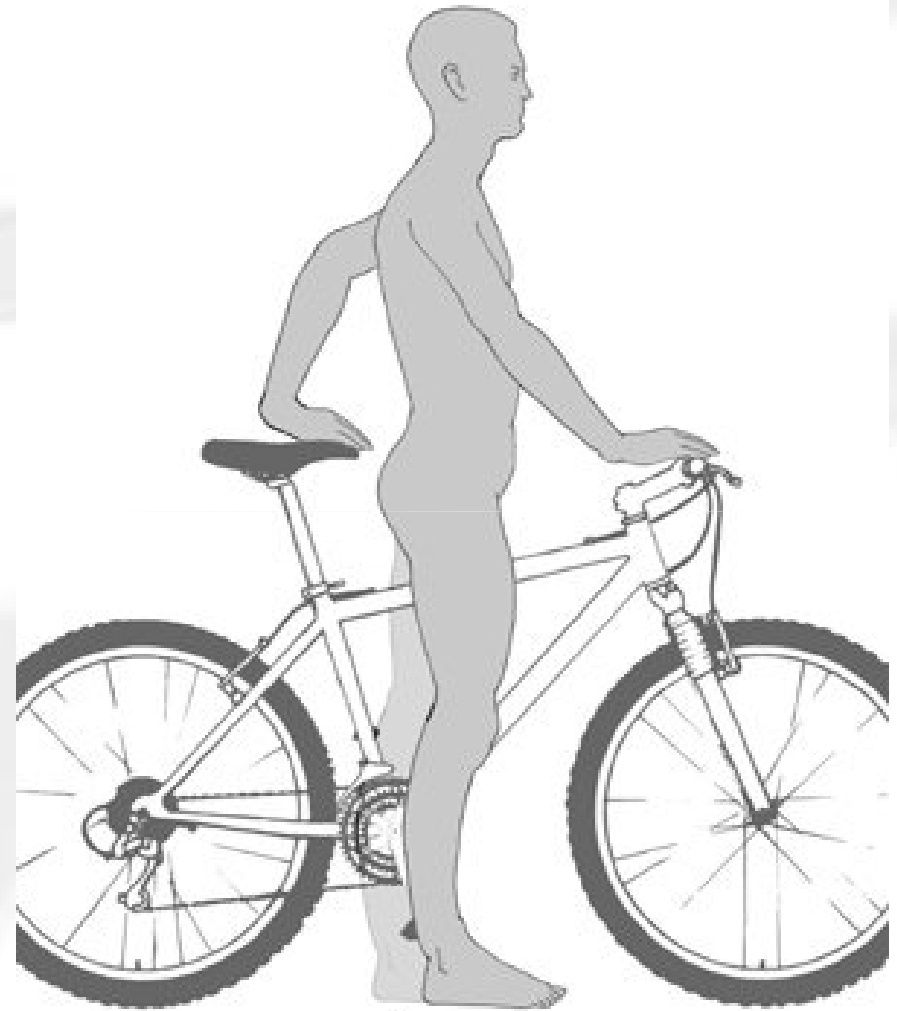
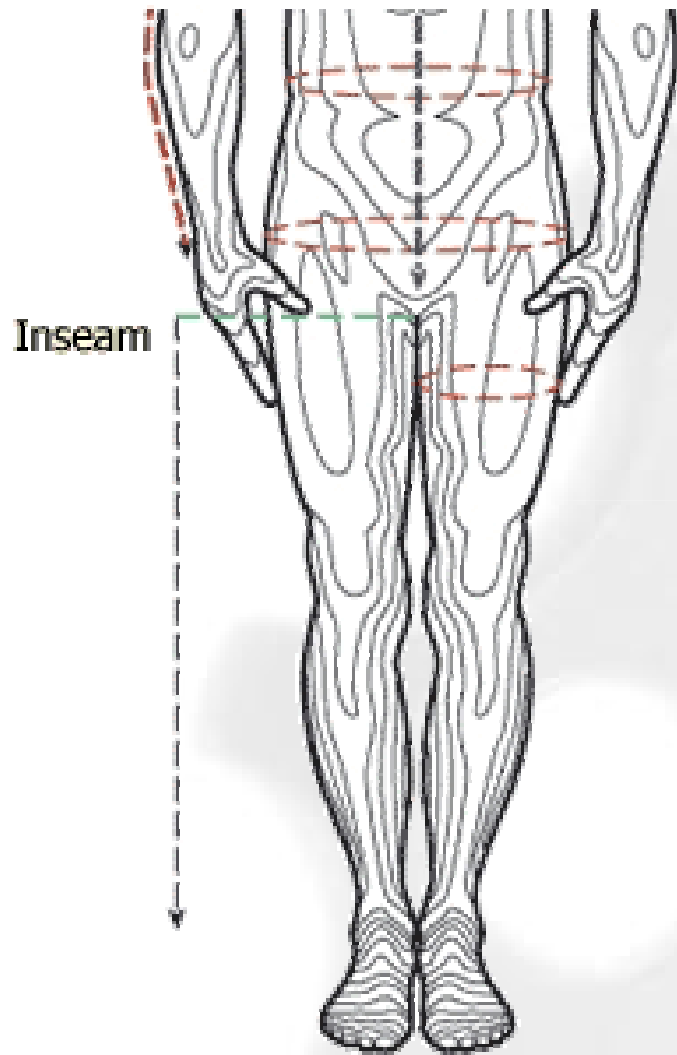


Image 1

Metric

Road Bikes and Some Hybrids

Height	Inseam Length	Bike Frame Size
4'10" - 5'1"	25.5" - 27"	46 - 48 cm
5'0" - 5'3"	26.5" - 28"	48 - 50 cm
5'2" - 5'5"	27.5" - 29"	50 - 52 cm
5'4" - 5'7"	28.5" - 30"	52 - 54 cm
5'6" - 5'9"	29.5" - 31"	54 - 56 cm
5'8" - 5'11"	30.5" - 32"	56 - 58 cm
5'10" - 6'1"	31.5" - 33"	58 - 60 cm
6'0" - 6'3"	32.5" - 34"	60 - 62 cm
6'2" - 6'5"	34.5" - 36"	62 - 64 cm

English

Mountain Bikes and Some Hybrids

Your Height	Your Inseam Length	Bike Frame Size
4'11" - 5'3"	25" - 27"	13 - 15 inches
5'3" - 5'7"	27" - 29"	15 to 17 inches
5'7" - 5'11"	29" - 31"	17 to 19 inches
5'11" - 6'2"	31" - 33"	19 to 21 inches
6'2" - 6'4"	33" - 35"	21 to 23 inches
6'4" and up	35" and up	23 inches and up

What to Adjust

- The stem can be switched out for a different length or angle.
- The saddle can be raised or lowered.
- Handlebars can be switched for a different width or shape.



Cleaning and Lubricating your Chain

- Don't use WD40!
- Why chain maintenance?
 - Longer life span
 - Increased pedaling efficiency
 - Protect your sprockets
 - Your average 57 link chain has 456 parts!



Chain Lubes



Wet lube or dry lube?



Lubricants



Polylube



- Threads
- Bottom brackets
- Headsets
- Hub bearings
- Seatposts
- Cable housing

Valve Types

- Schrader

“Automobile” or “American valve”

Spring-loaded valve core

Flexible

Generally one standard length



- Presta

“Valve designed for bikes”

“French” valve

Nut-held valve core

Thinner

Generally varying in length



The Issue of Pumping

Pumps can be specialized for only presta or schrader valves D:

Solution: Valve Adapters

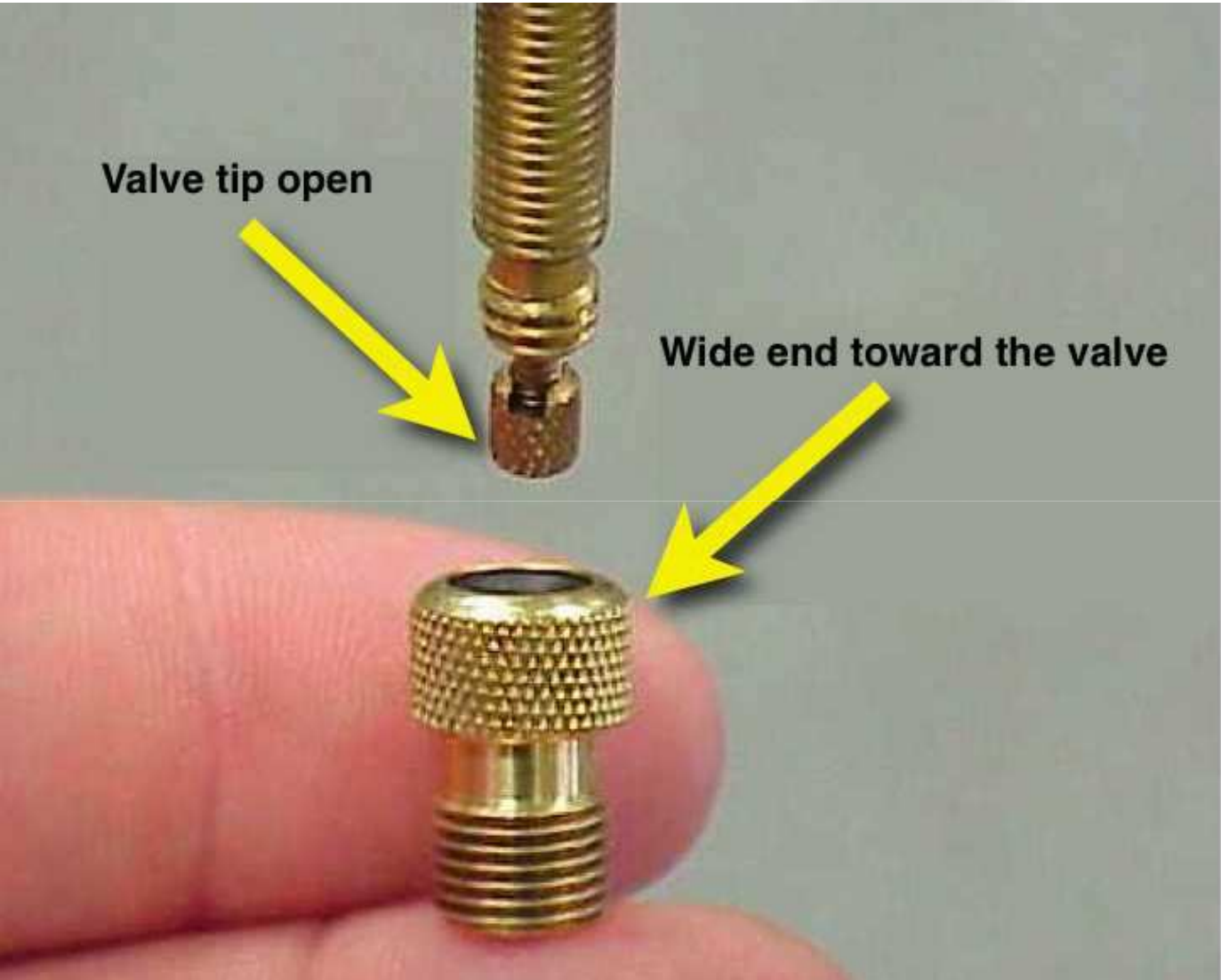


Schrader

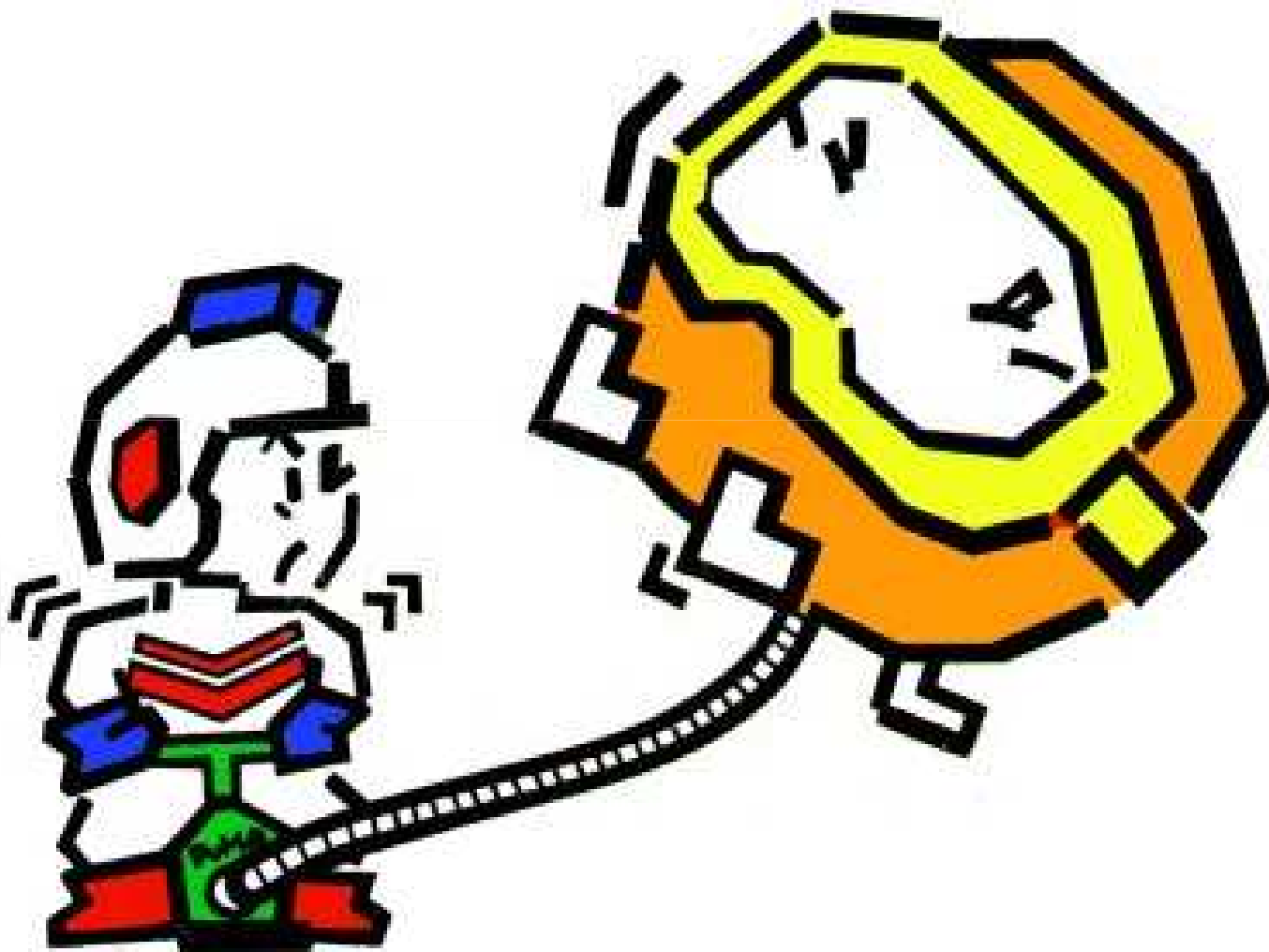
Presta Closed

Presta Opened

Adapter



PUMP! PUMP! PUMP!



Some Guidelines

Check the tire pressure on the tire sidewall



Pressure Recommendations (within pressure range)

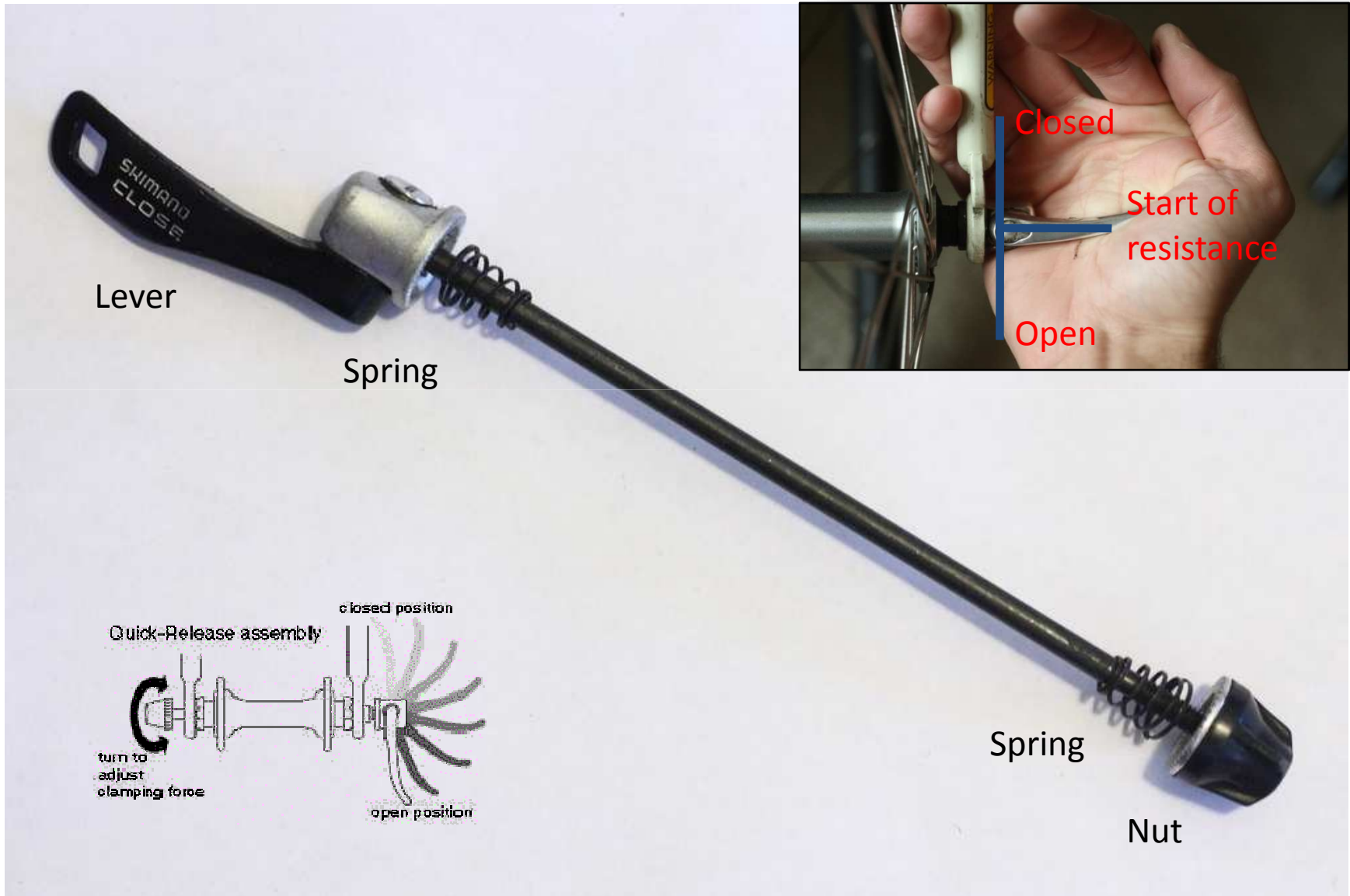
Check your pressure at least once a week

HIGH pressure – Less rolling resistance

LOW pressure – More comfort and traction on
rough surfaces

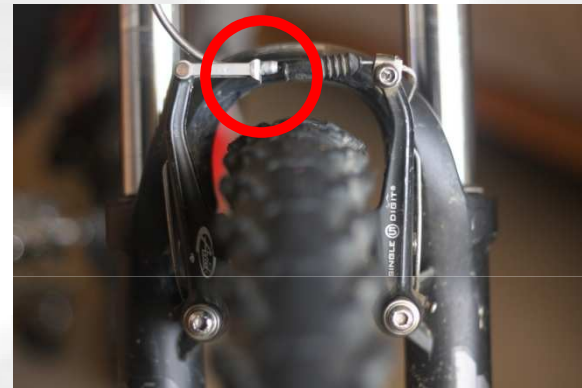


Quick Release



Removing a Wheel

- To remove wheel, release the brakes



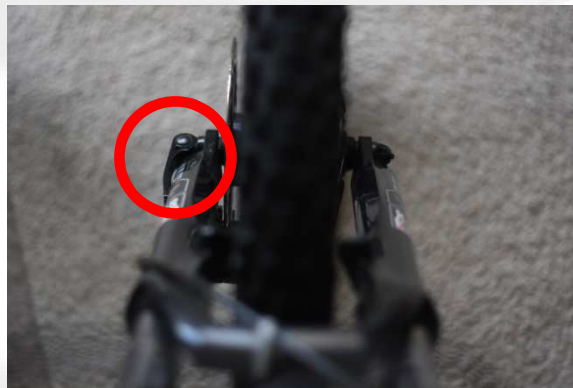
- If no brake release exists, deflate the tire or manually remove the brake cable
- Open quick release and unscrew nut on opposite side to remove wheel

Installing a Wheel

- Watch for direction of rotation



- Wheel must be straight in the fork.



- Quick release goes on the left side

Fixing a Flat

- Three ways to fix a flat
 - Changing the inner tube (\$5-7 at bike store)
 - Patching the inner tube (\$2-3 for patch kit)
 - Using a sealant (not recommended)



Fixing a Flat – Step by Step

1. Removing the offending wheel
 - Quick-release vs nut and bolt?
2. Removing the tire
 - Use tire levers
 - No screwdrivers, knives, etc.
 - Typically need 2 levers for road bikes



Fixing a Flat – Step by Step



3. Finding the hole

- Pump up inner tube
- Submerge in water

4. Patching the tube

- Rough the surface
- Apply rubber cement and wait 2-3 min
- Apply patch and pressure for 5-10 min

Repair on the Road



- Sliced tire? Use a dollar bill or an energy bar wrap to add strength



- No tire levers? Use the quick release as the tire lever.
- Flat tire? No way to patch? Stuff your tire full of leaves! Lots of leaves.

Group Sections

- Break up into groups of 4-5 people
 - Name, major, interest in biking, etc.
- Grab materials from the front
 - 1 patch kit
 - 1 set of tire levers
 - 2 inner tubes
- Help each other!

