

ILLUSTRATED STEPS / SAVE IT. FIND IT. BUILD IT.

MEASURING WHEEL

A marked tire, a hand count and one calibration turn rolling motion into distance.



START HERE

01

GET READY

Tools + clickable build map

02

FOLLOW THE STEPS

One clearly numbered stage at a time

03

FIND IT AGAIN

Quick reference + PDF bookmarks

Build a hand-counted ground-distance tool. Every complete guide is free; optional support receives the same content. Calibrate and check before use. No survey accuracy is promised.

NUKE ON TIKTOK

MORE FREE BUILD GUIDES

SOURCES / Sakamoto and Senda: effective rolling circumference · Oak Ridges Trail Association: distance measuring wheel

BUILD MAP

NEXT

YOUR BUILD MAP

Tap a step to jump there. The printed page numbers work offline too.

HAVE THESE READY

- Front wheel, matching metal fork, original secure axle
- Exposed steerer; sound long wood handle
- Two fitting hose clamps; matching driver
- Long tape; tire marker; ground chalk
- Pencil and paper; optional calculator/gauge

BEFORE YOU START

Keep the secure original axle. Two separated clamps must grip the full handle/steerer overlap. Test grip and free spin; never ride. Use unchanged tire inflation and similar ground. Calibrate and check; no survey-accuracy claim.

KEEP THIS COPY

Save the PDF with its guide ID. Use the build map, bookmarks, or your PDF reader's search to find a step later. Video and source links need internet; the instructions do not.

READ IN ORDER

PREP	Keep the existing axle assembly	03
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SETUP

Keep the existing axle assembly

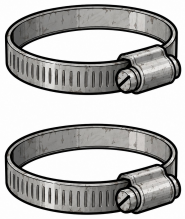
READ BEFORE STEP 01

PREP

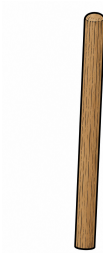
Start with an intact front wheel already held in its matching fork, removed from riding service.



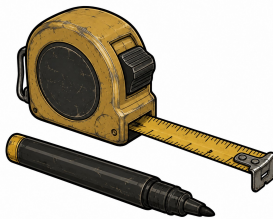
WHEEL + MATCHING FORK



TWO HOSE CLAMPS



WOOD HANDLE



TAPE + MARKER

CHOOSE THE WHEEL ASSEMBLY

- Use an intact front wheel in a matching straight metal fork with its original secure axle hardware.
- Keep a sound tire fitted.
- Obtain a suitable assembly removed from riding service; this guide does not teach axle fabrication or bicycle dismantling.

LAY OUT THE KIT

- Set out a sound, smooth wooden handle, two correctly sized metal hose clamps and the matching screwdriver or nut driver.
- Have a tape long enough for five turns, a visible tire marker, removable ground chalk, paper and pencil.
- A calculator and tire-pressure gauge are optional.
- Choose pre-cut, smooth wood and obtain help if cutting is needed.

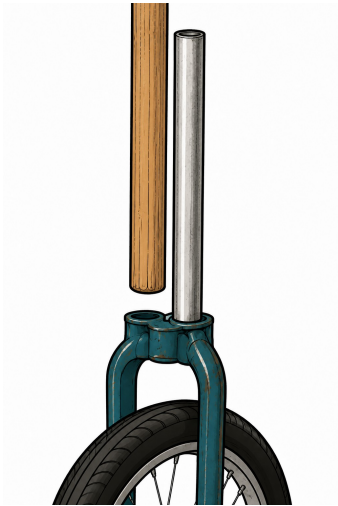
SETUP

Check the overlap before assembly

READ BEFORE STEP 01

PREP

The steerer is the tube above the fork crown; the handle will lie alongside it.



A JOINT BOTH CLAMPS CAN GRIP

- **The exposed straight steerer must be long enough for two full clamp bands with a visible gap between them.**
- Both bands must fit around the wood and tube together, completely supported and away from their ends or the crown.
- A short steerer hidden in a bicycle frame will not do.
- Choose a different assembly if this overlap cannot fit.

SET THE MEASURING CONDITIONS

- **Choose handle length for a comfortable standing grip.**
- Keep pneumatic tire pressure within its marked range and unchanged for calibration and use.
- Record it if a gauge is available.
- Work on a clear, firm, level straightaway away from traffic.
- Keep fingers, clothing and cords out of spokes.
- Never ride the device, lean on it or use it to carry a load.

BUILD MAP

PREVIOUS

NEXT

STEP

Fit and test the wooden handle

1 OF 4 / READ IN ORDER

01

The handle lies alongside the steerer; neither the wheel nor its axle is clamped to the wood.



TWO SEPARATED CLAMPS



GRIP + FREE-SPIN CHECK

OVERLAP AND TIGHTEN

- **Lay the handle against the straight exposed steerer.**
- Put one clamp toward each end of the shared overlap, with a gap between them.
- Each band grips both parts.
- Keep screw housings accessible and clear of your hand.
- Tighten gradually, alternating clamps and following their instructions.
- Reject split wood, distorted metal or a fit that slips; extra force cannot fix insufficient overlap.

TEST BEFORE ROLLING

- **With the wheel stationary and fingers clear, hold the fork and firmly tug and twist the handle.**
- Nothing should slip.
- Lift slightly and spin the wheel: tire and spokes must clear all parts and the axle must stay secure.
- Cover any sharp clamp tail only after the grip test.
- Roll a few paces; stop for rubbing, wobble, sharp edges or movement in the joint.

BUILD MAP

PREVIOUS

NEXT

STEP

Measure the distance per revolution

2 OF 4 / READ IN ORDER

02

Use a real rollout instead of guessing the tire's diameter or copying another wheel's circumference.



MARK, START AND COUNT

- **Make one visible tire mark that identifies its lowest position.**
- Put it at the ground contact point and mark that start.
- This is zero turns.
- Hold the wheel upright with light steady pressure, as during measurement.
- Roll straight until the mark returns to the ground five times.
- Stop at the fifth return and mark that contact position; a helper can mark while you hold still.

MEASURE, DIVIDE AND REPEAT

- **Tape-measure the straight ground distance between those contact marks and divide by five.**
- Record this distance per turn with its units.
- Repeat the rollout.
- If results disagree enough to matter for your layout, check your count, marks, straightness and tire condition, then repeat.
- Do not lift, skid or roll backward during a run.
- Keep the date and tire condition with your calibration.

SOURCES / Sakamoto and Senda: effective rolling circumference · Oklahoma State University: wheel-revolution calibration arithmetic

STEP

03

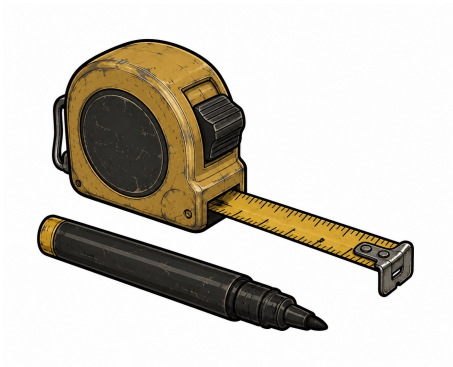
Measure complete turns and the remainder

3 OF 4 / READ IN ORDER

Keep the full-turn count separate from the short final stretch measured with your tape.



COUNT COMPLETE TURNS



TAPE MARK TO ENDPOINT

COUNT FROM THE START

- **Set the tire mark at the ground on your starting point.**
- Push upright and straight, counting complete returns to the ground.
- Use the calibration tire inflation and similar light pressure.
- Record the count when pausing.
- If you lose count, restart that segment.

STOP AND ADD THE REMAINDER

- **Stop at the last whole-turn contact before another complete turn would pass the endpoint.**
- Mark this ground position.
- Multiply complete turns by distance per turn.
- Tape-measure from that contact to the marked endpoint along the same path.
- Read the tape tick at the endpoint mark, not the housing.
- Add the remainder once, using the same units.
- If the segment is shorter than one turn, tape-measure it entirely.
- For corners, finish and record separate straight segments, then add them.

SOURCES / Sakamoto and Senda: effective rolling circumference · Oak Ridges Trail Association: distance measuring wheel

BUILD MAP

PREVIOUS

NEXT

STEP

04

Compare against an independent tape course

4 OF 4 / READ IN ORDER

A repeatable reading is more useful than a confident-looking guess.



COMPARE A KNOWN COURSE TWICE

- **Tape-measure a straight course, such as 10 metres, and mark both endpoints.**
- Measure it with the wheel count and taped remainder, then repeat.
- Compare with the original taped length.
- If disagreement matters for your job, check counts, marks, grip, straightness and tire condition.
- Correct the cause and recalibrate; do not move an endpoint to make results match.

CARRY THE CONDITIONS INTO USE

- **Avoid mud, loose stones, skidding and bouncing.**
- Recheck after changes to inflation, tire, handle geometry or ground conditions.
- A slope reading follows the ground surface, not horizontal survey distance.
- Check clamp grip before each session and stop for any movement.
- Use the tape directly when wheel readings are inadequate for the job; no universal accuracy is promised.

SOURCES / Sakamoto and Senda: effective rolling circumference · Oak Ridges Trail Association: distance measuring wheel

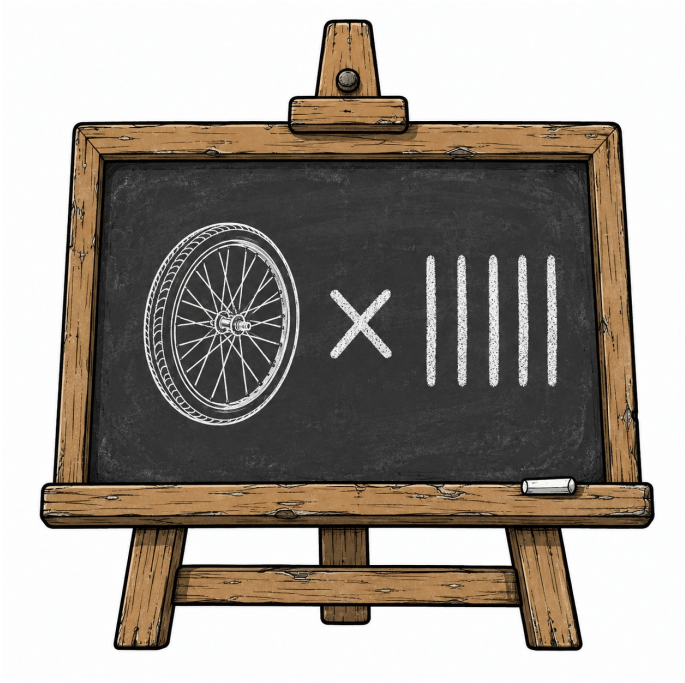
NOTE

Keep full turns and remainder separate

KEEP THESE LIMITS WITH THE STEPS

REF

These invented numbers explain the calculation; measure your own wheel.



KEEP ONE SET OF UNITS

- **For an invented example, a 10-metre five-turn rollout gives 2 metres per turn.**
- Seven complete turns plus a 0.6-metre taped remainder gives 14.6 metres.
- These numbers explain the arithmetic; they are not the size or performance of your wheel.
- For a route with corners, finish and record separate straight segments, then add them.

THE TWO CALCULATIONS

- **Calibration is five-turn rollout distance divided by five.**
- A job total is complete turns multiplied by that calibration, plus the taped remainder.
- Write the units beside each value.
- If a mark or count was uncertain, repeat the affected segment; extra decimal places cannot recover a missed turn.

SOURCES / Sakamoto and Senda: effective rolling circumference · Oak Ridges Trail Association: distance measuring wheel

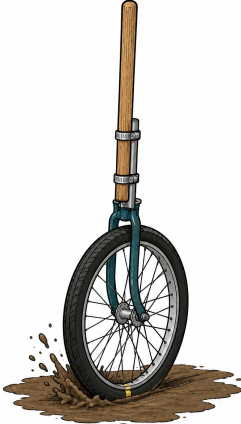
NOTE

Fix the cause, not the answer

KEEP THESE LIMITS WITH THE STEPS

REF

Change one thing, then repeat both the rollout and the known-distance check.



AVOID SLIPPING



CHECK THE JOINT

COUNTS AND MARKS

- **A missed revolution changes the reading by an entire calibrated turn.**
- Start with the same tire mark at the ground each time and count its returns, beginning after zero.
- Use a helper for the ground marks or shorter recorded segments if counting and steering compete for attention.
- Keep tape endpoints exactly at the contact marks and avoid double-counting a remainder.

CONTACT AND ATTACHMENT

- **A wheel that skids, lifts or bounces no longer reliably connects turns to ground distance.**
- Choose firmer ground and a steadier path.
- Check pressure changes and the handle joint if the result drifts between runs.
- If the fork, axle or joint is questionable, put the tool aside until the fault is corrected.
- A clamp cover hides sharp edges; it does not make a loose joint sound.

NOTE

Keep the calibration with the wheel

KEEP THESE LIMITS WITH THE STEPS

REF

A usable distance reading includes the units, conditions and a record of its check.



A SMALL FIELD RECORD

- **Write the date, five-turn rollout distance, distance per turn and units.**
- Record the tire condition or measured pressure, ground condition, known-course length and the two check results.
- For each job, record complete turns, taped remainder and total.
- Keep this note with the wheel so a later user does not borrow a calibration from a different setup.

FINISH WITHIN ITS LIMITS

- **Wipe the tire and attachment dry, inspect the clamp bands and wood, and store the wheel where it cannot roll into someone.**
- This is an educational hand-counted layout aid with no tested accuracy or durability rating.
- Use appropriate surveying or professional measurement for boundaries and other consequential decisions.
- Do not use the handle to carry a person, steady yourself or transport a load.

QUICK REFERENCE

Read the full steps first. Tap any row to return to its instructions.

BEFORE STEP 01

Keep the secure original axle. Two separated clamps must grip the full handle/steerer overlap. Test grip and free spin; never ride. Use unchanged tire inflation and similar ground. Calibrate and check; no survey-accuracy claim.

- 01

Extend and check

Two separated clamps grip handle and steerer. Tug-test; check free spin. Never ride.

P05
- 02

Calibrate five turns

Start mark down at zero. Measure five returns; divide by five. Repeat.

P06
- 03

Count and add

Full turns times calibration, plus one taped remainder. Keep units consistent.

P07
- 04

Compare with tape

Check a known course twice. Correct errors; recalibrate after tire/ground changes.

P08

NUKE SAYS

Write down the units. Future you has already forgotten them.