

North Carolina mathematics

Grade 4 | Measurement

Angles: measure, sketch, reason



NC.4.MD.6

Teacher scripts • original visual models • 30 choice checks • 30 open/performance tasks • worked keys • observation records

Current NC standards for 2026-27 and 2027-28. Use the selected core across short sessions; the reusable bank is not a single test.

Free sample | Contents

NC.4.MD.6 | Fourth Grade mathematics

This sample contains 23 complete selected pages from the 111-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-21, 78-79

Representative activities

M01: sample PDF page(s) 19; original page(s) 18

M02: sample PDF page(s) 21; original page(s) 20

O01: sample PDF page(s) 20; original page(s) 19

O02: sample PDF page(s) 22; original page(s) 21

Selected teacher prompts and keys: original page(s) 78-79

Using this sample

Read the preparation and access guidance before using a selected activity.
Keep teacher keys and private preparation pages separate from student copies.
Use the original resource contents to see the scope of the complete packet.

Complete paid download

The complete resource includes the full PDF task bank and teaching materials.

Contents and planning

Choose a focused lesson

Guide: exact standard, targets, preparation, worked models and seven detailed section scripts. Student resources: reusable organizer and 30 choice plus 30 open/performance tasks. Teacher resources: worked item keys, rubric, evidence record, inquiry and official sources. Use the printed page numbers and item IDs to select copies.

Selected core, not a 60-item test

An 80-minute selected core can be split across three or more sessions. Warm-up 8 min; I Do 12; We Do 15; collaborative practice 13; independent practice 17; small-group reteach 10; exit 5. Use the first M and O in each section; other items provide transfer or later observation. Do not ask learners to complete the whole bank in one sitting.

Section bank allocations: 01-04 warm-up; 05-08 I Do; 09-13 We Do; 14-18 collaborative; 19-23 independent; 24-27 reteach; 28-30 exit. Each range includes both M choice and O performance items. Choice success does not replace actual drawing, measurement or explanation.

Suggested split

Day 1: warm-up, models and shared work. Day 2: partner and individual practice. Day 3: targeted reteach, fresh exit and a later extension. Adjust minutes for access and evidence; times are never scoring cutoffs.

Visual support

Accurately drawn rotated angles, adjacent-angle diagrams, a reference protractor and sketch spaces support actual measurement.

Exact official standard

What learners demonstrate

NC.4.MD.6 | Develop an understanding of angles and angle measurement.

- Understand angles as geometric shapes that are formed wherever two rays share a common endpoint, and are measured in degrees.
- Measure and sketch angles in whole-number degrees using a protractor.
- Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems.

I can targets

A | I can describe an angle as two rays with a common endpoint; use degrees.

B | I can measure and sketch whole-number-degree angles with a protractor.

C | I can use addition and subtraction to find unknown angles in a diagram.

Essential question

How can a tool and an equation describe the same amount of turn?

Collect the actual drawing or construction, the measurement/calculation when relevant, and the learner's explanation. Targets are instructional descriptions, not official mastery cutoffs.

Preparation and access

Prepare tools, preserve thinking

Materials

Pencils, straightedge/ruler, blank paper and copies of selected pages. Each learner needs a standard 180° classroom protractor with whole-degree ticks. The printed reference supports instruction but a sturdy transparent protractor is preferred. Uniform resizing preserves angles; do not stretch page width or height separately.

Prior learning and limits

Recognize rays and common endpoints; add/subtract whole numbers within 360. A degree is $1/360$ of a full turn. Use 90° and 180° benchmarks. All measured/sketched task angles are whole-number degrees.

Vocabulary

ray, endpoint, vertex, angle, degree, protractor, adjacent, whole, part

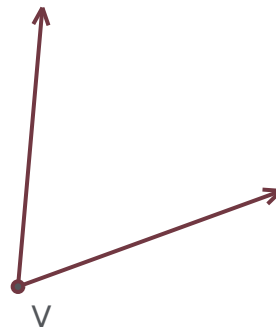
Access without supplying answers

Read prompts and labels neutrally. Allow oral, signed, AAC, drawn or learner-directed responses. A learner may direct an adult's physical marks when motor access is needed, but must choose locations and relationships. Do not place the protractor, identify a symmetry line, select a partition or name a shape for the learner during an independent check. Record physical access separately from mathematical cues. Do not score handwriting, spelling or reading speed.

Teacher-only worked model

Measure the opening

Say: "These rays meet at V, the vertex. I place the protractor center on V. I align zero with the starting ray, then follow that scale to the other ray." The pictured opening is 65° . The other scale reads 115° , but that is inconsistent with this acute opening. Move the protractor, not the vertex. Extend a short drawn ray with a straightedge if needed.



Invite evidence

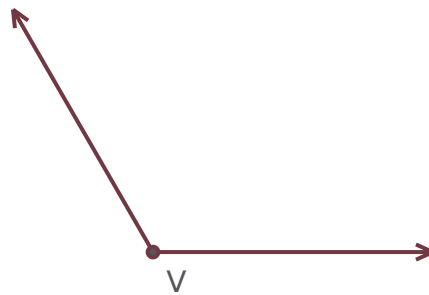
Say: "Show what in the model proves the claim. How could we check it a different way?" Ask the learner to perform the action, not merely repeat the vocabulary. Hide this completed model for uncued work.

If the wrong protractor scale is used, first predict acute/obtuse and locate the zero on the starting ray. If the center is misplaced, align it with the vertex before reading. If a whole and part are added, identify the nonoverlapping parts first and write $\text{part} + \text{unknown} = \text{whole}$.

Teacher-only worked model

Sketch with the tool

To sketch 120° : draw a starting ray. Put the protractor center at its endpoint and zero along it. Mark the 120° tick on that scale. Remove the tool and draw a ray from the endpoint through the mark; add an arrow. Check: the opening is obtuse, not the 60° from the opposite scale. Lengthening the rays changes no angle measure.



Invite evidence

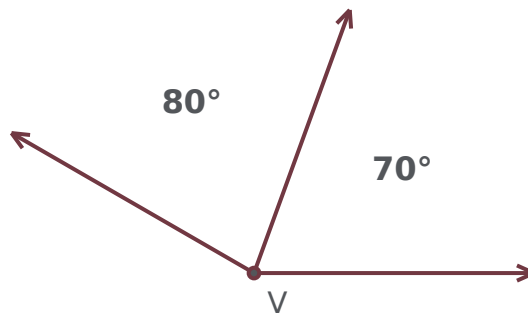
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Teacher-only worked model

Add and subtract parts

The whole opening is 150° . One adjacent part is 70° . Say: " $70 + x = 150$. The missing part is $150 - 70 = 80^\circ$. Check $70 + 80 = 150^\circ$." The interior ray separates two parts without overlap. To combine known parts, add them. Do not add the whole to one of its parts.



Invite evidence

Say: "Show what in the model proves the claim. How could we check it a different way?" Ask the learner to perform the action, not merely repeat the vocabulary. Hide this completed model for uncued work.

If the wrong protractor scale is used, first predict acute/obtuse and locate the zero on the starting ray. If the center is misplaced, align it with the vertex before reading. If a whole and part are added, identify the nonoverlapping parts first and write $\text{part} + \text{unknown} = \text{whole}$.

Teacher script | Warm-up

Warm-up | 8 minutes

Select M01 and O01. Reserve M/O01-04 for transfer or later practice. Target: Measure and sketch whole-number-degree angles with a protractor.

0-2 min | launch

Say: "Measure this angle with a protractor. Record the degree measure. Explain where you placed the center and which zero you used." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

2-5 min | work and observe

Invite a drawing, physical tool use or calculation. Say: "What feature matters here? Show each step so another person can check." In shared work, compare two proposed methods and test them against the figure.

5-8 min | check and record

Look/listen for: 35° (allow a documented drawing/reading tolerance of about 2° , not an official cutoff). Center at vertex; baseline aligned with starting ray; use matching zero scale. Observe actual instrument alignment. Use M01 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Teacher script | I Do

I Do | 12 minutes

Select M05 and O05. Reserve M/O05-08 for transfer or later practice. Target: Describe an angle as two rays with a common endpoint; use degrees.

0-2 min | launch

Say: "Draw two angles that both measure 35° but have different drawn ray lengths. Check with a protractor. Explain what stayed the same." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

2-9 min | model

Model the selected performance completely: Both angles measure 35° despite different finite ray depictions. The amount of opening/turn stays the same; ray lengths do not determine angle size. Each ray needs an arrow and both share a vertex. Say: "I will check the features in the actual drawing, not trust a label." Invite learners to describe the next step before you take it.

9-12 min | check and record

Look/listen for: Both angles measure 35° despite different finite ray depictions. The amount of opening/turn stays the same; ray lengths do not determine angle size. Each ray needs an arrow and both share a vertex. Use M05 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Teacher script | We Do

We Do | 15 minutes

Select M09 and O09. Reserve M/O09-13 for transfer or later practice. Target:
Use addition and subtraction to find unknown angles in a diagram.

0-2 min | launch

Say: "Use the diagram. The whole angle is 180° . Find x , write an equation, and verify by adding the parts." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

2-12 min | work and observe

Invite a drawing, physical tool use or calculation. Say: "What feature matters here? Show each step so another person can check." In shared work, compare two proposed methods and test them against the figure.

12-15 min | check and record

Look/listen for: $65 + x = 180$; $x = 115^\circ$. Check $65 + 115 = 180$. No overlap or gap between the two parts. Use M09 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Teacher script | Collaborative practice

Collaborative practice | 13 minutes

Select M14 and O14. Reserve M/O14-18 for transfer or later practice. Target: Measure and sketch whole-number-degree angles with a protractor.

0-2 min | launch

Say: "Use a protractor and straightedge to sketch an angle measuring 65° . Label the vertex and degree measure. Describe how a partner can check it." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

2-10 min | work and observe

Partner A performs the task while Partner B checks using the defining features. Switch roles with the next open item. Each learner makes a separate record. Say: "Point to evidence before agreeing with your partner."

10-13 min | check and record

Look/listen for: Two rays share a vertex and their smaller opening measures 65° . Place center, draw starting ray, mark 65° on matching scale, then draw second ray through mark. Check actual drawing, not only label. Use M14 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Teacher script | Independent practice

Independent practice | 17 minutes

Select M19 and O19. Reserve M/O19-23 for transfer or later practice. Target: Measure and sketch whole-number-degree angles with a protractor.

0-2 min | launch

Say: "Measure this angle with a protractor. Record the degree measure. Explain where you placed the center and which zero you used." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

2-14 min | work and observe

Give quiet time for the learner's own drawing, tool use and explanation. Do not supply a mathematical cue. Say only: "Show your check." Record the original response before any teaching.

14-17 min | check and record

Look/listen for: 145° (allow a documented drawing/reading tolerance of about 2° , not an official cutoff). Center at vertex; baseline aligned with starting ray; use matching zero scale. Observe actual instrument alignment. Use M19 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Teacher script | Small-group reteach

Small-group reteach | 10 minutes

Select M24 and O24. Reserve M/O24-27 for transfer or later practice. Target:
Use addition and subtraction to find unknown angles in a diagram.

0-2 min | launch

Say: "A hinge opens through 150° in two turns. The first turn is 70° . Sketch adjacent angles for the turns and find the second turn. Label the whole and both parts." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

2-7 min | work and observe

If the wrong protractor scale is used, first predict acute/obtuse and locate the zero on the starting ray. If the center is misplaced, align it with the vertex before reading. If a whole and part are added, identify the nonoverlapping parts first and write $\text{part} + \text{unknown} = \text{whole}$. Use a smaller or simpler fresh example first, then return to O24. Record the amount of support.

7-10 min | check and record

Look/listen for: Draw a 150° whole split into 70° and 80° . $150 - 70 = 80^\circ$. A protractor confirms the drawing, and adding parts confirms the arithmetic. Use M24 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Teacher script | Exit ticket

Exit ticket | 5 minutes

Select M28 and O28. Reserve M/O28-30 for transfer or later practice. Target:
Use addition and subtraction to find unknown angles in a diagram.

0-1 min | launch

Say: "Find the whole angle by combining the labeled parts. Write an addition equation and explain why addition fits." Ask the learner to explain what must be found or drawn before choosing a method. Read printed labels without interpreting them.

1-3 min | work and observe

Give quiet time for the learner's own drawing, tool use and explanation. Do not supply a mathematical cue. Say only: "Show your check." Record the original response before any teaching.

3-5 min | check and record

Look/listen for: $40+65=105^\circ$. Adjacent parts share the middle ray and together make the whole opening. Use M28 as a quick recognition check; the performance remains the stronger evidence.

Record item, actual action, explanation, neutral access and mathematical cues separately. Early finishers create a second valid example or a counterexample, then explain why it works.

Reteach and extension

Respond to the evidence

Common misconceptions

If the wrong protractor scale is used, first predict acute/obtuse and locate the zero on the starting ray. If the center is misplaced, align it with the vertex before reading. If a whole and part are added, identify the nonoverlapping parts first and write $\text{part} + \text{unknown} = \text{whole}$.

Language supports

Use the relevant frame: "I know ___ because the drawing shows ___." "I checked by ___." "My first claim changed because ___." Supply vocabulary or allow a home-language explanation without selecting the mathematical relationship. Pair verbal descriptions with pointing, sketching and gestures.

Extend strategically

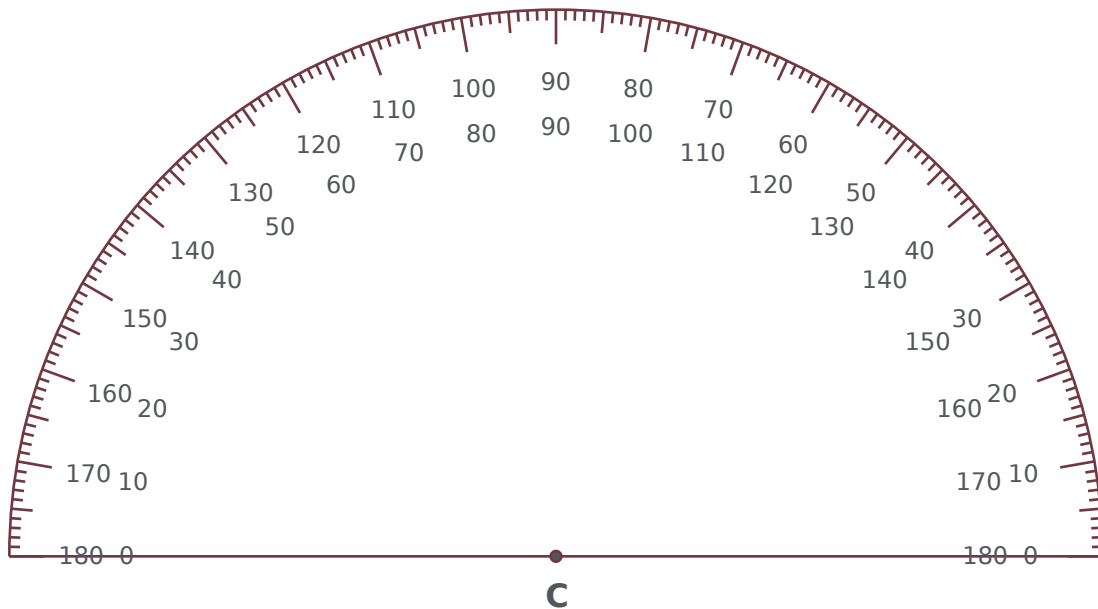
Session 1: design a fan with a 150° opening split into three whole-number angles; sketch with a protractor. Session 2: have a partner measure all parts, reconcile disagreement, and check their sum. Example $40^\circ + 50^\circ + 60^\circ = 150^\circ$. Revise any drawing that disagrees with its labels, preserving the original evidence.

This is a multi-session reasoning investigation. Preserve initial claims, tests and revisions; do not assign a high depth-of-knowledge label just because a task is long.

Reference tool | teacher-supported

Read the matching zero

Center C belongs at the angle vertex. Align a starting ray with a zero, then read the scale that starts there. A classroom transparent protractor is preferred for measuring task diagrams.



Outer numbers begin at 0 on the right; inner numbers begin at 0 on the left. Tick spacing is one degree. The degree values, not the tool's physical size, measure the angle.

Print without stretching. This opaque reference is useful for alignment demonstrations; use a transparent protractor for diagrams beneath the tool. Adult cutting is optional, never required.

Student master | copy as needed

Draw, label, explain

Name: _____ Item: _____

The grid cells represent equal units. No centimeter or inch scale is implied.

My labels and reasoning

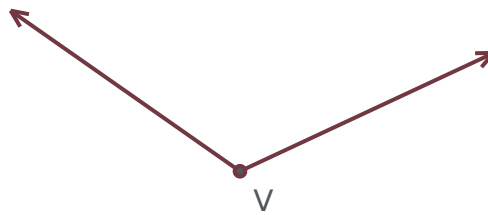
How I checked

Student | Warm-up

M01 | Choose and explain

Name: _____ Date: _____

Use a protractor to measure the smaller angle between these rays. How many degrees is it?



- A. 120
- B. 110
- C. 60
- D. 130

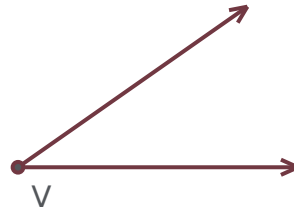
Show or tell how you know.

Student | Warm-up

001 | Perform and explain

Name: _____ Date: _____

Measure this angle with a protractor. Record the degree measure. Explain where you placed the center and which zero you used.



My reasoning or check (you may tell an adult):

Student | Warm-up

M02 | Choose and explain

Name: _____ Date: _____

What makes two rays form an angle?

- A. They must be horizontal.
- B. They share a common endpoint.
- C. They must be perpendicular.
- D. They must have equal drawn lengths.

Show or tell how you know.

Student | Warm-up

002 | Perform and explain

Name: _____ Date: _____

Use a protractor and straightedge to sketch an angle measuring 35° . Label the vertex and degree measure. Describe how a partner can check it.



My reasoning or check (you may tell an adult):

Teacher-only worked keys

M01 and O01

M01 | A - 120

Target B | Center on the common endpoint; align zero with either ray and read toward the other: 120° . The other scale gives 60° , which does not match the smaller opening.

Choice check: compare each distractor with the defining attributes or recompute the required quantity. A plausible label or number is insufficient if it contradicts the actual figure. Check the mathematical relationship, not a superficial feature or the order of options.

O01 | Complete sample evidence

Target B | 35° (allow a documented drawing/reading tolerance of about 2° , not an official cutoff). Center at vertex; baseline aligned with starting ray; use matching zero scale. Observe actual instrument alignment.

Accept mathematically equivalent valid examples and reasoning. Check actual drawing, measurement or tool use; record the learner's evidence and support. The sample is not a required wording script.

Teacher-only worked keys

M02 and O02

M02 | B - They share a common endpoint.

Target A | Any two rays with a shared endpoint form an angle; no special direction or right angle is required.

Choice check: compare each distractor with the defining attributes or recompute the required quantity. A plausible label or number is insufficient if it contradicts the actual figure. Check the mathematical relationship, not a superficial feature or the order of options.

O02 | Complete sample evidence

Target B | Two rays share a vertex and their smaller opening measures 35° . Place center, draw starting ray, mark 35° on matching scale, then draw second ray through mark. Check actual drawing, not only label.

Accept mathematically equivalent valid examples and reasoning. Check actual drawing, measurement or tool use; record the learner's evidence and support. The sample is not a required wording script.