

Signed Quantities and Magnitude



Grade 6 | NC.6.NS.5

Teacher scripts and worked models

30 multiple-choice + 30 open/performance tasks

Original number lines, coordinate grids and workspaces

Worked keys, scoring guidance and evidence record

Current North Carolina standards for 2026-27 and 2027-28. Select tasks across several sessions; this bank is not one test.

Free sample | Contents

NC.6.NS.5 | Sixth Grade mathematics

This sample contains 19 complete selected pages from the 92-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-15, 30-31, 60, 75

Representative activities

M01: sample PDF page(s) 16; original page(s) 15

M02: sample PDF page(s) 16; original page(s) 15

O01: sample PDF page(s) 17; original page(s) 30

O02: sample PDF page(s) 18; original page(s) 31

Selected teacher prompts and keys: original page(s) 60, 75

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.

TEACHER GUIDE

Exact standard

Understand and use rational numbers to:

Describe quantities having opposite directions or values.

Represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

Understand the absolute value of a rational number as its distance from 0 on the number line to:

- Interpret absolute value as magnitude for a positive or negative quantity in a real-world context.

- Distinguish comparisons of absolute value from statements about order.

Alignment note: All clauses above are taught and assessed in this packet. Current NC numbering is used; future 2028-29 standards are not substituted.

TEACHER GUIDE

Targets and coverage

T1: I can describe opposite directions or values with signed rational numbers.

Evidence: M01, M02, M04, M06, M07, M10, M18, M19, M22, M27, O04, O06, O07, O08, O12, O13, O14, O21, O26, O29

T2: I can represent a context and explain its zero reference.

Evidence: M08, M14, M24, M28, M30, O01, O02, O17, O20, O28

T3: I can interpret absolute value as distance and contextual magnitude.

Evidence: M03, M05, M15, M17, M21, O05, O09, O16, O23, O30

T4: I can distinguish signed order from magnitude comparisons.

Evidence: M09, M11, M12, M13, M16, M20, M23, M25, M26, M29, O03, O10, O11, O15, O18, O19, O22, O24, O25, O27

Essential question: How do location, direction and distance help us justify a signed-number statement? MP2 connects contexts and symbols; MP3 critiques reasoning; MP4 models; MP5 chooses tools; MP6 attends to signs and scales.

TEACHER GUIDE

Plan and navigation

Use four sessions of about 25-35 minutes: 1, warm-up and I Do; 2, We Do and collaborative practice; 3, independent work; 4, reteach and exit. Select one choice and one open task per section initially. Keep the other items for spaced practice, conferences and new evidence.

Navigation: exact standard -> targets -> materials -> worked model -> organizer -> seven scripts -> choice bank -> open bank -> worked keys -> evidence and sources. Print selected student pages, not the whole teacher packet.

Warm-up: M01-M04 and O01-O04

I Do: M05-M08 and O05-O08

We Do: M09-M13 and O09-O13

Collaborative practice: M14-M18 and O14-O18

Independent practice: M19-M23 and O19-O23

Small-group reteach: M24-M27 and O24-O27

Exit ticket: M28-M30 and O28-O30

Every item has its own target and worked key. Choice recognition is not a substitute for the plotting, modeling, contextual explanation or justified comparison required in open tasks.

TEACHER GUIDE

Materials and access

Prerequisites: read signed decimals and fractions, identify zero, recognize equal intervals, and describe horizontal/vertical directions. For coordinate tasks, review ordered pairs without teaching the answers to assessment items.

Materials: pencil, ruler, supplied number lines/grids and blank organizers. For integer models, use paper circles with + and - marks or safe classroom counters; the printed model shows how. Adults handle any cutting. No specialized purchased tool is required.

Access: neutral read-aloud, enlargement, high-contrast copy, AAC/signing and dictated explanations are allowed. Preserve the construct: a student must direct placement of each point or model step. A scribe may carry out exact student directions and record them.

Answer-supplying cues include naming the quadrant, reversing the sign for the learner, pointing at the correct location or announcing an operation. Record the first response before a cue and score later supported evidence separately.

Vocabulary: rational number, opposite, additive inverse, zero, absolute value, magnitude, inequality, ordered pair, axis, quadrant, reflection, coordinate, distance, zero pair. Teach only the terms needed for the selected standard.

N/O means unobserved, inaccessible or insufficient evidence. Zero means an observed interpretable incorrect response. Do not score handwriting, reading fluency or accent; do not impose invented speed or mastery cutoffs.

Diagrams use mathematical scales, not physical ruler lengths. Each grid has half-unit small squares. Integer lines show 2-unit major ticks with room for student midpoint ticks. Contexts and data are invented for instruction.

WORKED TEACHER MODEL

Elevation and distance

A diver is at -3.5 m and a lookout is at $+2$ m relative to sea level. Say: "Zero is sea level. The diver is lower because $-3.5 < 2$. But the diver is farther from zero: $|-3.5| = 3.5 > |2| = 2$. Order and magnitude answer different questions." The opposite of -3.5 is $+3.5$, an equal distance on the other side.



Anchor: left means less; right means greater. Absolute value measures distance from 0 and cannot be negative. Opposites have equal distances and opposite directions.

STUDENT TOOL

Reusable reasoning organizer

Name: _____ Date: _____

Situation / given values: _____

**Context and zero reference / direction or zero pairs****Equation or comparison / interpretation / check**

TEACHER GUIDE

Warm-up script

Core: M01 and O01. Optional bank through M04/O04. Use a fresh item for later independent evidence.

1-3 minutes | Launch

Name the reference before choosing a sign. Ask what a negative quantity means in this specific situation.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Represent a context and explain its zero reference. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

TEACHER GUIDE

I Do script

Core: M05 and O05. Optional bank through M08/O08. Use a fresh item for later independent evidence.

1-3 minutes | Launch

Model the diver and lookout. Think aloud about direction, zero and distance; separate signed order from magnitude.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Interpret absolute value as distance and contextual magnitude. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

TEACHER GUIDE

We Do script

Core: M09 and O09. Optional bank through M13/O13. Use a fresh item for later independent evidence.

1-3 minutes | Launch

Ask learners to predict which is greater and which is farther from zero. Plot before comparing.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Interpret absolute value as distance and contextual magnitude. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

TEACHER GUIDE

Collaborative practice script

Core: M14 and O14. Optional bank through M18/O18. Use a fresh item for later independent evidence.

1-3 minutes | Launch

Partners each invent a signed context; exchange and identify zero, opposites and magnitude independently.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Describe opposite directions or values with signed rational numbers. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

TEACHER GUIDE

Independent practice script

Core: M19 and O19. Optional bank through M23/O23. Use a fresh item for later independent evidence.

1-3 minutes | Launch

Keep the worked model covered. Ask for a signed representation and a separate magnitude explanation.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Distinguish signed order from magnitude comparisons. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

TEACHER GUIDE

Small-group reteach script

Core: M24 and O24. Optional bank through M27/O27. Use a fresh item for later independent evidence.

1-3 minutes | Launch

If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Distinguish signed order from magnitude comparisons. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

TEACHER GUIDE

Exit ticket script

Core: M28 and O28. Optional bank through M30/O30. Use a fresh item for later independent evidence.

1-3 minutes | Launch

Use an unfamiliar context. Ask for zero meaning and a comparison; collect the first independent response.

4-8 minutes | Demonstrate or elicit

Say: "Show where you start. What does the sign tell you? What in your representation proves the result?" In I Do, demonstrate the worked model; in We Do, pause for students to supply each step. In independent/exit work, give neutral directions only.

3-6 minutes | Examine

Look for: Represent a context and explain its zero reference. Ask: "Can you explain the scale, units and meaning of zero?" Check the model before accepting a correct numerical answer.

2-4 minutes | Respond

Document the exact response first. If a learner says a negative magnitude, measure the gap from zero. Keep the original response before modeling. Have the learner retry a different item after instruction; do not erase the distinction between initial and supported evidence.

1-3 minutes | Close

Record the item, representation, reasoning, access supports and any cue. Early finishers create a counterexample to a tempting shortcut and verify it with a model. Each partner provides individual evidence before discussion.

STUDENT CHOICE

Choice practice 1-2

M01 For account change, positive means a deposit and negative means a withdrawal. A quantity is 1.5 dollars in the negative direction. Which signed number represents it?

- A. 1.5
- B. -2.5
- C. -1.5
- D. 0

M02 For elevation, positive means above sea level and negative means below sea level. A quantity is 1 meters in the positive direction. Which signed number represents it?

- A. 2
- B. -1
- C. 0
- D. 1

STUDENT PERFORMANCE

001 | Warm-up

For score change, positive means a gain and negative means a loss. What does 0 represent? Represent the signed value 5 and its opposite on the blank number line. Label zero with its contextual meaning. Answer and justify using direction and distance.



Model details / equations / zero pairs or context

Answer / explanation / check

STUDENT PERFORMANCE

002 | Warm-up

For account change, positive means a deposit and negative means a withdrawal. What does 0 represent? Represent the signed value 5 and its opposite on the blank number line. Label zero with its contextual meaning. Answer and justify using direction and distance.



Model details / equations / zero pairs or context

Answer / explanation / check

TEACHER ONLY

M worked keys 1-2

M01: C. -1.5

Target: Describe opposite directions or values with signed rational numbers.

The direction determines the sign; the magnitude is 1.5. Thus the quantity is -1.5 dollars. Zero means no change in the account.

Distractor checks: 1.5: Test 1.5 against the required sign and distance 1.5; it does not meet both conditions. -2.5: Test -2.5 against the required sign and distance 1.5; it does not meet both conditions. 0: Test 0 against the required sign and distance 1.5; it does not meet both conditions.

M02: D. 1

Target: Describe opposite directions or values with signed rational numbers.

The direction determines the sign; the magnitude is 1. Thus the quantity is 1 meters. Zero means sea level.

Distractor checks: 2: Test 2 against the required sign and distance 1; it does not meet both conditions. -1: Test -1 against the required sign and distance 1; it does not meet both conditions. 0: Test 0 against the required sign and distance 1; it does not meet both conditions.

TEACHER ONLY

0 worked keys 1-2

001: no change in score

Target: Represent a context and explain its zero reference.

Zero is the named reference: no change in score. Positive and negative quantities describe opposite sides or changes relative to it. Plot 5 and -5, equally far from zero. Label 0: no change in score.

Look for the actual labeled model and an independently given explanation. Accept equivalent correct representations and contexts. A correct answer without the requested performance is incomplete evidence.

002: no change in the account

Target: Represent a context and explain its zero reference.

Zero is the named reference: no change in the account. Positive and negative quantities describe opposite sides or changes relative to it. Plot 5 and -5, equally far from zero. Label 0: no change in the account.

Look for the actual labeled model and an independently given explanation. Accept equivalent correct representations and contexts. A correct answer without the requested performance is incomplete evidence.