

TEACHER AND STUDENT RESOURCE

Reading Expressions in Context



NC Math 1 • NC.M1.A-SSE.1

Expressions and algebraic structure

Seven instructional sections with 30 multiple-choice and 30 open or performance tasks, teaching scripts, original mathematical visuals, generous workspaces, and worked keys.

Free sample | Contents

NC.M1.A-SSE.1 | NC Math 1 mathematics

This sample contains 19 complete selected pages from the 98-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.

ALIGNMENT

Standard and learning targets

Interpret expressions that represent a quantity in terms of its context.

- a. Identify and interpret parts of a linear, exponential, or quadratic expression, including terms, factors, coefficients, and exponents.
- b. Interpret a linear, exponential, or quadratic expression made of multiple parts as a combination of entities to give meaning to an expression.

T1 Interpret terms, factors and coefficients in context.

T2 Interpret exponents in exponential and quadratic expressions.

T3 Explain composite expressions as combinations of meaningful entities.

Each item names its own target. The bank supports multiple sessions; do not assign all 60 tasks in one sitting.

NAVIGATION

Choose evidence deliberately

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

T1: M01, M05, M09, M11, M15, M19, M21, M25, M29, O01, O03, O08, O10, O11, O13, O18, O20, O21, O23, O28, O30

T2: M03, M04, M07, M13, M14, M17, M23, M24, M27, O02, O05, O12, O15, O22, O25

T3: M02, M06, M08, M10, M12, M16, M18, M20, M22, M26, M28, M30, O04, O06, O07, O09, O14, O16, O17, O19, O24, O26, O27, O29

PLANNING

Materials, access and pacing

Materials

Pencils, erasers, straightedge, student pages, and optional graph paper. A calculator may support arithmetic after a learner states the intended relationship. No device or paid software is required.

Prerequisites

Check arithmetic, distribution, units, the meaning of variable, term, factor, coefficient, exponent, and area.

Pacing

Use a short diagnostic warm-up, a model and shared task in one session; collaborative and independent reasoning in later sessions; then targeted reteaching and an exit task. Select two to four tasks at a time based on evidence. Each section's full bank is reusable, not mandatory in one lesson.

Neutral access

Read directions aloud without interpreting the graph, enlarge a page, supply a writing or pointing response method, and allow a learner to dictate an explanation. Keep axes, units, data and mathematical demand unchanged.

Separate instruction from evidence

Keep the learner's first response. Record answer-supplying cues separately from access supports. A completed teacher graph or worked key is for discussion after independent work, never a student construction template.

Review convention

Context determines units and permitted inputs. A coefficient can describe an aggregate rate rather than one individual rate.

TEACHER MODEL

One expression, two useful views

Three teams each pay \$12 plus \$5 per player. Each has p players. Interpret $3(12 + 5p)$ and $36 + 15p$.

$12+5p$ is one team's charge; 3 counts teams. Distribute: $36+15p$. The 36 is all three entry fees; $15p$ is all player fees when each of the three teams has p players. The coefficient 15 is not the fee per individual player; that fee remains \$5. At $p=4$ each team pays \$32 and all three pay \$96.

VISUAL ANCHOR

See the structure

Three teams, each paying \$12 plus \$5 per player.

Team 1	Entry fee \$12	Player fees \$5p
Team 2	Entry fee \$12	Player fees \$5p
Team 3	Entry fee \$12	Player fees \$5p

Combine columns: \$36 in entry fees + \$15p in player fees.
The repeated bracket $12 + 5p$ is one team's whole bill.
This organizer is schematic; box size does not encode dollar value.

REUSABLE REASONING GUIDE

Represent, justify, interpret

Name: _____ Date: _____

Givens, quantities and restrictions**Representation and calculation****Justification or check****Conclusion, domain and units**

WARM-UP

Teaching script

Core: 001 • T1: Interpret terms, factors and coefficients in context.

Optional bank: M01–M04; O01–O04. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 5–8 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O01, including its graph when present. Invite a first independent response before discussion. Ask, “What do the symbols represent? What evidence supports your claim?”

Core task

A repair bill is $B = 15 + 8h$ dollars for h hours of labor. Label every term and coefficient with its meaning and units. Explain how the expression combines quantities and determine the bill for 3 hours.

Teacher solution and discussion

15 dollars is the fixed call-out fee. 8 dollars/hour is the labor rate; h is hours; $8h$ is total labor dollars. Add fixed and labor charges. $B(3) = 15 + 24 = 39$ dollars.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M01 to compare all alternatives after evidence is collected.

I DO

Teaching script

Core: 005 • T2: Interpret exponents in exponential and quadratic expressions.

Optional bank: M05–M08; O05–O08. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 10–12 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O05, including its graph when present. Think aloud through the core task. Say, “I will identify the quantities first, then build a representation and check it against the stated domain.” Hide the worked key until after predictions.

Core task

A model gives $V = 15(0.75)^t$ liters of liquid remaining after t hours. Explain the exponent and base and distinguish amount remaining from amount lost. Write an expression for total liters lost after t hours.

Teacher solution and discussion

t counts hourly reductions; 0.75 retains 75% each hour, losing 25% of the current amount each hour. Initial amount 15. Total lost is $15 - 15(0.75)^t$ liters. At $t=0$, remaining is 15 and lost is 0.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M05 to compare all alternatives after evidence is collected.

WE DO

Teaching script

Core: 009 • T3: Explain composite expressions as combinations of meaningful entities.

Optional bank: M09–M13; O09–O13. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 10–15 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O09, including its graph when present. Have learners propose the next step, then ask a partner to verify it using the original representation. Record more than one valid explanation.

Core task

For t days, a display has 4 racks. Each rack initially holds 15 items, and its item count doubles daily according to a mathematical model. Interpret $4[15(2)^t]$ and distinguish it from $(60 \cdot 2)^t$.

Teacher solution and discussion

Bracket is items per rack at day t ; outer factor counts racks. The initial total is 60 and daily multiplier 2. The other expression puts the initial count into the repeated multiplier; at $t=0$ it yields 1 instead of 60, so it models something different.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M09 to compare all alternatives after evidence is collected.

COLLABORATIVE PRACTICE

Teaching script

Core: O14 • T3: Explain composite expressions as combinations of meaningful entities.

Optional bank: M14–M18; O14–O18. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 15–20 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O14, including its graph when present. Assign reader, representer, checker and explainer roles. Each learner first makes a private prediction; compare reasoning and resolve differences with the data.

Core task

There are 5 separate teams. Each pays a one-time 17-dollar entry fee plus 9 dollars per player, with p players on each team. Explain $5(17 + 9p)$ at the level of each factor and the whole expression. Compare it with $17 + 45p$.

Teacher solution and discussion

Inside parentheses is dollars per team: fixed fee plus player charges. Outside 5 counts teams. Total is $85 + 45p$. The comparison expression charges the entry fee only once, so it is too small by 68 dollars.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M14 to compare all alternatives after evidence is collected.

INDEPENDENT PRACTICE

Teaching script

Core: O19 • T3: Explain composite expressions as combinations of meaningful entities.

Optional bank: M19–M23; O19–O23. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 15–20 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O19, including its graph when present. Provide the printed task and neutral access supports. Preserve the first independent response; do not point to the requested answer or select a method for the learner.

Core task

For t days, a display has 5 racks. Each rack initially holds 17 items, and its item count doubles daily according to a mathematical model. Interpret $5[17(2)^t]$ and distinguish it from $(85 \cdot 2)^t$.

Teacher solution and discussion

Bracket is items per rack at day t ; outer factor counts racks. The initial total is 85 and daily multiplier 2. The other expression puts the initial count into the repeated multiplier; at $t=0$ it yields 1 instead of 85, so it models something different.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M19 to compare all alternatives after evidence is collected.

SMALL-GROUP RETEACH

Teaching script

Core: O24 • T3: Explain composite expressions as combinations of meaningful entities.

Optional bank: M24–M27; O24–O27. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 10–15 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O24, including its graph when present. Start with the learner’s prior evidence. Rebuild one representation with explicit terms and operations, then use a fresh item to check transfer without the prior cue.

Core task

There are 6 separate teams. Each pays a one-time 19-dollar entry fee plus 10 dollars per player, with p players on each team. Explain $6(19 + 10p)$ at the level of each factor and the whole expression. Compare it with $19 + 60p$.

Teacher solution and discussion

Inside parentheses is dollars per team: fixed fee plus player charges. Outside 6 counts teams. Total is $114 + 60p$. The comparison expression charges the entry fee only once, so it is too small by 95 dollars.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M24 to compare all alternatives after evidence is collected.

EXIT TICKET

Teaching script

Core: O28 • T1: Interpret terms, factors and coefficients in context.

Optional bank: M28–M30; O28–O30. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 5–8 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O28, including its graph when present. Ask for a concise claim supported by the representation. Collect the response before sharing a solution; use it to choose the next instructional step.

Core task

A club prints x posters. Its revenue is $10x$ dollars and its cost is $6x + 19$ dollars. Interpret $10x - (6x + 19)$, simplify it, and explain why both cost terms are subtracted.

Teacher solution and discussion

Net = revenue minus total cost. Variable printing cost $6x$ and fixed setup 19 are both expenses. Result $4x - 19$; coefficient is contribution per poster before fixed cost, constant is the setup expense.

Evidence and response

Look for a claim tied to specific terms, factors, operations or graph features. If a learner only names an answer, ask which values or parts of the graph support it. If a sign or operation is mishandled, reconstruct that step with a numerical analogy, then collect a fresh response. A selected option alone does not identify a unique misconception.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M28 to compare all alternatives after evidence is collected.

MULTIPLE-CHOICE BANK

M01 / M02 • Select and justify**M01 | Warm-up | T1**

A rental costs $C = 7 + 3h$ dollars for h hours. What does 3 represent?

- A. The one-time charge in dollars.
- B. The number of rented hours.
- C. The total charge for all hours.
- D. The charge in dollars per hour.

Reasoning: _____

M02 | Warm-up | T3

For w weeks, a club collects $3(7w + 12)$ dollars from 3 identical groups. What does $7w + 12$ represent?

- A. The dollars collected by all groups.
- B. The weekly dollars collected by all groups.
- C. The number of groups participating.
- D. The total dollars collected by one group.

Reasoning: _____

WARM-UP

001 • Show your reasoning

T1: Interpret terms, factors and coefficients in context.

A repair bill is $B = 15 + 8h$ dollars for h hours of labor. Label every term and coefficient with its meaning and units. Explain how the expression combines quantities and determine the bill for 3 hours.

Representation / calculation

Explanation / check

WARM-UP

002 • Show your reasoning

T2: Interpret exponents in exponential and quadratic expressions.

An account model is $A = 1500(1.05)^t$ dollars after t whole years. Interpret the coefficient, base and exponent. Explain A at $t = 0$ and why this is not adding \$1.05 each year.

Representation / calculation

Explanation / check

WORKED TEACHER KEYS

M01 / M02**M01 • T1: Interpret terms, factors and coefficients in context.****Answer: D. The charge in dollars per hour.**

3 multiplies h hours, so its units are dollars/hour; 7 is the fixed charge.

Check each alternative

- A. The one-time charge is 7, the separate constant.
- B. Hours are represented by h , not the coefficient.
- C. The entire expression $7+3h$ gives the total.
- D. 3 multiplies h hours, so its units are dollars/hour; 7 is the fixed charge.

M02 • T3: Explain composite expressions as combinations of meaningful entities.**Answer: D. The total dollars collected by one group.**

Inside parentheses is one group's weekly collections $7w$ plus its initial 12 dollars. The outside factor 3 counts groups.

Check each alternative

- A. The full product $3(7w+12)$ gives all groups.
- B. The weekly total rate for all groups is 21, without the initial funds.
- C. The outside factor 3 counts groups.
- D. Inside parentheses is one group's weekly collections $7w$ plus its initial 12 dollars. The outside factor 3 counts groups.

WORKED TEACHER KEYS

001 / 002**001 • T1: Interpret terms, factors and coefficients in context.**

15 dollars is the fixed call-out fee. 8 dollars/hour is the labor rate; h is hours; $8h$ is total labor dollars. Add fixed and labor charges. $B(3) = 15 + 24 = 39$ dollars.

002 • T2: Interpret exponents in exponential and quadratic expressions.

1500 dollars is the initial amount; 1.05 is the annual multiplier (105% retained, a 5% increase). t counts multiplications. At $t=0$ the multiplier is 1, so $A=1500$. Each year adds 5% of the current amount, not a fixed \$1.05.