
Writing for a Purpose: Journal Writing

MATHEMATICS Grades 10-12

Journal writing in mathematics is a tool that can positively affect attitudes toward the subject, promote skill development, and aid concept mastery. Journals allow teachers to see into student reasoning, rather than simply testing output. Journal writing in mathematics offers students not only a growth opportunity but also the opportunity to receive better-focused teaching strategies. A journal is both a learning tool and a coaching tool.

Purpose

- Provide students with a supportive learning environment in which they are able to test ideas (i.e., to be able to express ideas and be willing to be wrong).
- Provide a vehicle for feedback to students which supports, encourages, and challenges, rather than judges.
- Inform and focus instruction.

Payoff

Students will:

- become better thinkers and writers.
- learn mathematical content and improve problem solving skills.
- overcome math anxiety.

Tips and Resources

- There are three developmental stages in journal writing: the class journal, the group journal, and the personal journal. As the students pass through each stage their role and the role of their teacher will change. However, the strategies they use in the writing process remain the same. As students become familiar with the various strategies, they may pick and chose the methods that work best for them. The teacher will help students identify useful strategies if more than one strategy is introduced.
- Recognize that journals gradually become vehicles for communication for students. Initial writings may be brief and meaningless to the teacher. (This disappears when writing in math becomes part of the culture of the school.)
- Always use very specific prompts that direct student writing – prompts such as, “What did you learn today?” invite the reply, “Nothing.”
- Persistence is required when first introducing writing in the math class: “I am glad that the students are starting to show progress with their math journals.” (A teacher from DDSB after 6 weeks of implementing journals.) Many, however, see much quicker progress.
- Do not give in to the temptation to minimize the time spent on modeling (i.e., Class Journals) and practice (i.e., Group Journals).
- Each developmental stage must be reintroduced when the journal form changes.
- As the writing process moves from the first stage to the final stage, the teacher’s role evolves from that of a leader to that of a respondent.
- See Teacher Resource: *Journal Writing – Developmental Stages*.
- See Teacher Resource: *Journal Writing – Forms and Writing Prompts*.
- See Teacher Resource: *Journal Writing – Linking Process, Strategies and Developmental Stages*.

Further Support

- Give struggling learners organizers or word lists that will help them with their tasks.

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MATHEMATICS Grades 10 - 12

Notes

What teachers do	What students do
Before <ul style="list-style-type: none"> Develop a journal writing prompt (see Teacher Resource: <i>Journal Writing – Forms and Writing Prompts</i>). Model the form of writing to be used if it has not been modeled before. (See Teacher Resource: <i>Journal Writing – Developmental Stages</i> and Teacher Resource: <i>Journal Writing – Forms and Writing Prompts</i>). 	<ul style="list-style-type: none"> Learn the journal form and the response style.
During <ul style="list-style-type: none"> Assign the journal entry in one of three formats: class, group, or personal journal. (See Teacher Resource: <i>Journal Writing – Developmental Stages</i>.) 	<ul style="list-style-type: none"> Respond to the journal prompt: as a class to a class journal; as a group (3 or 4 students) in a group journal; or individually in a personal journal.
After <ul style="list-style-type: none"> Respond to the journal entry. This must initially be done after each journal assignment until such time that the students are confident that the teacher is an interested reader; then journal entries may be responded to after two or three journal assignments: <ul style="list-style-type: none"> respond as a comment; marking/grading will often stop students from responding freely; start the response with a positive comment (on effort, honesty, style, use of terminology <i>something</i>); comment on the central concept; ask a question to help clarify or to further the student's thinking; do not grade grammar and spelling; this is the students' opportunity to express themselves freely, on their terms, not the teacher's; comment on grammar and spelling in a 'coaching' mode, and <u>only after</u> a supportive learning environment has been established; assess the journal entry for student understanding and for indicators to the teacher that an alternate instruction is required. 	<ul style="list-style-type: none"> Read/listen to the response and respond to it if a return question is asked.



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MATHEMATICS

Journal Writing – Developmental Stages

There are three developmental stages in journal writing: the class journal, the group journal, and the personal journal. As the students pass through each stage their role and the role of their teacher will change. However, the strategies they use in the writing process remain the same. As students become familiar with the various strategies, they may pick and choose the methods that work best for them. The teacher will help students identify useful strategies if more than one strategy is introduced.

The writing process and possible strategies are outlined in the Teacher Resource, *Journal Writing – Linking Process, Strategies and Developmental Stages*. Not every strategy listed can be found in this resource. The omitted strategies are marked with * and can be found in *Think Literacy: Cross Curricular Approaches, Grades 7 – 12*.



Journal Writing – Forms and Writing Prompts

In the context of journal writing the word ‘form’ and the expression ‘writing prompt’ take on very specific meanings. These are outlined on the next pages

Forms	Sample Starts, Ideas
Personal Writing reflecting on feelings, attitudes, successes, challenges	- I think I’m good/weak in working with technology because ... - When I’m asked a question in class I ...
Summaries explaining what they learned	- Create a poster that displays data in various ways. - Brainstorm everything you know about probability.
Definitions defining math terms in their own words	- Define the words that are associated with series and sequences. - Define difference of squares, completing the square, and perfect squares.
Translations taking information from one source and having the students put it in their own words	- What does, “The population is modeled by a quadratic relation” mean? - Explain the additive principle.
Reports bringing a series of lessons together to show understanding of how they are related	- We have looked at ways to measure distances through modeling. Report on how these methods are similar/different. - How are annuities and loans the same/different?
Instructions writing a series of steps in a procedure	- How do you expand the product of two binomials? - How do you create a histogram?
Lists a written collection of items, objects, ideas, etc.	- List all of the things that need to be done to complete your independent study unit. - List different forms of a linear function.

Forms	Journal Prompts
Self-assessments giving feedback or comments about math work, learning experiences	- The hardest problem was ... - I think I could do better if ...
Descriptions describing procedures, conversation, group work...	- Our group had trouble agreeing on ... - The two different solutions that we got were ...
Arguments/Justifications persuading others to accept your point of view, refuting someone's point of view, justifying a choice...	-The most efficient way to solve this problem is ... - I found the roots of the equation in order to ...
Explanations reasoning, findings, attempts, strategies, patterns, suggestions	- I tried to solve the word problem by ... -We find the x intercept in order to ...
Applications where this math/lesson could be used	- How would an astronomer use the sine law? -How would a biologist use probability?
Problem Design creating a problem that has to incorporate specific criteria	- Create a problem using similar triangles. - Create a problem using the body mass index.



Journal Writing – Linking Process, Strategies and Developmental Stages

Process	Strategies	Class Journal	Group Journal	Personal Journal
Generate and Record	<ul style="list-style-type: none"> • Rapid Writing* • Setting the Context * 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • select the form and writing prompt • model the strategy <p>Student's Role:</p> <ul style="list-style-type: none"> • make notes • provide ideas • ask questions 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • select the form and writing prompt • assign groups • monitor progress <p>Student's Role:</p> <ul style="list-style-type: none"> • select a strategy as a group • decide on their role • provide ideas • ask questions 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • select the form and journal prompt • monitor progress <p>Student's Role:</p> <ul style="list-style-type: none"> • select and carry out the strategy
Develop and Organize	<ul style="list-style-type: none"> • Webbing and Mapping * • Supporting the Main Idea • Adding Details 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • model the strategy <p>Student's Role:</p> <ul style="list-style-type: none"> • make notes • provide ideas • ask questions 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • monitor progress • provide feedback <p>Student's Role:</p> <ul style="list-style-type: none"> • select a strategy as a group • lead in designated role • provide ideas • ask questions 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • monitor progress • provide feedback <p>Student's Role:</p> <ul style="list-style-type: none"> • select and carry out the strategy
Revise and Edit	<ul style="list-style-type: none"> • Reorganizing Ideas * • Asking Questions to Revise Writing • Peer Editing* • Proofreading Without Partners* 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • model the strategy <p>Student's Role:</p> <ul style="list-style-type: none"> • make notes • provide ideas 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • monitor progress • provide feedback <p>Student's Role:</p> <ul style="list-style-type: none"> • select a strategy as a group • lead in designated role • provide ideas • ask questions 	<p>Teacher's Role:</p> <ul style="list-style-type: none"> • monitor progress • provide feedback <p>Student's Role:</p> <ul style="list-style-type: none"> • select and carry out the strategy

* Refer to *Think Literacy Approaches Grades 7-12* (2003).