Holyoke Public Schools
Mathematics Curriculum Map
Grade 1

Making Shapes and Designing Quilts

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Curriculum Maps

GOALS:

1. To ensure that students are exposed to a rigorous curriculum in every school and every grade.
2. To have consistent instruction and assessment district wide.
3. To prepare students for the MCAS test.
4. To explain what is expected to be covered in each CMP or Investigations Unit.

EXPECTATIONS:

The district's expectation is for students to successfully meet the Massachusetts Mathematics Standards. In order to help facilitate this, teachers are required to follow the curriculum maps. The successful implementation of these maps requires teachers to thoroughly read each lesson in the TE and work through the project and problems in the map and the text prior to planning their lessons. Work should be kept in the binder with the curriculum map. Working through the math is an essential part of lesson planning, as it helps the teacher to better understand the concept being taught and the students' possible misunderstandings.

FEEDBACK TO STUDENTS:

Feedback needs to happen daily in the classroom. There are many ways to give feedback. Conferencing, observations, questions asked during your opening, work time and closing are all forms of feedback.

MAP COMPONENTS:

1. GENERAL PROBING QUESTIONS
2. UNIT SPECIFIC PROBING QUESTIONS
3. GOALS OF UNIT, CONTENT STANDARDS, & PERFORMANCE STANDARDS
4. PROJECT- to be done at end of unit and kept in the portfolio.
    - STUDENT MASTER – for project
5. INVESTIGATIONS:
    - NOTEBOOK - includes: folder, Bound Notebook, Portfolio
    - ACCOUNTABLE TALK – using probing questions

5. ON-DEMAND ASSESSMENTS - to be done during teaching of unit.
    - STUDENT MASTERS- for on-demand assessments.

Mathematics
Evidence of Learning Artifacts

Artifact	K - 1	2 - 5	6 - 8
folder (F)*	o Student Work[1]	o Vocabulary o Student sheets[1] ***All work should be dated and listed by investigation***	o Math books o Vocabulary o Core Problems[1] o Lab sheets ***All work should be dated and listed by investigation***
Marble Notebook (MJ)	o Journal entries[2]	o Table of Contents o Problem of the day o Journal entries o Class work ***All work should be dated and listed by investigation in the Table of Contents***	o Table of Contents o Work time o Journal entries ***All work should be dated and listed by investigation in the Table of Contents***
Portfolio[3] ***(P)***	o On-demand tasks o Projects o Teacher anecdotal notes	o On-demand tasks o Reflections o Projects ***All work should be dated and listed by investigation***	o On-demand tasks o Reflections o Projects ***All work should be dated and listed by investigation***

[*] *Folders may be used in place of binders for these grade levels*
[1] *Send home at the end of each unit*
[2] *Use grade level math journals*
[3] *All documents should be kept for the entire year*

Making Shapes and Designing Quilts
Probing Questions for Accountable Talk

As students progress through this unit, they should be asked the following questions to assess their knowledge about shapes and designs.

- How are the shapes related?
- Can you combine these shapes to make other shapes?
- How is a quadrilateral different than a triangle?
- What makes a square a special kind of rectangle?
- Can you make a different pattern with these shapes?

Classroom Routines

Continue from unit 1

Start With/Get To
Quick Images
Morning Meeting

Classroom Routines offer practice and review of key concepts at each grade level. After their initial introduction, these short activities, designed to take no longer than 10 minutes, support and balance the in-depth work of each curriculum unit.

Implementing Investigations in Grade 1: Please review pages 24-38 for the 3 routines in this unit.

Additional Probing Questions for Accountable Talk

The teacher's role in probing for understanding is to ask questions that will:

- Clarify student understanding
- Get at the objective of the lesson
- Go deeper into the mathematics
- Uncover misconceptions and misunderstandings
- Compare and contrast

The students' role is to be an active participant by:

- Explaining their strategies
- Asking clarifying questions to teacher and other students
- Being active listeners
- Using the language of mathematics

When probing for understanding the teacher and students can use one or more of these suggested questions:

- Why are you using < >?
- What are the ways you could < >?
- What else do you know?
- How do you know that?
- Can you show that?
- What convention did you use here?
- What can you do if you do not know?
- What standard does this work apply to?
- Is this always true?
- How does this connect to other mathematics we have learned?
- What is the same and what are the differences between < >?
- Can you back that up?
- Where is the math in your sketch?
- What does the answer mean?
- Does the answer make sense?
- Could you have used another operation to solve this task?
- Can you give examples?
- Can you say it another way?
- What's the math?
- Tell me about the task in your own words?
- What are you trying to find?
- How did you make your estimate?
- Will your answer be an over-estimate or an under-estimate? Why?
- I noticed that you used <….> to help you understand the task. Can you show us what you did and tell us how it helped you?
- Where do you see < > in your <model, diagram, number line, chart, etc.>?
- How can we see < > in your <model, diagram, number line, chart, etc.>?
- You have used a representation that is different from others that I've seen. Can you show us your <model, diagram, number line, chart, etc.>, and tell us how it helped you?
- How did you decide to solve the task? Why did you choose that method?
- Did you try any method that didn't work?
    - Tell us what you tried.
    - Why didn't it work?
    - Would it ever work?

Goals, Content Standards, & Performance Standards

Unit Goals:

- Fill a given region in different ways with a variety of shapes.
- Use geometrical language to describe and identify and identify important features of familiar 2-D shapes.
- Identify and describe triangles.
- Describe and sort 2-D shapes.
- Compose and decompose shapes.

Math Content Standards: *Remember grades 1 and 2 share the same standards.

(2.G.1) Describe attributes and parts of 2- and 3-dimensional shapes, e.g. length of sides, and number of corners, edges, faces, and sides.
(2.G.2) Identify, describe, draw and compare two-dimensional shapes, including both polygonal (up to six sides) and curved figures such as circles.
(2.G.4) Identify shapes that have been rotated (turned), reflected (flipped), translated (slid), and enlarged. Describe direction of translations , e.g., left, right, up, and down
(2.G.6) Predict the results of putting shapes together and taking them apart
(2.G.7) Relate geometric ideas to numbers, e.g., seeing rows in an array as a model of repeated addition.
(2.M.1) Identify parts of the day (morning, afternoon, and evening), days of the week, and months of the year. Identify dates using a calendar.

Performance Standards:

(M2a) Is familiar with assorted two- and three-dimensional shapes.
(M2d) Determines and understands length, area, and volume.

UNIT: Making Shapes and Designing Quilts

End-of-Unit Project

GRADE: 1

End-of-Unit Project (P) Student work should be placed in portfolio **(P)**. The project is the culminating assessment which will allow students to apply what they learned in the unit. It is written in MCAS form to give students the experience of answering an open-response question.	End-of-Unit Assessment: Unit2, M43 – M 45 - Resource Binder, "Resources Masters and Transparencies"

UNIT: MAKING SHAPES AND DESIGNING QUILTS
Investigation 1 (1.1 – 1.7) DAYS: 7

GRADE: 1

Evidence of Learning Artifacts Journal and Reflection questions should be posted and referred to at the beginning of the appropriate *Investigation*. Journal and Reflection entries need to be done in class as part of the closure and assessment.	***Vocabulary*** – geometry, triangle, rectangle, square, circle, two-dimensional ***Work Time –*** Student Sheets 1 – 25 ***Journal Entries*** – **Inv. 1.1 – 1.4** Choose 2 different shapes and describe their attributes. **Inv. 1.5 – 1.7** List several shapes that can be put together to fill a hexagon. ***Reflection*** – Explain a strategy you could use to fill a hexagon with the **most** blocks.
Accountable Talk To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.	*As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:* How did you know that? How can you use …? Can you show another way? What convention did you use? *These are some recommended questions that you might use. Others can be found be found at the beginning of the map and on the probing question sheet in the district mathematics guide.*

UNIT: MAKING SHAPES AND DESIGNING QUILTS
Investigation 2 (2.1 – 2.5) DAYS: 5

GRADE: 1

Evidence of Learning Artifacts Journal and Reflection questions should be posted and referred to at the beginning of the appropriate *Investigation*. Journal and Reflection entries need to be done in class as part of the closure and assessment.	***Vocabulary*** – quadrilateral ***Work Time –*** Student Sheets 26 - 33 ***Journal Entries*** – **Inv. 2.5** Create two different triangles and two shapes that are not triangles. ***Reflection*** – Describe the attributes of a triangle and a quadrilateral.
Accountable Talk To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.	*As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:* How did you know…? Can you solve the problem in a different way? Does your answer make sense? What was your strategy? *These are some recommended questions that you might use. Others can be found be found at the beginning of the map and on the probing question sheet in the district mathematics guide.*

UNIT: MAKING SHAPES AND DESIGNING QUILTS
Investigation 3 (3.1 – 3.4) DAYS: 4

GRADE: 1

Evidence of Learning Artifacts Journal and Reflection questions should be posted and referred to at the beginning of the appropriate *Investigation*. Journal and Reflection entries need to be done in class as part of the closure and assessment.	***Vocabulary*** – pattern ***Work Time –*** Student Sheets 34 - 40 ***Journal Entries*** – Inv. 3.4 How are squares and triangles related? Explain using pictures, numbers, and words. ***Reflection*** -Describe the pattern you made with your quilt.
Accountable Talk To promote learning, explore solutions, and justify reasoning, conversations between students and students or students and teacher must be accountable – accountable to the learning community, to the mathematics discipline, and to rigorous thinking.	*As a result of this Investigation, students should be able to talk and manipulate the vocabulary of the Investigation in response to this type of question:* How did you know…? Can you solve the problem in a different way? Does your answer make sense? What was your strategy? *These are some recommended questions that you might use. Others can be found be found at the beginning of the map and on the probing question sheet in the district mathematics guide.*

End-of-Unit Project

Student work should be placed in **portfolio (P)**.

The project is the culminating assessment which will allow students to apply what they learned about shapes and patterns. It is written in MCAS form to give students the experience of answering an open-response question.

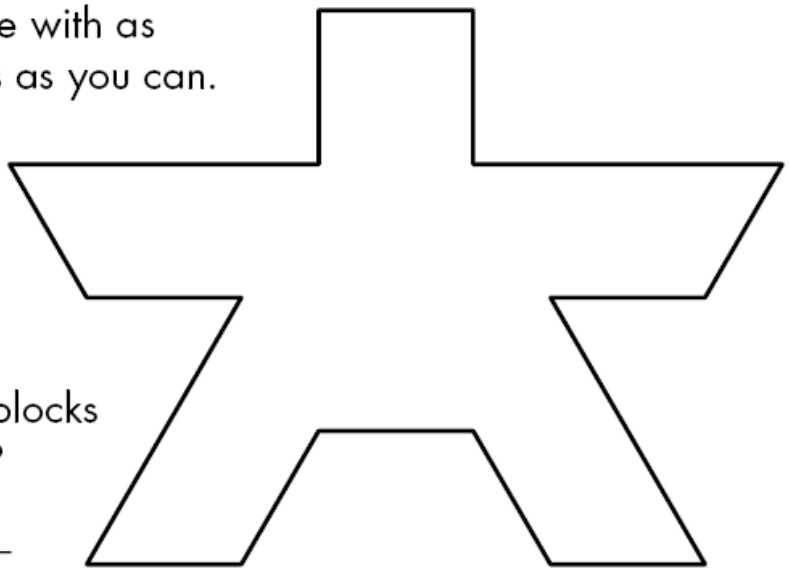
NAME: _____ **DATE:** _____

End-of-Unit Project

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF EACH QUESTION.**
- **Show all work (diagrams, tables, and computations) on your answer sheet.**
- **If you do the work in your head, explain in writing how you did the work.**

Problem 1: Fill in the Shape: Many and Few

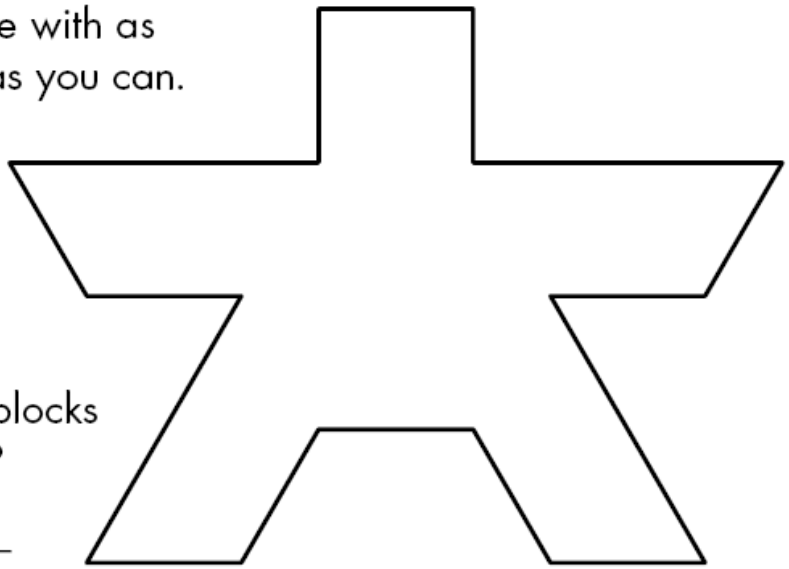
Fill this shape with as many blocks as you can.



How many blocks did you use?

_____

Fill this shape with as few blocks as you can.

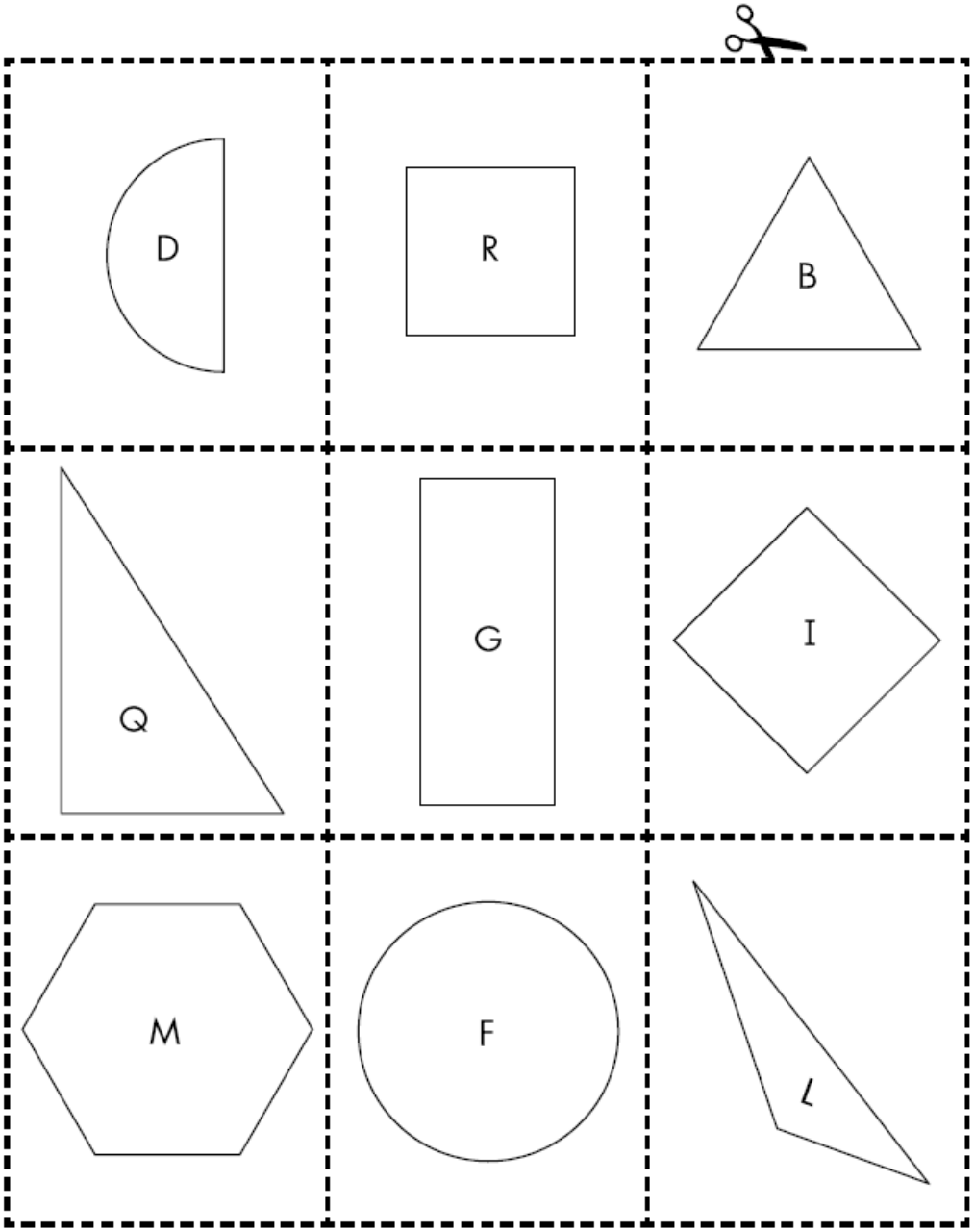


How many blocks did you use?

_____

Problem 2: Sort the Shapes

Cut out the shape cards from the next page. Sort them into two or more groups and glue them onto this page. Label each group.



On-Demand Assessments

(To be filed in portfolio)

Making Shapes and Designing Quilts
Investigations

In class individualized On-Demand tasks assess knowledge of mathematical facts, operations, concepts, and skills, and their efficient application to problem solving. The results of these different forms of assessment provide rich profiles of students' achievements in mathematics and serve as the basis for identifying curricula and instructional approaches to best develop their talents.

UNIT: MAKING SHAPES AND DESIGNING QUILTS

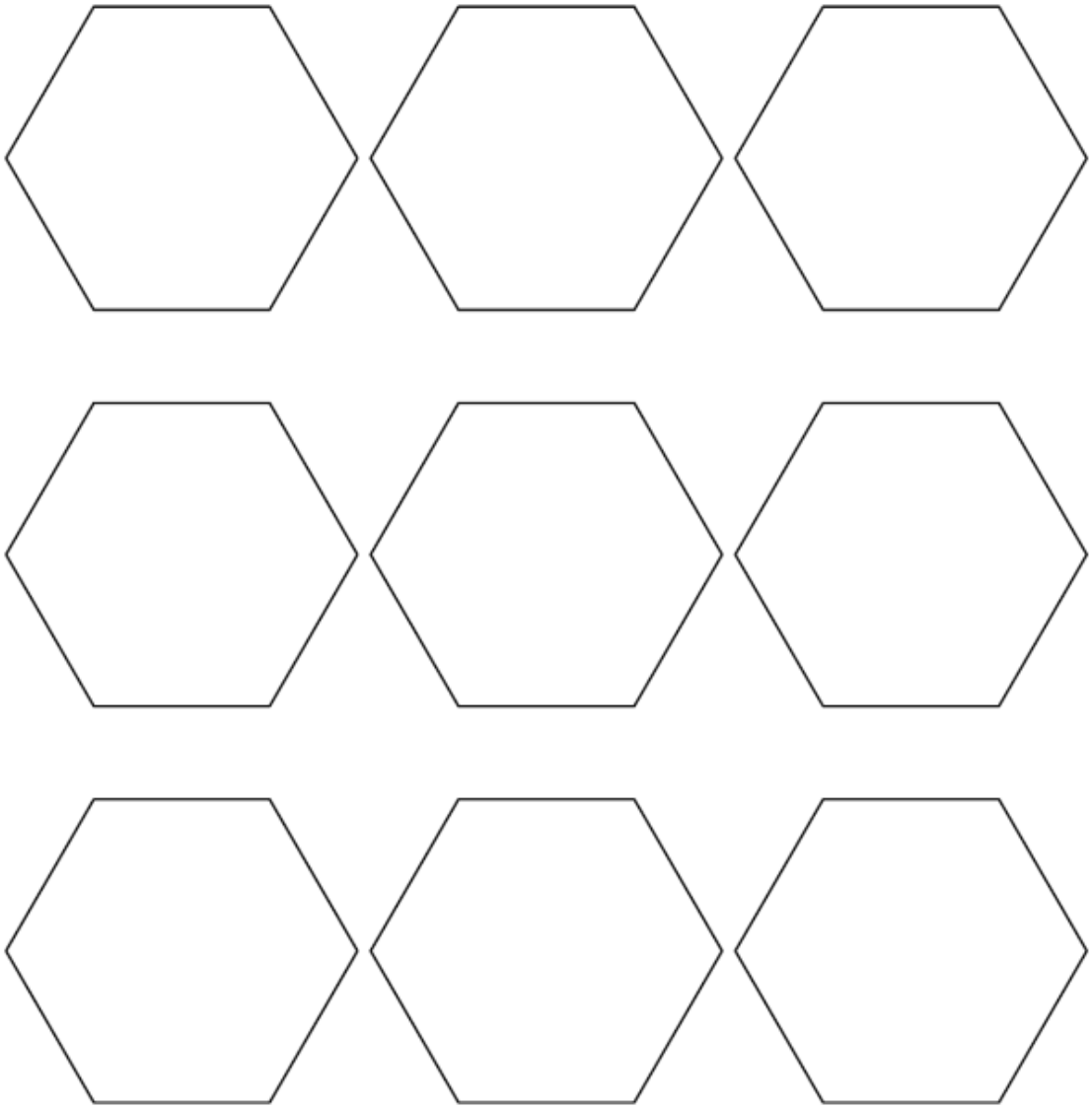
On-Demand Assessments

GRADE: 1

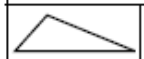
On-Demand Assessments (P) Making Shapes and Designing Quilts Investigations In class individualized On-Demand tasks assess knowledge of mathematical facts, operations, concepts, and skills, and their efficient application to problem solving. The results of these different forms of assessment provide rich profiles of students' achievements in mathematics and serve as the basis for identifying curricula and instructional approaches to best develop their talents.	***Inv. 1:*** Resource Binder: Session 1.7 M28 & 29** ***Inv. 2:*** Resource Binder: Session 2.5, Assessment Checklist M35* ***Inv. 3:*** Resource Binder: None due to project *Assessment Checklists should be kept with tracking sheets.(if there is an assessment that we are asking them to use ****Please refer to the section in the Teacher's Unit Guide entitled, "Professional Development" for examples of student work for each assessment.**

Assessment: Many Ways to Fill a Hexagon

Use pattern blocks to fill in the hexagons. Fill in the hexagons in as many different ways as you can.



Assessment Checklist: What Is a Triangle?

		Recognizes these shapes as triangles				Recognizes these attributes of a triangle				
Student	Identifies a triangle	 triangles with unequal sides	 equilateral triangles	 right triangles	 isosceles triangles	3 sides	3 angles (points or corners)	straight sides	sides may or may not be equal	Notes

Holyoke Public Schools

Mathematics
Scoring Rubric

Score point 4:
The response shows a ***comprehensive*** understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It indicates that the student has ***completed the task(s) correctly***, using mathematical sound procedures. It contains ***clear, complete explanations*** and/or ***adequate work required***.

Score point 3:
The response shows a ***general*** understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It indicates that the student has ***completed the task(s)***, using mathematical sound procedures. It contains ***complete explanations*** and/or ***adequate work required***.

Score point 2:
The response shows a ***basic*** understanding of the mathematical concept(s) and/or procedures embodied in the task(s). It addresses ***most aspects of the task(s)***, using mathematically sound procedures. It may contain a correct solution but provides ***incomplete procedures, reasoning and/or explanations***. It may reflect ***some misunderstandings*** of the underlying mathematical concepts and/or procedures.

Score point 1:
The response shows a ***minimal*** understanding of the mathematical concepts and/or procedures embodied in the task(s). It addresses ***some elements of the task(s) correctly*** but reaches an ***inadequate solution and/or provides reasoning that is faulty or incomplete***. It exhibits ***multiple flaws related to a misunderstanding of important aspects*** of the task(s), ***misuse*** of mathematical procedures, or faulty mathematical reasoning. It reflects a ***lack of essential understanding*** of the underlying mathematical concepts. It may contain a correct numerical answer but the ***required work is not provided***.

Score point 0:
The response is ***completely incorrect, irrelevant, or incoherent***, or contains a correct response arrived at using an ***obviously incorrect procedure***.

NOTES