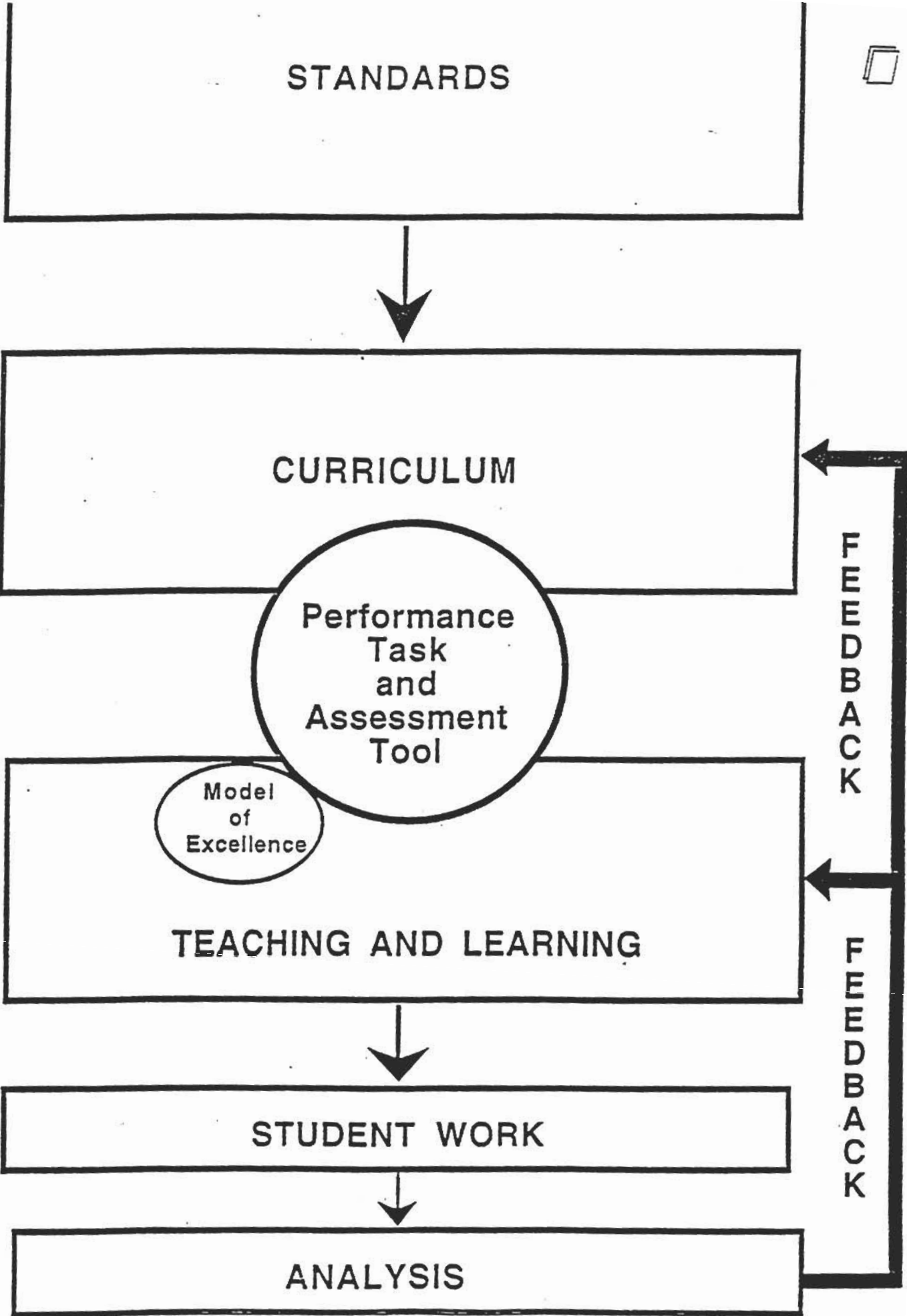


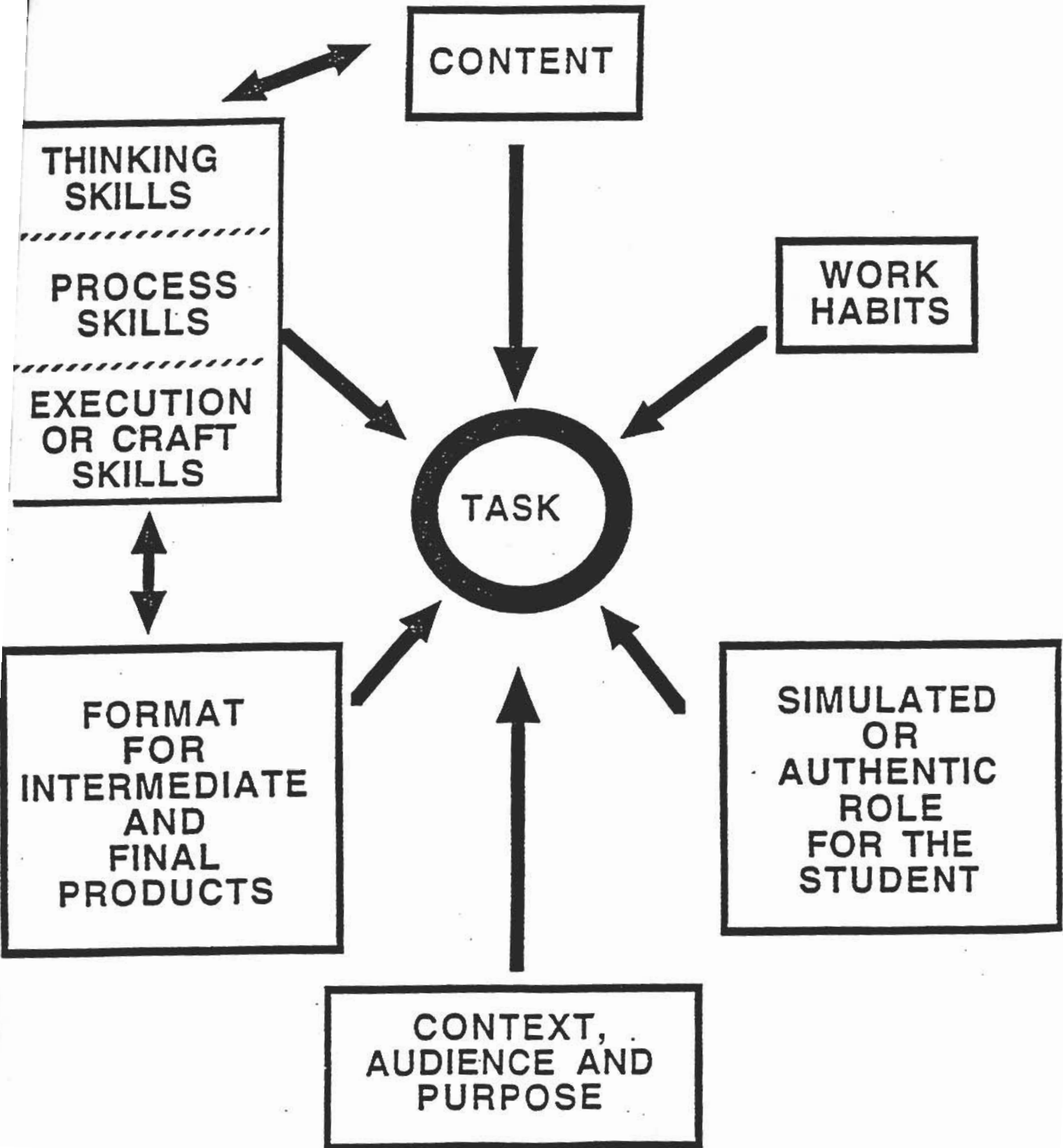
Worksheets
Workshop #1

DIMENSIONS OF UNDERSTANDING

1. The learner uses information that is accurate, well chosen, and sufficient.
2. The learner asks questions that show insight.
3. The learner uses thinking skills that show active problem solving and processing of the content.
4. The learner takes more than one perspective.
5. The learner makes connections between what is being learned and what is already known.
6. The learner finds new information to add to what is being learned.
7. The learner identifies mistakes within the content or its presentation by another person.
8. The learner makes sense out of the unexpected.
9. The learner communicates in a variety of formats to a variety of audiences on the topic.
10. The learner carries-out self-assessment and goal-setting to improve both the processes and products of learning.



ELEMENTS OF A PERFORMANCE-BASED LEARNING/ASSESSMENT TASK





FRAMEWORK FOR A PERFORMANCE TASK

BACKGROUND

The background sets-up the “situation” to establish a reason that this student is creating the product(s) and/or performances for this audience.

The background section establishes the role for the student.

TASK

The task section defines the format(s) of the final product(s), and therefore, what craft skills will be used. Intermediate products may be specified or left up to the learner to select as part of the performance task.

The task section identifies the content focus for the student’s work.

The task section identifies the level of “comprehending information” skills to be used through the “thinking skill” verbs used in one or more of the following categories:

- Initial Understanding
- Developing An Interpretation
- Making Connections
- Taking A Critical Stance

AUDIENCE

The audience section defines who the audience is. This section may describe the audience or leave that work up to the student as part of the performance task.

PURPOSE

The purpose section defines the purpose (impact) the final product is to have on the intended audience.

PROCEDURE

The procedure section provides the MINIMUM structure necessary for the student. The more “performance mature” the student, the less structure is presented.

When the student is more “performance mature,” part of the student’s work is to plan more or all of the procedure for the work to be done.



ACTION VERBS DEFINE THINKING SKILLS

INITIAL UNDERSTANDING

Calculate	Compute	Describe
Display	Identify	Label
List	Locate	Make
Match	Sequence	Show
Summarize		

DEVELOPING AN INTERPRETATION

Analyze	Apply	Categorize
Challenge	Classify	Compare
Conclude	Contrast	Decide
Defend	Describe Patterns	
Describe Relationships		
Design	Devise	Draw Conclusions
Extrapolate	Generalize	Guess
Hypothesize	Infer	Justify
Make Analogies	Predict	Prioritize
Synthesize	Use Metaphors	

MAKING CONNECTIONS

(between what you already know and the new information)

Add To	Categorize	Compare
Contrast	Generalize	Revise
Support		

CRITICAL STANCE

Check	Criticize	Evaluate
Identify Error	Judge	Rate
Support		



SOME OPTIONS AS TO THE FORMAT FOR THE PRODUCT OF A PERFORMANCE TASK

GRAPHIC ORGANIZERS:

- Venn Diagrams
- Time Lines
- Flow Charts
- Cycles
- Character Analysis Frameworks
- Cause and Effect Sequence or Webs
- Effect and Cause Sequence or Webs
- Pro/Con or Strength/Weakness Charts
- Concept Maps
- Story Webs
- Classification Keys
- Decision-Making Flow Charts

OTHER ORGANIZATIONAL PRODUCTS:

- Note Cards
- Diaries
- Plans
- Data Charts and Tables
- Double Column Entry Journals
- Designs for Experiments
- Time and Task Management Plan (for group work or individual work)
- Assessment Lists
- Outlines
- Observation Logs
- Goals and Objectives

GRAPHS:

- Bar Graphs
- Pie Graphs
- Histograms
- Scatter grams
- Stem and Leaf Graphs
- Line Graphs
- Bar and Whisker Graphs
- Pictographs

WRITTEN PRODUCTS:

- Words
- Paragraphs
- Essays
- Themes
- Reports
- Books
- Chapters
- Sequels
- Fairy Tale
- Short Stories
- Explanations
- Resumes
- Explanations
- Metaphors
- Memos
- Biography
- Questions
- Menus
- Sentences
- Friendly Letters
- Business Letters
- Letters to the Editor
- Persuasive Letters.
- Consumer News Letters
- Book Reports
- "Missing Chapters"
- Myths
- Fables
- "How To" Directions
- Self-Reflective Analyses
- Analogies
- Poems
- Autobiographies
- Proposals
- Tests
- Recipes



GRAPHICS AND OTHER VISUALS WITH AND WITHOUT TEXT:

- | | |
|---------------------------------|---------------------|
| Posters | Cartoons |
| Pamphlets | Brochures |
| Drawings | Blue Prints |
| Paintings | Sculptures |
| Maps | Displays |
| Bumper Stickers | Home Pages |
| Videos | Hypermedia Programs |
| Book Jackets | Collages |
| Photographs | Photo Essays |
| Models | Schematics |
| Advertisements | Banners |
| Scrapbooks | Portfolios |
| Storyboards | Bulletin Boards |
| Dioramas, Trioramas, Quadoramas | |

CONSTRUCTED PRODUCTS:

- | | |
|-----------------|-----------|
| Models | Tools |
| Machines | Apparatus |
| Sculptures | Costumes |
| Museum Displays | |

PERFORMANCES:

- | | |
|------------|-------------------|
| Speeches | Debates |
| Interviews | Panel Discussions |
| Skits | Dances |
| Music | Puppet Shows |
| Newscasts | |

OTHER:

- | | |
|------------|---------------------|
| Group Work | Conflict Resolution |
| Food | |

SOME OPTIONS FOR THE AUDIENCE FOR THE PRODUCT OF A PERFORMANCE TASK



The Classroom Teacher	The Principal Or Other Administrator
Another Adult In The School	An Adult Family Member
A Juvenile Family Member	A Classmate
A Government Official	A Business Person
An Author	A Famous Person In History
A Political Candidate	An Editor
A Scientist	An Engineer
An Artist	A Private Foundation
A Museum or Gallery Visitor	A Judge
A Boss	An Employee
Students In The School Or Another School (same age, younger, older)	
A Member Of An Advocacy Group	
A Character In A Book, Poem, Movie, Or Video	
The Consumers Of A Product Or Service	

SOME PURPOSES FOR THE IMPACT OF A PRODUCT OF A PERFORMANCE TASK ON A TARGET AUDIENCE

Inform	Persuade	Entertain
Teach	Inspire	Draw Attention To
Coach	Evaluate	Critique
Defend	Summarize	

SOME ROLES FOR STUDENTS TO TAKE OR SIMULATE

Student	Citizen	Consumer
Scientist	Engineer	Trades Person
Lawyer	Judge	Business Person
Athlete	Artist	Author
Biographer	Autobiographer	Reporter
Detective	Police Person	Fire Fighter
Literary Critic	Newscaster	Tour Guide
Travel Agent	Zoo Keeper	Tutor
Politician	Famous Person	Director of an Art Gallery or Museum
Inventor	Eye Witness	Advertiser
Animal	Plant	Fictitious Person or Character
Atom	Molecule	Machine
Cell	Organ	Body System



92 Write a story problem that can be solved using the number sentence

$$12 - 5 = \square$$

93 Draw a triangle.

--

94 Draw a rectangle.

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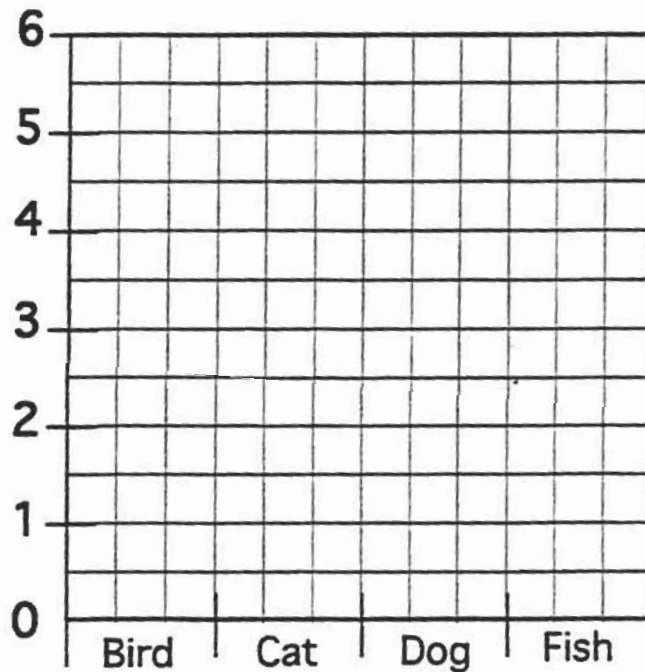
95 Complete the BAR graph using the following information.

Family Pets

Pets	Number of Students
Bird	2
Cat	4
Dog	6
Fish	3

Family Pets

Number
of
Students



Pets



Answer problems 135 and 136 on page 10
of your answer booklet.

135 Draw one line of symmetry for this figure.



136 Draw a parallelogram. Write one or two
sentences to describe this figure.

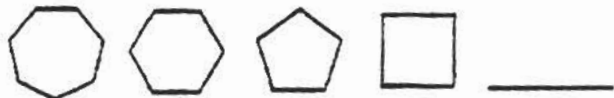


Answer problems 89-94 on pages 7-10 of your answer booklet.

- 9 Write the number that should come next in this pattern. Then write a sentence to explain how you decided what to write.

120, 105, 90, 75, _____

- 10 Draw the polygon that comes next in this sequence. Write a sentence to explain how you decided what to draw.



- 91 Al bought 3 baseball caps. Each sells for \$21.95. Write a number sentence to find the total amount Al spent.

- 92 Antonio baby-sat for 5 hours on Sunday. He earned \$22.50. Write a number sentence to find the amount Antonio earned per hour.

- 93 Ira is comparing the number of small business franchises. Draw and label a BAR graph that shows the number of each franchise shown in the table below.

NUMBER OF FRANCHISES 1990	
McDonald's	7919
Jazzercise	4407
Dairy Queen	5214
7-Eleven	3010

- 94 Betty thought it would be a good idea to save \$10 each month. Draw and label a LINE graph that shows the amount of money Betty would have saved from January to July.

**CAPT Mathematics Open-Ended Cluster:
"Concentration of Medication in the Bloodstream"****Concentration of Medication in the Bloodstream**

The effect of certain pain-killing medications can be described by mathematical formulas. Doctors often use the formulas and their graphs to show how the concentration of medication in the bloodstream changes as time passes. This information can be used to decide when additional doses should be given.

In the formulas represented in questions 1 through 5, t represents the time in hours since the medication was given, and C represents the concentration of the medication in milligrams per liter of blood.

1. Graphing the Concentration

The concentration formula for one of these medications is shown below:

$$C = \frac{2t}{t^3 + 1}$$

Use the formula to find the missing concentration in the table provided in the answer booklet. Round your answer to the nearest tenth and enter it into the table. Then plot the points and sketch the graph on the grid that is provided in the answer booklet.

Remember to show your work and write your answer in your answer booklet.

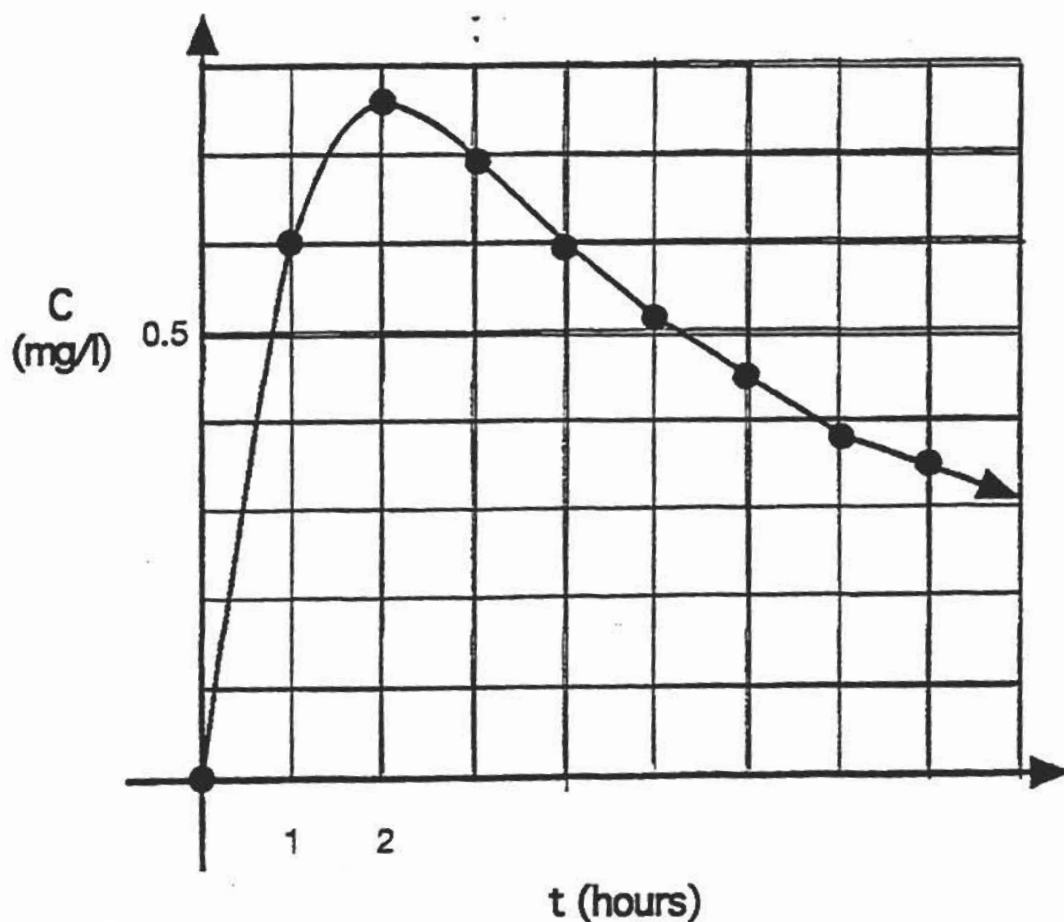
**Concentration of Medication in the Bloodstream (continued)**

Use the information below to answer questions 2-3.

To analyze the effect of another medication, a doctor displayed the graph of its concentration over time on a graphing calculator. The concentration formula for this medication is

$$C = \frac{3t}{4+t^2}$$

The graph is shown below.



RELEASED ITEM

**Concentration of Medication in the Bloodstream (continued)****2. Drawing Conclusions**

What conclusions about the concentration of medication in the bloodstream can you make for this period of time included on the graph? Use the graph to support your conclusions.

Remember to show your work and write your answer in your answer booklet.

3. Concentration Over Time

Suppose that the doctor gives only one dose of the medication. Use the graph and the formula to explain what happens to the concentration of the medication after the time period shown on the graph (e.g., $t > 9$ hours). Support your conclusion by substituting two or more values for time.

Remember to show your work and write your answer in your answer booklet.

— RELEASED ITEM —

Concentration of Medication in the Bloodstream (continued)**4. Aspirin Relief**

When aspirin is taken orally, the amount of relief that it provides can be modeled by the equation

$$r = 4t - t^2$$

where r is the amount of relief provided and t is the number of hours that have elapsed since taking the aspirin.

After how many hours is the obtained relief at a maximum? Explain your reasoning.

[You may use any method to determine your answer, but be sure to show the mathematics you use to determine your answer. The graph is provided for your convenience.]

Remember to show your work and write your answer in your answer booklet.

Do Not Write Here

— RELEASED ITEM —



Concentration of Medication in the Bloodstream (continued)

5. The Blood Test

Olympic Clinic Blood Test Schedule (Appointment Required)	
1 p.m.	5 p.m.
2 p.m.	6 p.m.
3 p.m.	7 p.m.
4 p.m.	8 p.m.

An olympic athlete must have his blood tested for the presence of illegal substances. At 6 P.M. on the evening before the test, an athlete took a prescription medication whose concentration formula is

$$C = \frac{3}{t^2}$$

Because the medication can interfere with the blood test, its concentration must be less than 0.01 mg/l when the athlete's blood is tested,

Of the times shown in the Blood Test Schedule, what is the earliest time at which the concentration of the medication will be below the required level? Show the mathematics you use to determine your answer.

Remember to show your work and write your answer in your answer booklet.



CAPT Science Performance Task

Ice Cold

Today you will be investigating the interaction of ice with two different forms of salt, and you will be asked to decide which form of salt, if either, is more effective for melting ice. During this activity you will work with a partner (or possibly two partners). However, you must keep your own individual lab notes because after you finish you will work independently to write an article about your experiment.

The Problem

In winter, sidewalks and front steps can become dangerously slippery when they are coated with ice. People often spread salt on steps and walks to help melt the ice.

Some people use ordinary table salt to prevent accidents on icy walks, while other people use rock salt. Does one work better than the other?

Your Task

Today you and your partner will design and conduct an experiment to investigate what happens when salt and ice come together and to determine if one form of salt (table salt or rock salt) is better for melting ice on steps and sidewalks.

You have been provided with the following materials and equipment:

Table salt (approximately 60g)	Paper cups (2)
Rock salt (approximately 60g)	Plastic spoons (2)
Ice cubes (approximately 500g)	Thermometers (2)
Tap water	Weighing paper (2 sheets)
Graduated cylinder	Access to a balance
Beakers (2)	Safety equipment
Paper towels for cleanup	Access to a calculator
Access to a clock or watch with a second hand	



Steps to Follow

1. In your own words, state the problem you are going to investigate, and write your statement of the problem on the page provided.

There are several ways to investigate this problem. If you decide to determine the temperature of the ice, mix plenty of ice cubes with a very small amount of water in a beaker. Then, measure the temperature of the ice water.* In order to get an accurate measurement, the bulb of the thermometer should be immersed in water at the bottom of the beaker. **Caution: Do not use a thermometer to stir the ice and water mixture.**

2. Design an experiment to solve the problem. Write your experimental design on the page provided. Show your design to your teacher before you begin your experiment.
3. After receiving approval from your teacher, work with your partner to carry out your experiment. Your teacher's approval does not necessarily mean that your teacher thinks your experiment is well designed. It simply means that in your teacher's judgment, your experiment is not dangerous or likely to cause an unnecessary mess.
4. While conducting your experiment, take notes on the pages provided. Space is also provided for charts, tables or graphs. Your notes will **not** be scored, but they will be helpful to you later as you work independently to write about your experiment and the results. You must keep your own notes because you will not work with your partner when you write your article.

Later, you will work independently to write about your investigation in the form of a newspaper article that tells Connecticut citizens which type of salt is better for melting ice on steps and sidewalks. Turn the page and take a few minutes to read "Directions for Writing Your Article."

When you have finished your experiments, your teacher will give you instructions for clean-up procedures, including proper disposal of all materials.

(Students are provided with four blank pages for their notes.)

* The temperature of the ice water mixture will approximate the temperature of the ice.