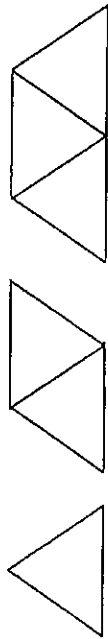


**TASK A**

**Manipulatives or Tools Available:** One triangle pattern block

Using the edge of a triangle pattern block as the unit of measure, determine the perimeter of the following pattern-block trains.



**TASK B**

**Manipulatives or Tools Available:** Calculator

Product

$$2 \times 2 = 4$$

$$2 \times 2 \times 2 = 8$$

$$2 \times 2 \times 2 \times 2 = 16$$

$$2 \times 2 \times 2 \times 2 \times 2 = 32$$

If the pattern shown continues, could 375 be one of the products in this pattern? Explain why or why not.

**TASK C**

**Manipulatives or Tools Available:** None

Think of a real-life situation that describes the following problem.

$$287 \div 14 =$$

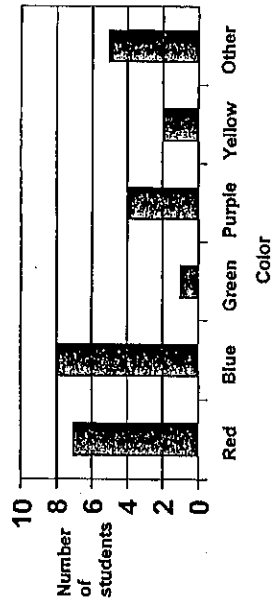
Write the problem and then solve it.

**TASK D**

**Manipulatives or Tools Available:** None

Use the graph to answer the questions.

**Favorite Colors in Our Class**



1. How many students picked red as their favorite color?

2. Did more students like blue or purple?

3. Which color did only one student choose as a favorite color?

**TASK E**

**Manipulatives or Tools Available: None**

Identify the place value for each of the underlined digits.

1. 351

2. 26

3. 4,789

4. 1.2

**TASK F**

**Manipulatives or Tools Available: None**

About how big is  $\frac{4}{5}$  of this rectangle? Show your answer by shading in the rectangle.



What other fractions are near  $\frac{4}{5}$  in size?

**TASK G**

**Manipulatives or Tools Available: Calculator**

Solve each of the following. Show all your work. Check your answers with a calculator.

1.  $8\overline{)96}$

2.  $7\overline{)452}$

3.  $6\overline{)3288}$

4.  $5\overline{)3412}$

5.  $10\overline{)4630}$

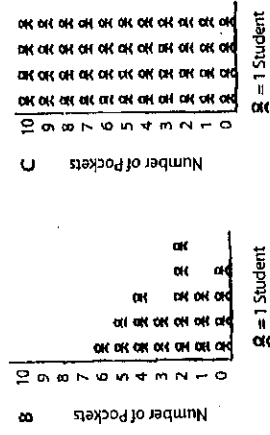
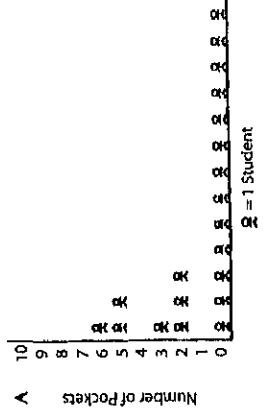
6.  $16\overline{)4952}$

**TASK H**

**Manipulatives or Tools Available: None**

There are 20 students in Mr. Pang's class. On Tuesday, most of the students in the class said they had pockets in the clothes they were wearing.

Which of the graphs below most likely shows the number of pockets each child had? Explain why you chose that graph and why you did not choose the other graphs.



**TASK I****Manipulatives or Tools Available: Interlocking cubes, grid paper**

Solve the two sets of problems shown below. You can use interlocking cubes or the grid paper to make arrays to help you solve these problems. Try to solve the last problem in each set by thinking about the other problems in the set. You can add problems to the set that help you solve the final problem better. After you solve the problems, write about how you solved the last problem in each set.

10 x 6	4 x 6
3 x 6	4 x 10
6 x 6	4 x 12
13 x 6	4 x 30
	4 x 36

**TASK K****Manipulatives or Tools Available: Cubes**

Use cubes to model the situations below. Write a number sentence for each problem. Then use words or pictures to explain how you solved each problem.

1. If each student is to receive 3 pencils, how many students will 15 pencils supply?
2. Jamie and Alex baked 48 cookies for the bake sale and packaged them in groups of 6 cookies per bag. How many bags did they pack?
3. If 32 cookies are divided equally among 8 students, how many cookies will each student receive?

**TASK J****Manipulatives or Tools Available: None**

Think carefully about the following question. Write a complete answer. You may use drawings, words, and numbers to explain your answer. Be sure to show all your work.

Jose ate  $\frac{1}{2}$  of a pizza.

Ella ate  $\frac{1}{2}$  of another pizza.

Jose said that he ate more pizza than Ella, but Ella said they both ate the same amount. Use words and pictures to show that Jose could be right.

**TASK L****Manipulatives or Tools Available: None**

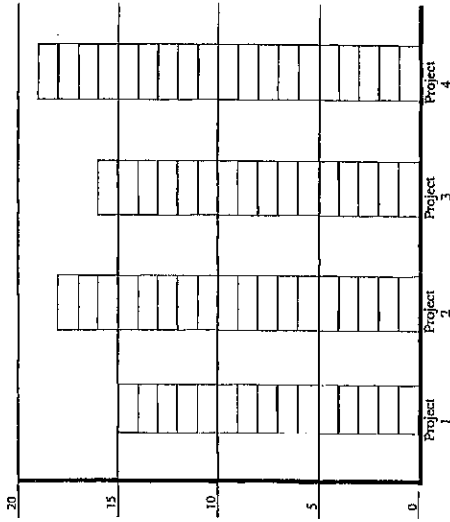
Complete the following multiplication facts in one minute or less.

$2 \times 3 = \underline{\quad}$	$5 \times 4 = \underline{\quad}$	$10 \times 6 = \underline{\quad}$
$4 \times 7 = \underline{\quad}$	$8 \times 10 = \underline{\quad}$	$8 \times 4 = \underline{\quad}$
$9 \times 5 = \underline{\quad}$	$3 \times 4 = \underline{\quad}$	$5 \times 5 = \underline{\quad}$
$6 \times 8 = \underline{\quad}$	$7 \times 9 = \underline{\quad}$	$2 \times 6 = \underline{\quad}$
$3 \times 9 = \underline{\quad}$	$8 \times 7 = \underline{\quad}$	$9 \times 2 = \underline{\quad}$

**TASK M**

**Manipulatives or Tools Available: None**

Anita has four 20-point projects for science class. Her scores are shown below. What is her average score? Find the average for Anita's scores by leveling off the stacks.



**TASK N**

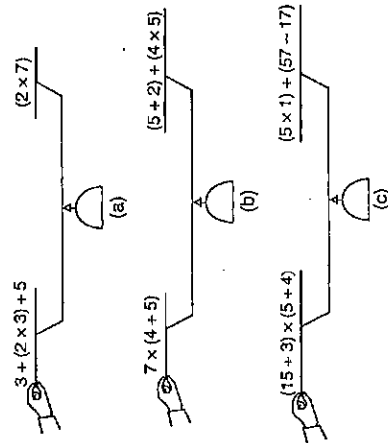
**Manipulatives or Tools Available: Grid paper, interlocking cubes**

1. The kindergarten class is coming to watch a play in our classroom. There are 20 students. In what different ways could we arrange the chairs for them so that all the rows are equal?
2. The two third-grade classes are going to watch our play in the cafeteria. There are 49 students altogether. In what different ways would we arrange the chairs for them so that all the rows are equal?
3. What do you notice about your solutions for problem 1 and problem 2?

**TASK O**

**Manipulatives or Tools Available: None**

Tell if the scale will balance (equation) or tilt (inequality). If it does not balance, please write which side will tilt down.



**TASK P**

**Manipulatives or Tools Available: Counters, cubes, grid paper, base-ten blocks**

Solve this problem in two different ways:

$$32 - 17 = \underline{\quad}$$

After each way, write about how you did it. Be sure to include what materials, if any, you used to solve this problem; how you solved it; an explanation of your thinking as you solved it.

First Way:

Second Way:

# Appendix A

## ELEMENTARY SCHOOL SORTING ACTIVITY

### Matrix of Features Exemplified by Each Task by Category

The purpose of this matrix is to provide a set of counterexamples to assumptions made regarding the categorization of the cognitive level of a task on the basis of surface features of the task.

Features of Tasks	Memo- rization		Procedures without Connections				Procedures with Connections					Doing Mathematics				
	E	L	A	D	G	O	F	I	K	M	P	B	C	H	J	N
Uses manipulatives			•					•	•		•					•
Uses a calculator					•							•				
Uses a diagram			•	•			•			•				•		
Has real-world context				•					•	•			•	•	•	•
Is symbolic or abstract	•	•			•	•	•	•			•	•	•			
Involves multiple steps, actions, or judgments						•		•		•	•	•	•	•		•
Requires an explanation						•		•	•		•	•		•	•	•
Is textbook-like	•	•		•	•		•		•							•

*Low level*  
 A, D, E, G, L, O  


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*High level*  
 B, C, F, H, I, J, K, M, N, P