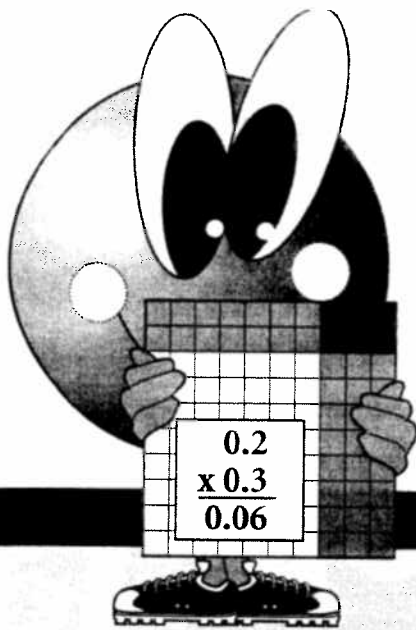


Purple Products

To solve simple multiplication problems, partners color a decimal grid using red and blue crayons. The product (where the two colors intersect) will appear in purple. Pairs Compare their answers to check for correctness.



Steps . . .

Cooperative Structure

Pairs Compare

Materials

- 1 Copy of **Purple Products** for each pair
- 1 Red and 1 blue crayon or colored pencil for each pair

Getting Ready

Make an overhead transparency of the **Decimal Squares** (page 158). Prepare students for this multiplication activity by demonstrating how to color a grid to find the product of two decimals. Using one block of the transparent 100 square grid on the overhead projector, color one factor (such as 0.3) *horizontally* in red. Color the other factor (such as 0.4) *vertically* in blue. The purple area where the two colors cross is the product (in this case 0.12).

1 Divide teams into 2 sets of pairs. Designate Partners A and B.

2 Partner A colors the first factor *horizontally* in red.

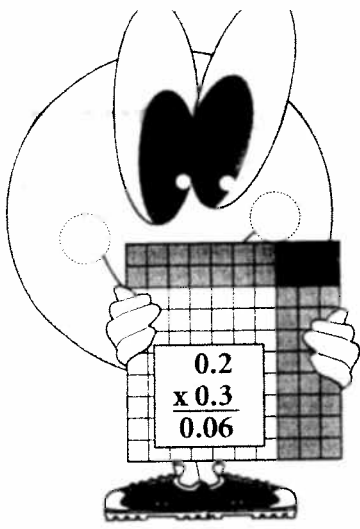
3 Partner B colors the second factor *vertically* in blue.

4 Together the students count the purple squares to find the

product. One person writes the product on the line below the problem.

5 Students continue to work all 8 problems, taking turns to record their answers.

6 When everyone is finished, the entire team compares and discusses answers.

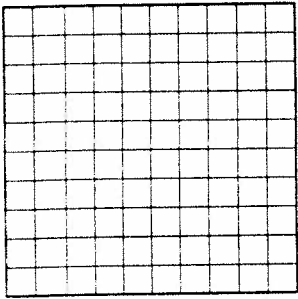


Purple Products

Partner A colors the first decimal horizontally in red. Partner B colors the second decimal vertically in blue. The area in purple shows the product of the two decimals. Compare answers with your teammates after everyone has finished all 8 problems.

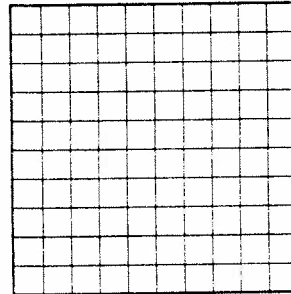
Partner A _____

Partner B _____



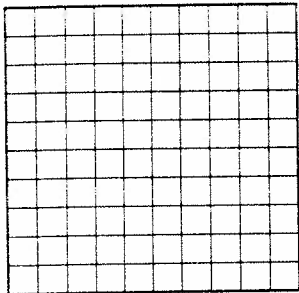
1)

$$0.3 \times 0.3 =$$



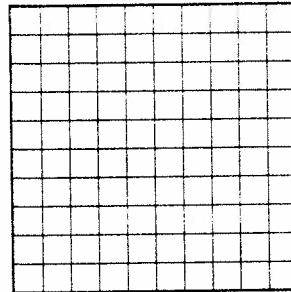
2)

$$0.3 \times 0.9 =$$



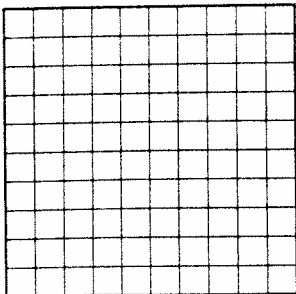
3)

$$0.8 \times 0.6 =$$



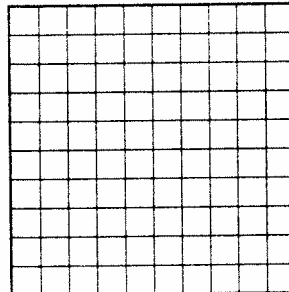
4)

$$0.1 \times 0.7 =$$



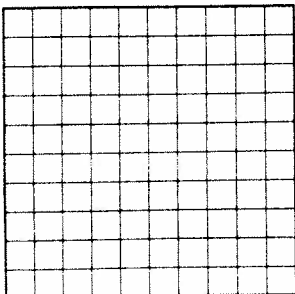
5)

$$0.5 \times 0.6 =$$



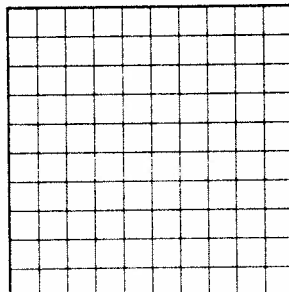
6)

$$0.4 \times 0.9 =$$



7)

$$0.8 \times 0.2 =$$

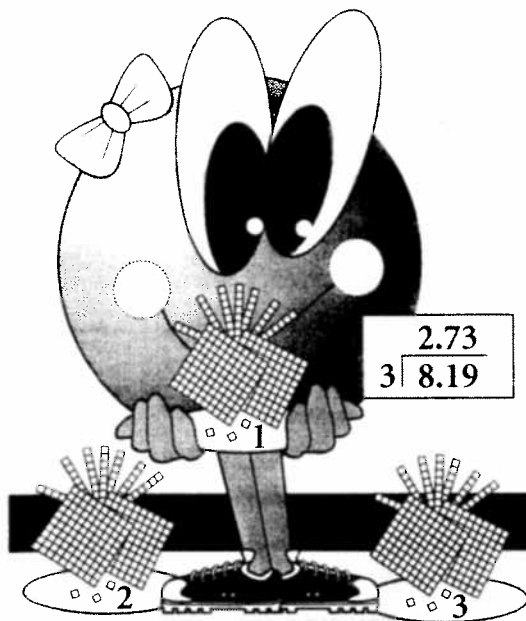


8)

$$0.7 \times 0.5 =$$

Break It Down

Students use Base 10 manipulatives to solve simple decimal division problems. After each problem is solved, the problem card is rotated to the next team.



Steps...

Cooperative Structure

RoundTable
Send-A-Problem

Materials

- **Base 10 Manipulatives** (1 set per team)
- **Place Value Mat** (1 per team)
- **Break It Down Division Problems** (1 per class)
- **Break It Down Example transparency**
- Paper and pencil
- Calculators (1 per team only)

Getting Ready

This activity works best if students have already done "Moving Ahead With Multiplication" (pages 113-115). The steps are very similar except that students are passing the problems ahead to the next team rather than moving ahead with their answer. You'll need a set of **Base 10 Manipulatives** (pages 155-156) for each team, with at least 1 cube, 10 flats, 10 rods, and 10 units in each set. If you don't have **Place Value Mats**, you can prepare them using the directions (page 154). Make a transparency of the **Break It Down Example** (page 121).

1 Place the **Base 10 Manipulatives** and **Place Value Mat** in the center of each team. Place the **Break It Down** transparency on the overhead projector.

2 Use one team to model the directions for Base 10 block division. As the rest of the class watches, have the students take turns following the steps on the overhead transparency. The first person does Step 1, the next does Step 2, and so on in RoundTable fashion. The last person records the team answer and checks it with a calculator.

3 After everyone understands the procedure, give each team one **Break It Down Problem Card** (page 122). The team follows the steps on the overhead to find the quotient.

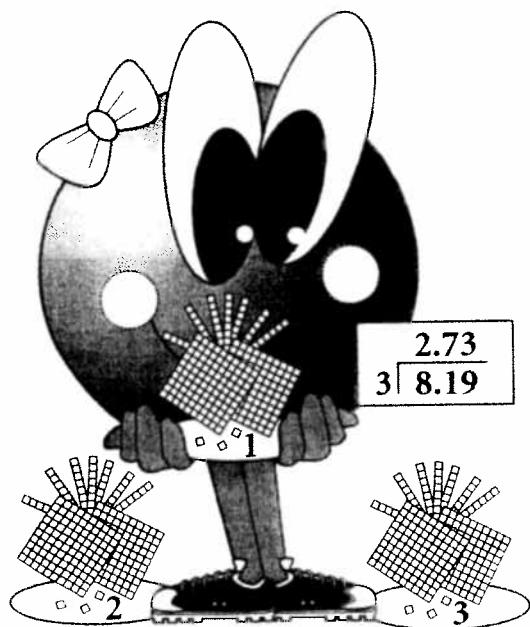
4 When all teams are ready, have one person pass the **Break It Down Problem Card** to the next team.

5 As students begin a new problem, they rotate roles one person to the left. A different person builds the dividend for each round.

Hints...

- **Extra Problem Cards** - You may want to prepare a few extra **Break It Down Problem Cards**. That way if a team always finishes early you can give them an extra problem to work on while they are waiting.
- **Paper and Pencil Division** - If some teams finish before others are ready, ask them to write the division problem on paper and try to work it out "the long way." They will be amazed that they get the same answer as they did with **Base 10 Manipulatives**.
- **Linking Concrete and Abstract Concepts** - After having students solve several division problems using **Base 10**

Break It Down



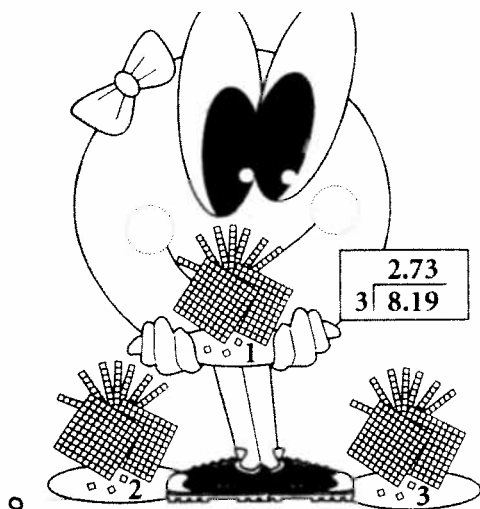
Manipulatives, start writing each problem on the board. Solve the problem step-by-step on the board as students solve it with their manipulatives. Later in the lesson, have them solve problems by drawing Base 10 block illustrations. Finally, teach them to divide without manipulatives or pictures.

Break It Down

Example: $3 \overline{)8.19}$



Step 1											
Build											
Build the dividend (8.19) using flats for ones, rods for tenths, and units for hundredths.											
Step 2											
Divide flats											
Divide everything into piles according to the divisor (3). Start by dividing the flats into 3 piles. If any flats are left over, regroup them into rods.											
Two flats left over											
Step 3											
Divide rods											
Divide all the rods into 3 piles and stack them on the flats. If there are any rods left over, regroup them into units.											
No rods left over											
Step 4											
Divide units											
Divide the units into 3 piles and stack them on top of the flats and rods.											
Step 5											
Count											
To find the answer, take one of the 3 piles and place those manipulatives in their correct locations on the Place Value Mat . Count the number of flats, rods, and units. Write the number in standard form (2.73).	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Cubes</th> <th style="padding: 5px;">Flats</th> <th style="padding: 5px;">Rods</th> <th style="padding: 5px;">Units</th> </tr> </thead> <tbody> <tr> <td style="height: 50px;"></td> <td style="text-align: center; padding: 5px;"> </td> <td style="text-align: center; padding: 5px;"> </td> <td style="text-align: center; padding: 5px;"> </td> </tr> </tbody> </table>			Cubes	Flats	Rods	Units				
Cubes	Flats	Rods	Units								
= 2.73											



Break It Down

Division Problems

1

$$3 \overline{) 9.42}$$

2

$$2 \overline{) 8.36}$$

3

$$4 \overline{) 9.64}$$

4

$$3 \overline{) 4.08}$$

5

$$5 \overline{) 12.5}$$

6

$$2 \overline{) 3.84}$$

7

$$4 \overline{) 6.32}$$

8

$$3 \overline{) 13.5}$$