lesson four - student resource sheet

Lesson Objective: Multiply a two-digit number by a two-digit number with no regrouping.

Vocabulary Box

multiply — To combine the number of items from equal-sized groups to find the total number of items. Example: 3×5 means to combine three equal groups of five.

product — The answer to a multiplication problem. Example: The product of 3×5 is 15; $3 \times 5 = 15$.

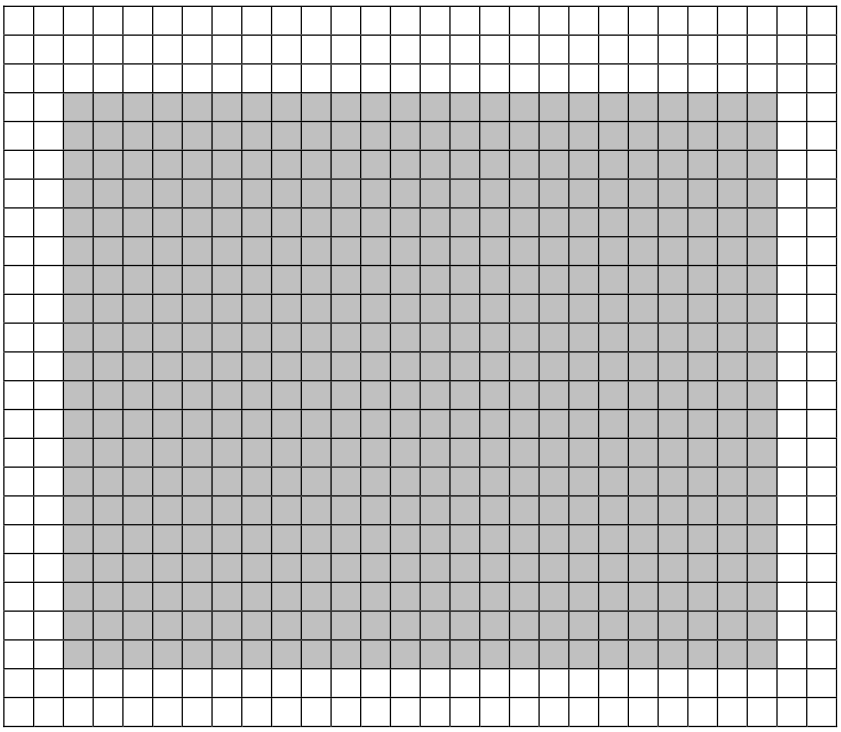
partial products — The smaller products found when multiplying a number to the ones and tens of a two-digit number. The sum of the two partial products is the total product. Example: $34 \times 5 = (30 \times 5) + (4 \times 5) = 150 + 20 = 170$; the 150 and 20 are the two partial products.

Independent Practice

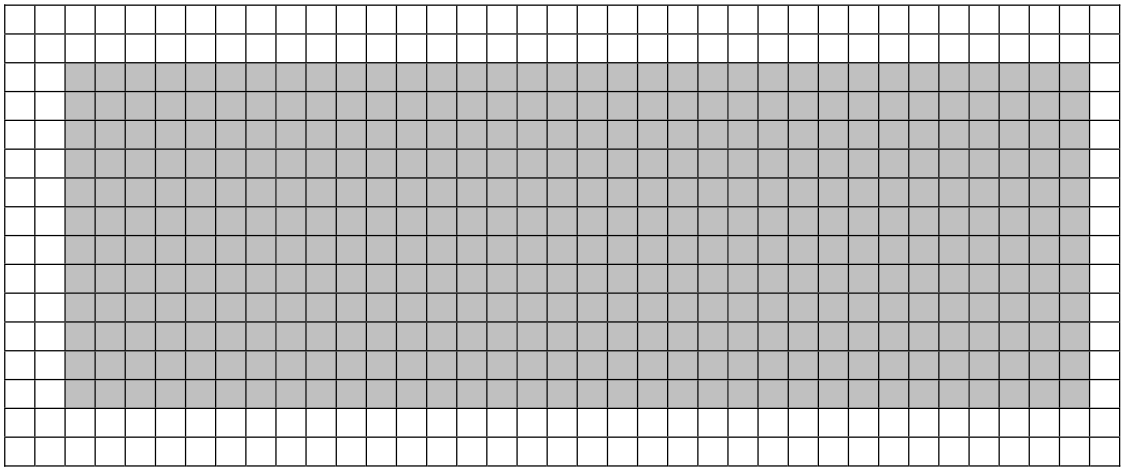
Directions: Complete the following practice problems on your own. Your teacher will review the answers. Make sure you show all your work.

I. Write the multiplication problem that is modeled by each rectangle shown below. Then use the model to find each product. Remember to count by groups of about 10 to save time.

On the grid paper, draw the two different rectangles you would have if you made this problem into **partial products**.



1. _____



2. _____

II. Use partial products to solve each problem.

1. $32 \times 40 =$

   Partial Products:

   $30 \times 40 =$ _____

   $2 \times 40 =$ _____

   Total Product:

   $32 \times 40 =$ _____

2. $33 \times 20 =$

   Partial Products:

   $30 \times 20 =$ _____

   $3 \times 20 =$ _____

   Total Product:

   $33 \times 20 =$ _____

III. Solve the following problems using partial products. Be sure to show all your work.

1. $13 \times 22 =$ _____

2. $42 \times 30 =$ _____

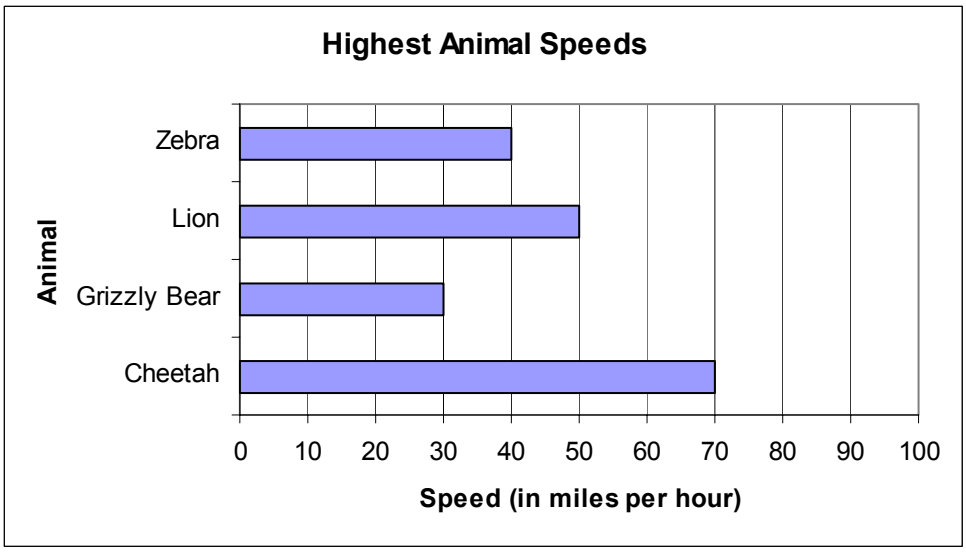
3. $23 \times 15 =$ _____

Directions: Draw lines to match each multiplication problem with its correct product.

1.	60×20	A.	2,000
2.	40×50	B.	2,700
3	30×70	C	1,000
4.	50×20	D.	7,200
5.	80×90	E.	2,100
6.	30×90	F.	1,200

Problem Solving

The bar graph below shows how fast some animals can run.



SOURCE: http://www.factmonster.com/ipka/A0004737.html

1. A zebra spent 23 hours running at its highest speed. How many miles did the zebra run at its highest speed?

   1) First, find the zebra's highest running speed.

   Zebra speed: _____ mph

   2) Then, multiply that speed times 23 hours. This will give you the total number of miles the zebra ran at its highest speed. Use partial products to find your answer.

   3) Now write your answer in a complete sentence. Use words from the problem.

   4) How could you check to see if your product is correct?

2. A grizzly bear spent 21 hours running at its highest speed. How many miles did that grizzly bear run at its highest speed? Be sure to show all your work. Write your answer in a complete sentence.

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1. $30 \times 17 =$ _____

2. $13 \times 11 =$ _____

3. $32 \times 40 =$ _____

lesson five - student resource sheet

Lesson Objective: Multiply a two-digit number by a two-digit number with regrouping.

Vocabulary Box

ones — The smallest place value in a whole number. Example: In the number 528, the digit 8 is in the ones place and has a value of 8, or 8 ones.

tens — Groups of 10 ones. Example: In the number 528, the digit 2 is in the tens place and has a value of 20 ones or 2 tens.

hundreds — Groups of 10 tens, or groups of 100 ones. Example: In the number 528, the digit 5 is in the hundreds place and has a value of 500 ones, 50 tens, or 5 hundreds.

regroup — To exchange amounts of equal value to rename a number. Examples: 423 ones can be regrouped as 4 hundreds, 2 tens, and 3 ones (423 = 400 + 20 + 3); 4 tens and 7 ones can be regrouped as 47 ones (40 + 7 = 47).

Guided Practice

Directions: Complete the following practice problems with your partner. Your teacher will review the answers. Make sure you show all your work.

I. Solve the following problems. Use partial products and regrouping.

1.
$$\begin{array}{r} 19 \\ \times\ 14 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 38 \\ \times\ 15 \\ \hline \end{array}$$

II. Solve the following problems using partial products and regrouping. Please work independently.

1. $\begin{array}{r} 41 \\ \times\ 18 \\ \hline \end{array}$

2. $\begin{array}{r} 27 \\ \times\ 36 \\ \hline \end{array}$

3. $\begin{array}{r} 53 \\ \times\ 24 \\ \hline \end{array}$

Summary/Closure

A. Vocabulary Words

Directions: Fill in each blank with one of today's vocabulary words.

1. 1 hundred, 2 tens, and 4 ones can be regrouped as 124 _____.

2. You can regroup 57 _____ as 5 hundreds and 7 tens.

3. You can regroup 360 ones as 3 _____ and 6 tens.

4. If you combine 28 ones and 54 ones and then regroup the total, you have 8 _____ and 2 _____.

lesson five - student resource sheet

B. Summarize What We Learned Today

Write and solve a sample problem involving multiplying a two-digit number by a two-digit number with regrouping.

Then, explain in words, numbers, and pictures how you solved the problem. You will use this explanation as a personal reminder.

lesson six - student resource sheet

Lesson Objective: Multiply a two-digit number by a two-digit number with regrouping.

Vocabulary Box

ones – The smallest place value in a whole number. Example: In the number 528, the digit 8 is in the ones place. It has a value of 8 or 8 ones.

tens – Groups of 10 ones. Example: In the number 528, the digit 2 is in the tens place. It has a value of 20 ones or 2 tens.

hundreds – Groups of 10 tens, or groups of 100 ones. Example: In the number 528, the digit 5 is in the hundreds place. It has a value of 500 ones, 50 tens, or 5 hundreds.

regroup – To exchange amounts of equal value to rename a number. Examples: 423 ones can be regrouped as 4 hundreds, 2 tens, and 3 ones (423 = 400 + 20 + 3); 4 tens and 7 ones can be regrouped as 47 ones (40 + 7 = 47).

Independent Practice

Directions: Complete the following practice problems on your own. Your teacher will review the answers. Make sure you show all your work.

I. Tell how you would regroup each of the following with base ten blocks.

1. 67 ones = _____
2. 52 tens = _____
3. 70 tens and 16 ones = _____
4. 345 ones = _____

II. Use base ten blocks to model the problem. Then use the model to find the product.

1. 28×14 = _____

III. Use partial products to solve each problem.

1. $\begin{array}{r} 32 \\ \times 16 \\ \hline \end{array}$

2. $\begin{array}{r} 58 \\ \times 24 \\ \hline \end{array}$

Directions: Draw a picture of base ten blocks to model the greater number in each problem below. Then tell how many groups of those blocks you would need to combine to find the product.

In your pictures, use a line to show a tens rod and a small circle to show a ones block.

1. $46 \times 32 =$

   Picture:

   Number of equal groups: _____

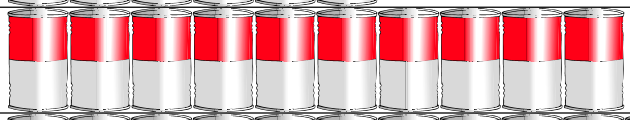
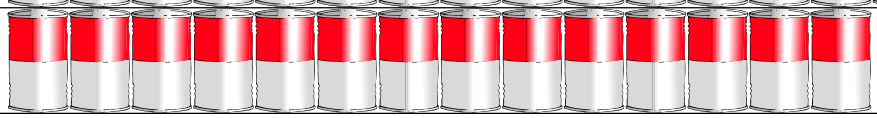
2. $27 \times 63 =$

   Picture:

   Number of equal groups: _____

Problem Solving

The students at Jackson Elementary School collected cans for recycling. The pictograph below shows how many pounds of cans each grade collected.

SCHOOL RECYCLING DRIVE	
1st Grade	
2nd Grade	
3rd Grade	
4th Grade	
5th Grade	
Key: Each  = 25 pounds of cans.	

1. Which grade collected the most cans?

   You need to compare the cans for the grades shown on the graph. The grade that has the most can symbols, collected the most cans. Write your answer in a complete sentence.

2. How many pounds of cans did that grade collect?

   1) First, count the number of cans shown on the graph for that grade.

   2) Next, read the key to find out how many pounds each can represents.

3) Then, use all of that information to find how many pounds of cans that grade collected. Use partial products to find your answer.

   number of cans $\times$ number of pounds for each can = total number of pounds

4) Check your answer by solving the problem again to make sure you did not make any mistakes.

5) Remember, you should always write your answer to a word problem in a complete sentence. Use words from the problem.

3. Which grade collected the least number of cans? Remember to write your answer in a complete sentence.

4. How many pounds of cans did that grade collect? Use partial products to find your answer.

1) Check your answer by solving the problem again to make sure you did not make any mistakes.

2) Write your final answer in a complete sentence.

lesson six - student resource sheet

1. 64 tens can be regrouped as _____.

2.
$$\begin{array}{r} 24 \\ \times\ 13 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 78 \\ \times\ 32 \\ \hline \end{array}$$