L Name: _____ Date: _____

9.2 Multiplying 10s and 100s Page 1

Student Book pages 312–313

GOAL

Use patterns to multiply 10s and 100s.

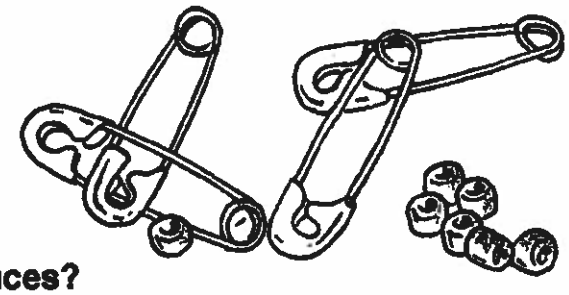
You will need

- base ten blocks

Problem

Diane is making safety pin necklaces.

She uses 100 beads and 10 safety pins to make each necklace.

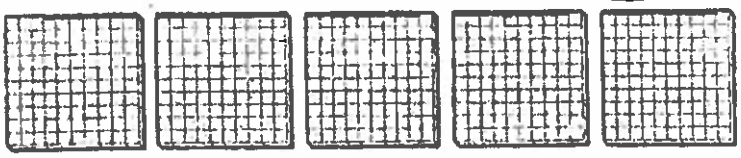


How many does she need to make 5 necklaces?

Step 1: Use base ten blocks to model the number of beads in each necklace.

There are 100 beads in each necklace.

Use 5 hundreds blocks to show the beads.



These blocks show 5 × 100.

Count by 100s to find out how many beads are needed for the 5 necklaces.

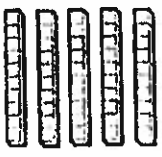
100, 200, 300, 400, 500

Diane needs 500 beads.

Step 2: Use base ten blocks to model the number of pins in each necklace.

There are 10 pins in each necklace.

Use 5 tens blocks to show the pins.



These blocks show 5 × 10.

Count by 10s to find out how many pins are needed for the 5 necklaces.

10, 20, 30, 40, 50

Diane needs 50 pins.

Name: _____ Date: _____

9.2 Multiplying 10s and 100s Page 2

Step 3: You can use tables to organize your information and look for patterns.

Complete the tables below for up to 5 necklaces.

Number of necklaces		Number of beads
1	1 × 1 hundred = 1 hundred	100
2	2 × 1 hundred = 2 hundreds	200
3	3 x 1 hundred = 3 hundreds	300
4	4 x 1 hundred = 4 hundreds	400
5	5 x 1 " = 5 hundreds	500

Number of necklaces		Number of pins
1	1 × 1 ten = 1 ten	10
2	2 × 1 ten = 2 tens	20
3	3 x 1 ten = 3 tens	30
4	4 x 1 tens = 4 tens	40
5	5 x 1 " = 5 tens	50

Reflecting

What patterns do you see in your tables?

Each is increasing by 100's or 10's.

C&P Name: _____ Date: _____

9.2 Multiplying 10s and 100s Page 1

Student Book pages 312–313

GOAL

Use patterns to multiply 10s and 100s.

You will need

- base ten blocks

Checking

1. How many beads and pins does Diane need for 7 bracelets?

Step 1: Each bracelet needs 100 beads.

Use base ten blocks to help fill in the chart below.

Number of bracelets		Number of beads
1	1 × 1 hundred = 1 hundred	100
2	2 × 1 hundred = 2 hundred	200.
3	3 × 1 hundred = 3 hundred	300
4	4 x 1 hundred = 4 hun.	400
5	5 x 1 hundred = 5 hun	500
6	6 x 1 hundred = 6 hun	600
7	7 x 1 hundred = 7 hun	700

Step 2: Each bracelet needs 50 pins.

Use base ten blocks to help fill in the chart below.

Number of bracelets		Number of pins
1	1 × 5 tens = 5 tens	50.
2	2 × 5 tens = 10 tens	100
3	3 × 5 tens = 15 tens	150
4	4 x 5 tens = 20 tens	200
5	5 x 5 tens = 25 tens	250
6	6 x 5 tens = 30 tens	300
7	7 x 5 tens 35 tens	350

Diane needs 700 beads and 350 pins to make 7 bracelets.

C&P Name: _____ Date: _____

9.2 Multiplying 10s and 100s Page 2

Practising

2. Multiply.

a) $7 \times 10 =$ 7 $\times$ 1 ten
$=$ 7 tens
$=$ 70

b) $3 \times 40 =$ 3 $\times$ 4 tens
$=$ 12 tens
$=$ 120

c) $50 \times 4 =$ 5 tens $\times$ 4
$=$ 20 tens
$=$ 200

d) $9 \times 200 =$ 9 $\times$ 20 tens
$=$ 180 tens
$=$ 1 800

4. Find the missing number.

a) $400 =$ 4 $\times 100$ 4 x 100 = 400 ✓

b) $60 =$ 6 $\times 10$

c) $80 =$ 8 $\times 10$

d) $700 = 7 \times$ 100

Hint: Think of equal groups of tens and hundreds.

Name: (4) Date: _____

Chapter 9 Lesson 2

Multiplying 10s and 100s

GOAL

Use patterns to multiply 10s and 100s.

1. Multiply.

a) $4 \times 1 = 4$
$4 \times 10 = 40$
$4 \times 100 = 400$

b) $4 \times 2 = 8$
$4 \times 20 = 80$
$4 \times 200 = 800$

c) $4 \times 5 = 20$
$4 \times 50 = 200$
$4 \times 500 = 2000$

2. Multiply.

a) $5 \times 10 = 50$
b) $60 \times 3 = 180$
c) $8 \times 100 = 800$
d) $70 \times 4 = 280$

e) $2 \times 200 = 400$
f) $9 \times 30 = 270$
g) $500 \times 5 = 2500$
h) $40 \times 6 = 240$

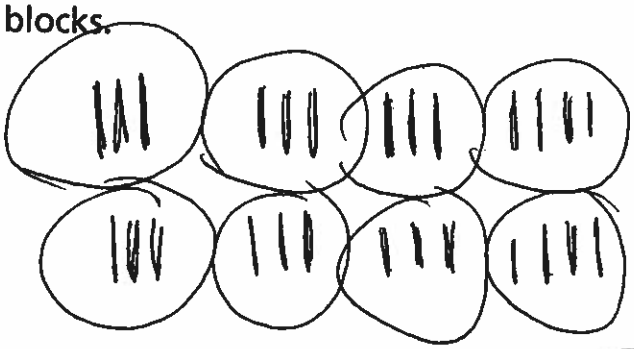
i) $7 \times 300 = 2100$
j) $90 \times 4 = 360$
k) $10 \times 6 = 60$
l) $4 \times 800 = 3200$

3. Kate found four $100 bills.
How much money did she find?

$4 \times 100 = \$400$

$4 \times 1 = 4$
$4 \times 10 = 40$
$4 \times 100 = 400$

4. Lang is building a model of the school using blocks.
He bought 8 sets of 30 blocks.
How many blocks does he have in total?



$8 \times 30 = 240$

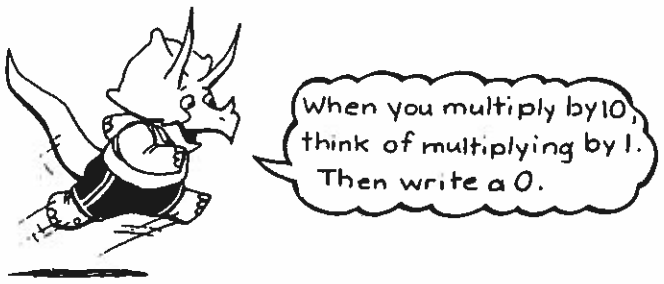
8 groups of 30

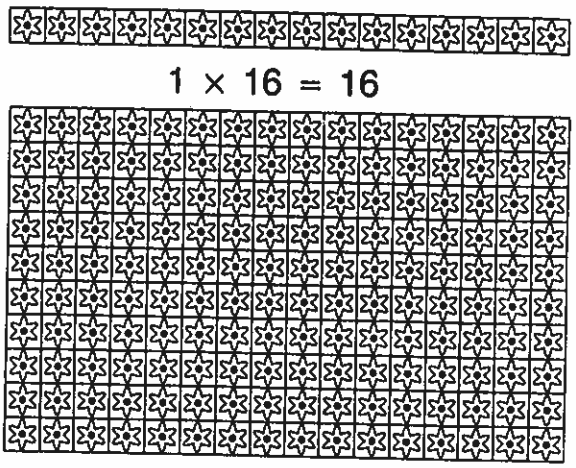
Multiplying by 10

Name _____

Multiply 10 × 16.

Think: 1 × 16 = 16, so
10 × 16 = 160





1 × 16 = 16

10 × 16 = 160

Complete each sentence.

1. Since I know 23 × 1 = 23,
   I also know 23 × 10 = 230.

2. Since I know 45 × 1 = 45,
   I also know 45 × 10 = 450.

3. Since I know 98 × 1 = 98,
   I also know 98 × 10 = 980.

4. Since I know 1 × 36 = 36,
   I also know 10 × 36 = 360.

5. Since I know 60 × 1 = 60,
   I also know 60 × 10 = 600.

6. Since I know 1 × 72 = 72,
   I also know 10 × 72 = 720.

Multiply these pairs of factors.

7. 85 × 1 = 85
   85 × 10 = 850

8. 38 × 1 = 38
   38 × 10 = 380

9. 572 × 1 = 572
   572 × 10 = 5720

10. 1 × 443 = 443
    10 × 443 = 4430

11. 20 × 1 = 20
    20 × 10 = 200

12. 1 × 76 = 76
    10 × 76 = 760

Multiply.

13. 10 × 35 = 350

14. 69 × 10 = 690

15. 546 × 10 = 5460

16. 41 × 10 = 410

17. 10 × 768 = 7680

18. 10 × 80 = 800

PRACTICE PAGE #12

Name: _____ Date: _____

WORD PROBLEM

Tanvi was selling boxes of candy. Each box had 6 pieces of candy in it. The first week she sold 10 boxes. The second week she visited an apartment building where she sold 100 boxes. How many pieces of candy did she sell in all?

BASICS BOX

There are place-value patterns in multiplication that can help you multiply by 10s, 100s, or even 1,000s. This is great for saving time by using mental math.

1. Begin by finding the simple fact in the larger problem. This is 6 x 1, which is 6.
2. Count the 0s in the problem. In this case, there is one. This lets us know there will be one 0 in the product.
3. Write 6 with one 0 behind it to get the product of 60. Repeat the same three steps for the second part to get a product of 600.

In Tanvi's problem, we have to multiply 6 x 10 for the first week, which is 60. The second week is 6 x 100 = 600. Add 600 and 60 to see that she sold 660 pieces of candy.

PRACTICE

Find the products.

1. $5 \times 10 =$ 50
2. $5 \times 100 =$ 500
3. $5 \times 1{,}000 =$ 5000
4. $10 \times 3 =$ 30
5. $10 \times 30 =$ 300
6. $10 \times 300 =$ 3000
7. $500 \times 4 =$ 2000
8. $50 \times 4 =$ 200 $5 \times 4 = 20$.
9. $40 \times 50 =$ 2000
10. $2 \times 20 =$ 40
11. $2 \times 200 =$ 400
12. $20 \times 20 =$ 400

JOURNAL

How can multiplication patterns help you solve a problem like 16 x 100?

$16 \times 1 = 16$ so
$16 \times 100 = 1600$

#5

Name: _____ Date: _____

Multiplication Patterns

Find the products.

1. $10 \times 8 =$ 80
2. $10 \times 80 =$ 800
3. $100 \times 8 =$ 800
4. $1{,}000 \times 8 =$ 8000
5. $4 \times 40 =$ 160
6. $400 \times 40 =$ 16000
7. $1 \times 400 =$ 400
8. $40 \times 40 =$ 1600
9. $9 \times 10 =$ 90
10. $90 \times 10 =$ 900
11. $9 \times 20 =$ 180
12. $90 \times 20 =$ 1800
13. $900 \times 20 =$ 18000
14. $20 \times 50 =$ 1000
15. $200 \times 50 =$ 10000
    10.000

Review.

16. What strategy could be used to solve 8 x 6? Explain.
I could use $10 \times 6 = 60 - 12$ or 48
I could use half (4) $\times 3 = 12$ and
double $8 \times 3 =$ (24)

17. What property of multiplication tells us that if $3 \times 9 = 27$ then $9 \times 3 = 27$?
The property is = or they are the same. This is call distributive
$9 \times 3 = 27$ is the same $3 \times 9 = 27$

18. Give an example of a fact for the Half-Then-Double strategy.
(8) $\times 4 = 32$? I can half the eight to four
(4) $\times 4 = 16$ then double to get $8 \times 4 = 32$.

L Name: _____ Date: text

9.3 Multiplying Using Arrays Page 1

Student Book pages 314–317

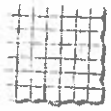
Page 315-317
1 - a - i

GOAL

Use arrays to visualize easier ways to multiply.

You will need

- grid paper
- pencil crayons



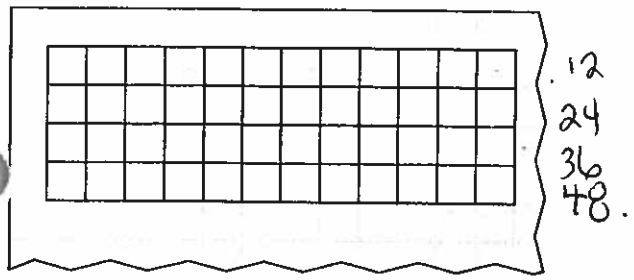
Problem

Alec has a game board that has 4 rows of 12 spaces.

How can you calculate the number of spaces on Alec's 4-by-12 game board?

Step 1: The game board has 4 rows of 12 spaces.
Sketch it on grid paper.

4 x 12



4 x 10 + 4 x 2

Step 2: 4 × 12 tells the number of spaces.

You already know 4 × 10 = 40.

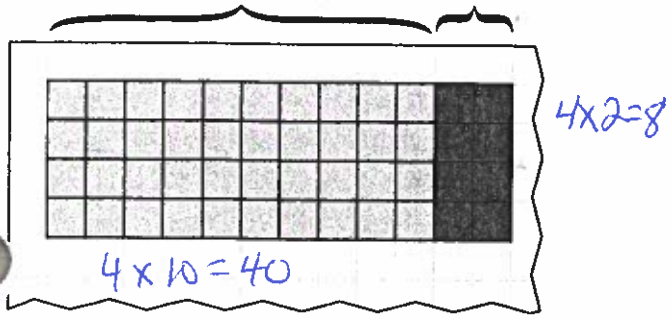
You also know that 4 × 2 = 8.

Split the 4-by-12 array into a 4-by-10 array and a 4-by-2 array.

Colour and label both arrays as shown below.

4 x 10 = 40 2 x 4 = 8

4 rows of 10 4 rows of 2



L Name: _____ Date: _____

9.3 Multiplying Using Arrays Page 2

Step 3: 4 rows of 10 = 4 × 10

4 rows of 2 = 4 × 2

Use 4 × 10 + 4 × 2 to calculate 4 × 12.

4 × 12 = 4 × 10 + 4 × 2

4 × 12 = 40 + 8

4 × 12 = 48

So, there are 48 spaces on Alec's game board.

Reflecting

How does splitting an array into smaller arrays help you to multiply?

We take an easier number sentence like 4 x 10 = 40 to chunk with 4 x 2 = 8 to make 4 x 12 = 48

What other ways can you split the 4-by-12 array to calculate 4 × 12?

We can use half

(2) x 12 = 24 then double

(4) x 12 = 48

Name: _____ Date: _____

Chapter 9 Lesson 3

Multiplying Using Arrays

text page 315 + 316

#1-11

GOAL

Use arrays to visualize easier ways to multiply.

1. Fill in the blanks.

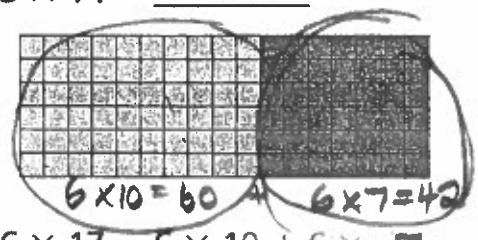
a) 3×10 + 3×4 = 42

3 × 14 = (3 × 10) + (3 × 4)

3 × 14 = 30 + 12

3 × 14 = 42

b)



6 × 17 = 6 × 10 + 6 × 7

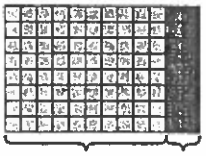
6 × 17 = 60 + 42

6 × 17 = 102

At-Home Help

You can use an array to help you multiply. For example:

I want to calculate 8 × 12.
I already know that 8 × 10 = 80.

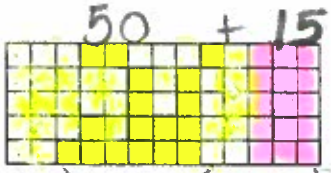


8 rows of 10 | 8 rows of 2
8 × 10 = 80 | 8 × 2 = 16

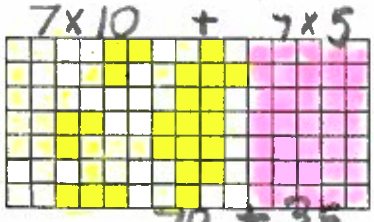
8 × 12 = 8 × 10 + 8 × 2
8 × 12 = 80 + 16
8 × 12 = 96

2. Sketch arrays to help you multiply.

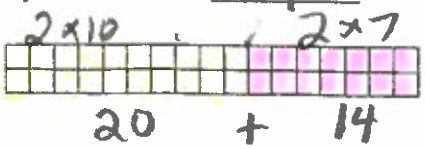
a) 5 × 13 = 65



b) 7 × 15 = 105



c) 2 × 17 = 34

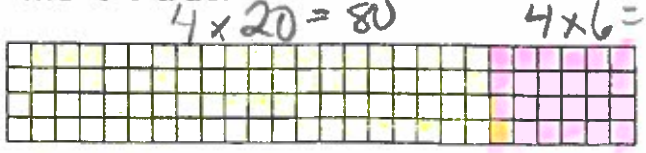


3. Sketch an array to show that this statement is true.

4 × 26 = 4 × 20 + 4 × 6

4×26 = 80 + 24

4×26 = 104

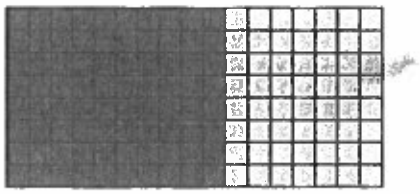


Multiplying with Arrays

Front end multiplication

Goal **Use easier numbers to simplify multiplication.**

1. A kitchen floor has 8 rows and 17 columns of tiles. These arrays show 8×17 by showing $8 \times 10 + 8 \times 7$.



$8 \times 17 =$ 8 x 10 + 8 x 7

$8 \times 17 =$ 80 + 56

$8 \times 17 =$ 136

At-Home Help

Using easier numbers to multiply is useful when one factor is greater than 10.

$3 \times 18 = 3 \times 10 + 3 \times 8$

$3 \times 18 = 30 + 24$

$3 \times 18 = 54$

Or using other easier facts:

$3 \times 18 = 3 \times 9 + 3 \times 9$

$3 \times 18 = 27 + 27$

$3 \times 18 = 54$

2. Complete.

a) $2 \times 56 = 2 \times 50 + 2 \times 6$

$2 \times 56 =$ 100 + 12

$2 \times 56 =$ 112

b) $5 \times 14 = 5 \times 7 + 5 \times$ 7

$5 \times 14 =$ 35 + 35

$5 \times 14 =$ 70

c) $4 \times 29 = 4 \times$ 25 $+ 4 \times$ 4

$4 \times 29 =$ 10 + 16

$4 \times 29 =$ 116

d) $6 \times 22 =$ 6 $\times$ 20 + 6 $\times$ 2

$6 \times 22 =$ 120 + 12

$6 \times 22 =$ 132

3. Find each product.

a) $9 \times 18 = 172$

9 x 10+8

9 x 10 = 90 + 9 x 8 = 72

90 + 72 = 162

b) $7 \times 12 = 84$

7 x 10+2

7 x 10 = 70 + 7 x 2 = 14

70 + 14 = 84

c) $4 \times 19 = 76$

4 x 10+9

4 x 10 = 40 + 4 x 9 = 36

40 + 36 = 76

d) $8 \times 33 = 264$

8 x 30+3

8 x 30 = 240 + 8 x 3 = 24

240 + 24 = 264

Name: ______________________ Date: ______________

9.3 Multiplying Using Arrays Page 1

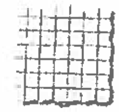
Student Book pages 314–317

4

GOAL

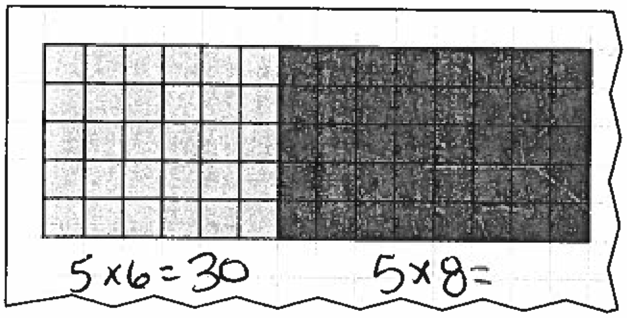
Use arrays to visualize easier ways to multiply.

You will need

- grid paper 
- pencil crayons 

Checking

1. a) Complete the number sentence to show how the 5-by-14 array is shaded.



Look at the light grey part of the array.

How many rows are there in all? 5 rows

How many light grey squares are in each row? 6

There are 5 × 6 squares in the light grey part of the array.

Look at the dark grey part of the array.

How many rows are there in all? 5

How many dark grey squares are in each row? 8

There are 5 × 8 squares in the dark grey part of the array.

The 5-by-14 array combines the 2 smaller arrays.

Complete the number sentence below.

5 × 14 = 5 × 6 + 5 × 8.

b) Complete the number sentences to calculate 5 × 14.

5 × 14 = 5 × 6 + 5 × 8.

5 × 14 = 30 + 40

5 × 14 = 70 → ✓

check

^{2}14
× 5
70

C&P Name: _____ Date: _____

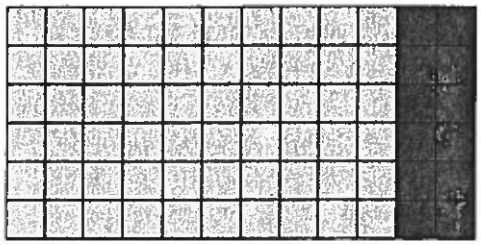
9.3 Multiplying Using Arrays Page 2

Practising

3. Look at the different shades in the arrays below.

Complete the number sentences.

a)



check

+1
12
x 6
72

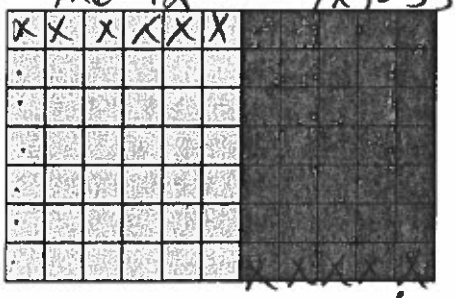
$6 \times 12 = 6 \times 10 + 6 \times \underline{2}$

$6 \times 12 = \underline{60} + \underline{12}$

$6 \times 12 = \underline{72}$

b)

7x6=42 7x5=35



$7 \times 11 = \underline{7} \times \underline{6} + \underline{7} \times \underline{5}$

$7 \times 11 = \underline{42} + \underline{35}$

$7 \times 11 = \underline{77}$

42
+35
77

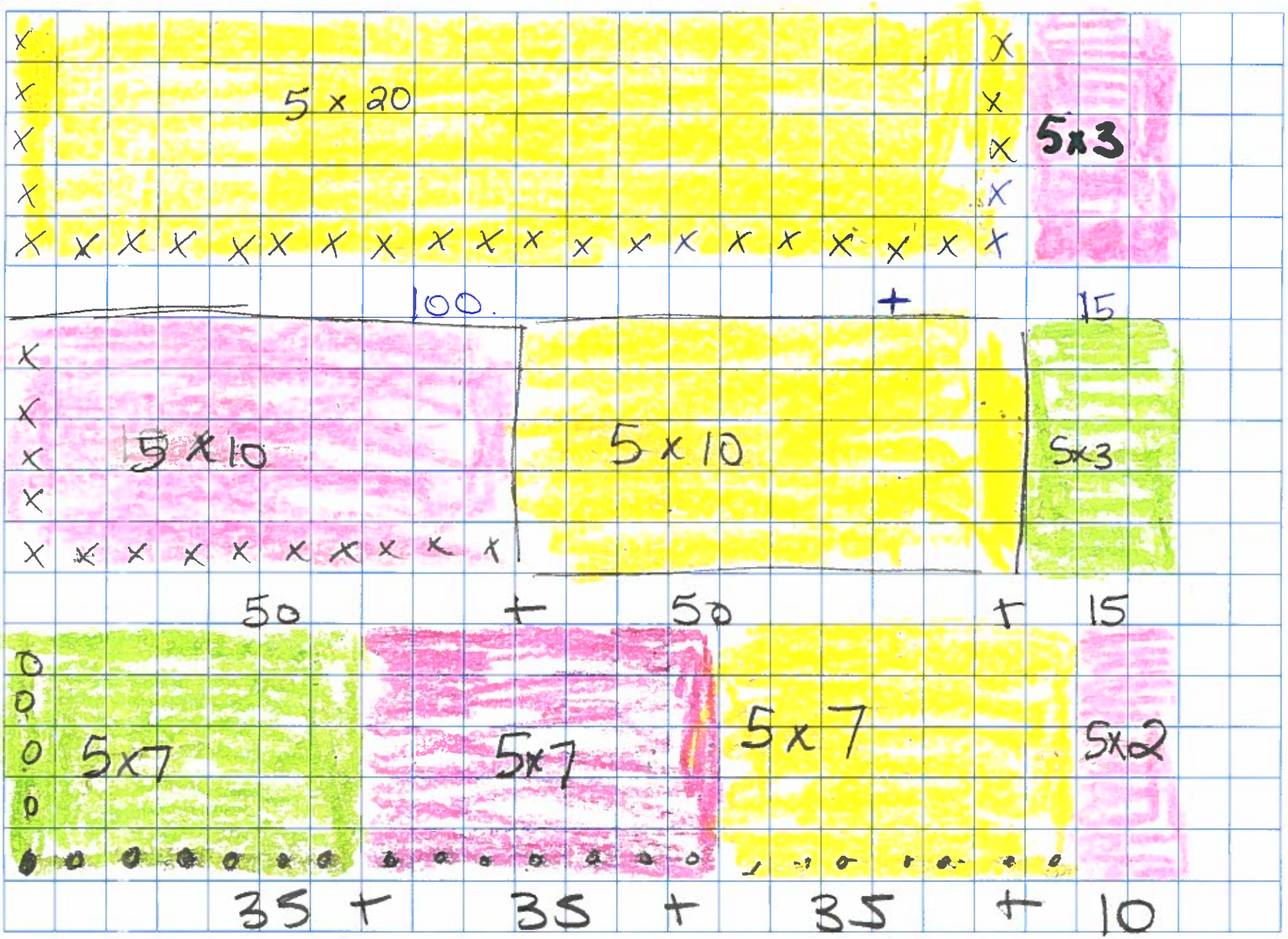
9. Sketch arrays on grid paper to show that each statement is true.

a) $5 \times 23 = 5 \times 20 + 5 \times 3$

b) $5 \times 23 = 5 \times 10 + 5 \times 10 + 5 \times 3$

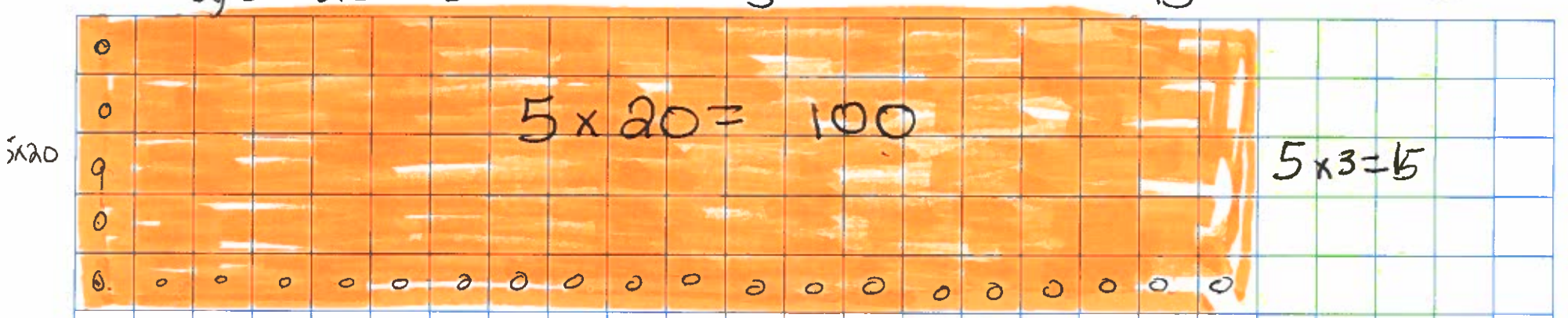
c) $5 \times 23 = 5 \times 7 + 5 \times 7 + 5 \times 7 + 5 \times 2$

5 x 23 = ? 115

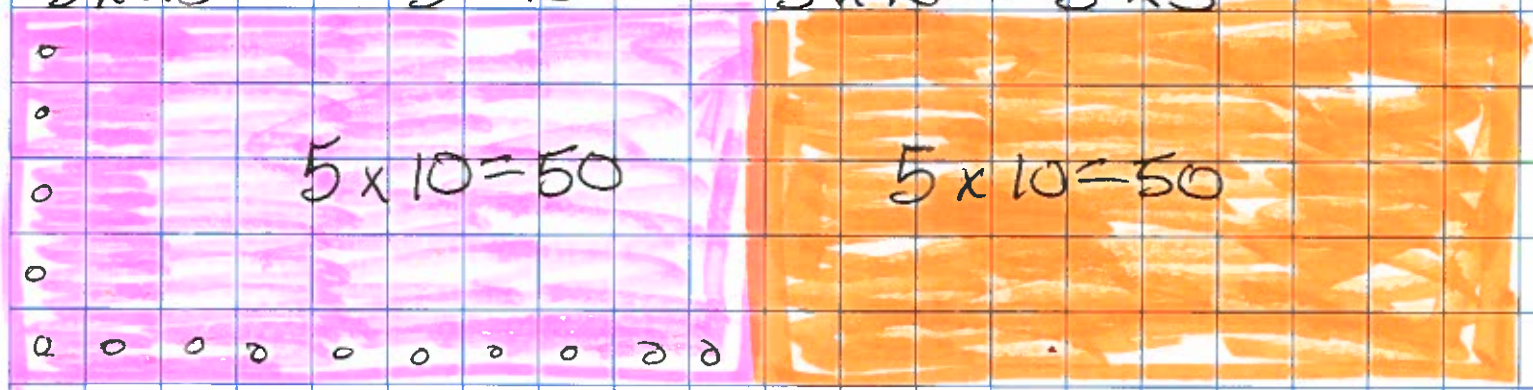


01-01010

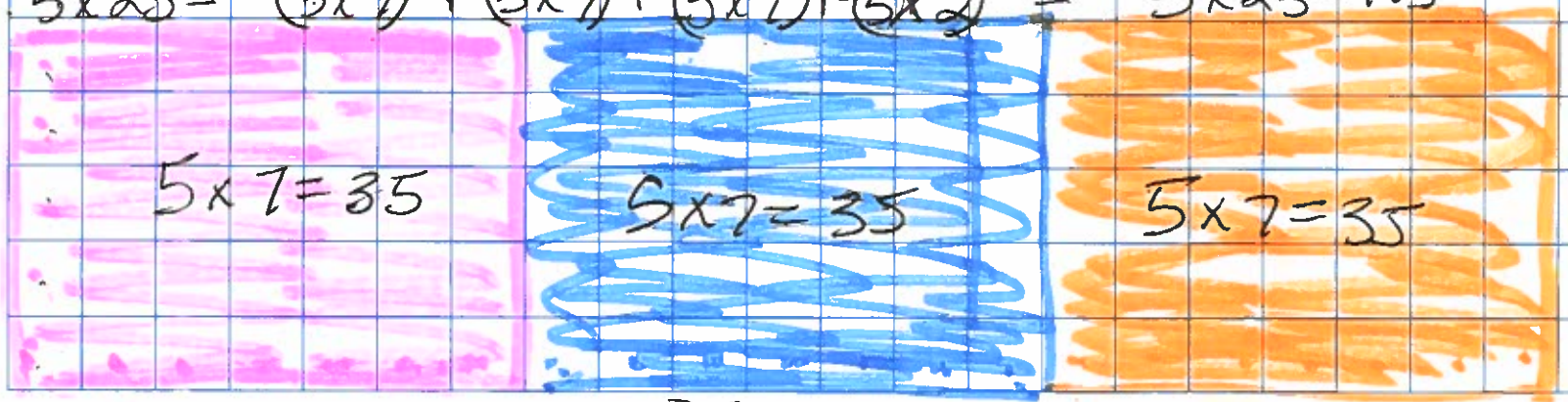
a) $5 \times 23 = 5 \times 20 + 5 \times 3$ $\quad 5 \times 23 = 115$



b) $5 \times 23 = 5 \times 10 + 5 \times 10 + 5 \times 3$ $\quad 5 \times 10 = 50 + 50 + 15 = 115$



c) $5 \times 23 = (5 \times 7) + (5 \times 7) + (5 \times 7) + (5 \times 2) = 5 \times 23 = 115$



35 + 35 + 35 + 10

Name: _____ Date: _____

9.4 Modelling Multiplication Page 1

Student Book pages 318–321

Text page 320-321 #1-14

GOAL

Modelling multiplication as equal groups.

Problem

Annie is making 54 leather bags.

She sews 3 designs on each bag.

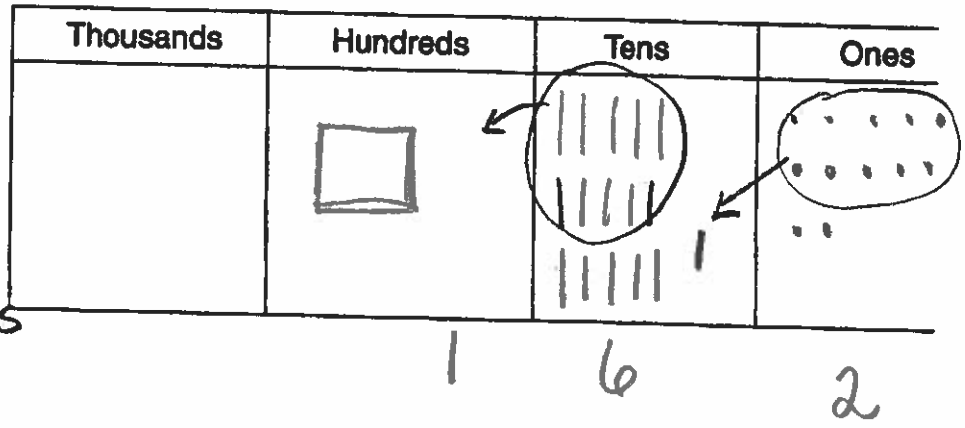
How many designs will Annie sew?

use a place value chart

Use expanded form to calculate.

5 tens + 4 ones

× 3



Step 1: 5 tens × 3 = 15 tens

Step 2: 4 ones × 3 = 12 ones

Step 3: 15 tens = 150

Step 4: 12 ones = 12

Step 5:

15 tens = 150 (see Step 3)

+ 12 ones = + 12 (see Step 4)

Total = 162

Annie sewed 162 designs.

Name: ______________________ Date: ______________

9.4 Modelling Multiplication Page 2

Reflecting

How does grouping tens and ones help you with multiplication?

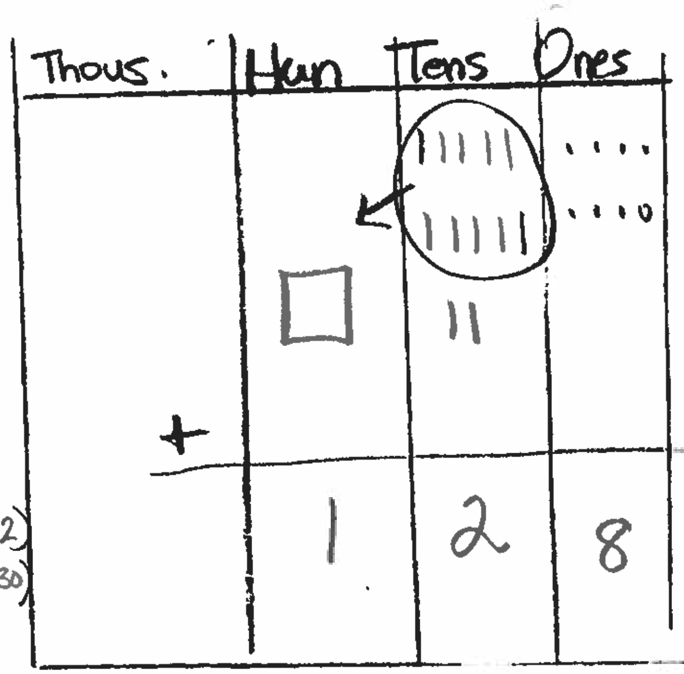
I know that each digit has to be multiplied. We rename 22 x3 as 20 + 2 and multiply x 3 each digit.

Sam serves 4 trays of salmon.

Each tray holds 32 pieces.

How many pieces of salmon does Sam serve?

Follow these steps to calculate 4×32.



Step 1: ***Expand***

32 is 3 tens + 2 ones

× 4 ×4

8 ones (4x2)

Step 2: ***Multiply*** + 1 2 tens (4x30)

4×32 is 128 groups of 32.

Model 4 groups of 32 with base ten blocks on the place value chart.

Step 3: ***Add***

32 is 3 tens + 2 ones

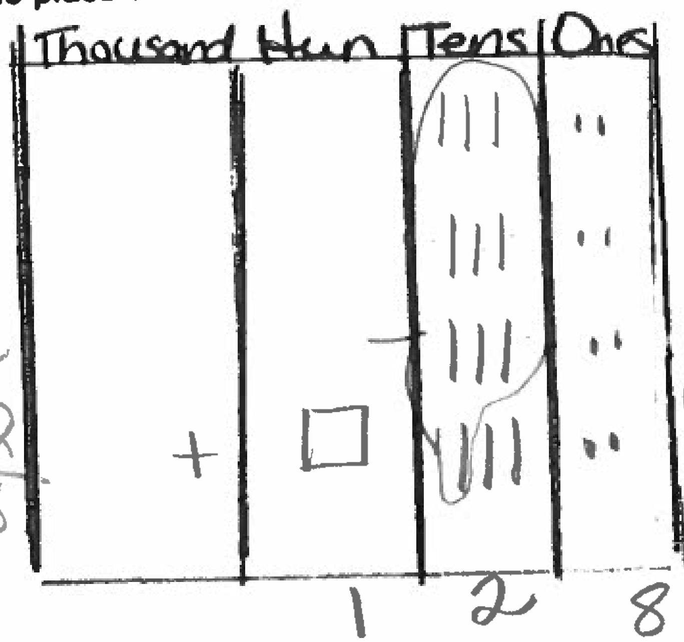
× 4 ×4

12 tens

+ 8 ones

128

32
32
32
+ 32
128



Sam served 128 pieces of salmon.

Name: _____ Date: _____

Chapter 3 Lesson 4

Multiplying Using Expanded Form

GOAL

Multiply 2-digit numbers by 1-digit numbers using expanded form.

1. Multiply.

a) $5 \times 22 =$ ▒

$20 + 2$
$\times 5$
100 (20×5)
$+ \ 10$ (2×5)
110

b) $3 \times 64 =$ ▒

$60 + 4$
$\times 3$
180 (60×3)
$+ \ 12$ (4×3)
192

2. Multiply using expanded form.

a) 2×19

$10 + 9$
$\times 2$
20
$+ \ 18$
38

c) 5×33

$30 + 3$
$\times 5$
150
$+ \ 15$
165

e) 4×26

$20 + 6$
$\times 4$
80
$+ \ 24$
104

b) 3×51

$50 + 1$
$\times 3$
150
$+ \ 3$
153

d) 6×82

$80 + 2$
$\times 6$
480
$+ \ 12$
492

f) 2×48

$40 + 8$
$\times 2$
80
$+ \ 16$
96

3. Michael's school has 7 classrooms. There are 23 students in each class. How many students are at the school?

$23 \times 7 =$

$20 + 3$
$\times 7$
140
$+ \ 21$
161

At-Home Help

You can use expanded form to multiply 2-digit numbers by 1-digit numbers. For example:

I want to know 4×36.

36 is the same as $30 + 6$, or 3 tens + 6 ones.
I will multiply each part separately by 4.

$30 + 6$
$\times 4$
120
$+ \ 24$
144

$4 \times 36 = 144$

Multiplying in Expanded Form

Goal **Multiply 1-digit numbers by 2-digit numbers using expanded form.**

1. Complete.

a) 46×9

4 tens + 6 ones
× 9

36 tens + 54 ones
41 tens + 4 ones

414

c) 78×9

70 + 8
× 9
630
+ 72
702

b) 89×5

8 tens + 9 ones
× 5

40 tens + 45 ones
400 + 45
445

d) 36×8

30 + 6
× 8
240
+ 48
288

At-Home Help

The **expanded form** of 28 is 2 tens + 8 ones or 20 + 8.

2. Stanley can display 37 models on 1 shelf. How many models can he display on 4 shelves? $37 \times 4 = 148$

30 + 7
× 4
120
+ 28
148

3. Circle the letter that is a reasonable estimate for 96×5.

A. more than 450 **B.** less than 450 **C.** less than 45 **D.** less than 30

Explain how you know.

estimate:
$100 \times 5 = 500$

Check
90 + 6
× 5
450
+ 30
480

L Name: _____ Date: _____

9.5 Estimating Products Page 1

Student Book pages 322–324

GOAL

Develop strategies for estimating.

You will need

- counters

Problem

8 soccer teams were playing in a tournament.

There were 9 players on each team.

About how many players were playing in the tournament?

There are different strategies for estimating.

Practise using easier numbers.

$8 \times 9 =$ ___ estimate high.

$8 \times 10 = 80$

There are 8 teams with 9 players.

You are trying to estimate 8×9.

Think about easier numbers to use.

9 is close to 10.

Think about 8×10.

You can count by 10s.

$8 \times 10 =$ 80

Since you changed 9 to 10, there are a few less than 80 players altogether.

Try the strategy again.

What if there were 6 teams with 7 players on each team?

Think about easier numbers to use.

$6 \times 7 =$ ___ estimate lower.

$5 \times 7 = 35$ more than

6 is close to 5.

Think about 5×7.

You can count by 5s.

$5 \times 7 =$ 35

Since you changed the 6 to 5, there are a few more than 35 players altogether.

L Name: _____ Date: _____

9.5 Estimating Products Page 2

Use easier numbers to estimate the products.

$7 \times 9 =$ 63

Change the fact to $7 \times 10 =$ 70.

7×9 is a little less than 70.

$8 \times 6 =$ 48

Change the fact to 8 × 5 = 40 + 8.

8×6 is 48.

or

$10 \times 6 = 60 - 12$

$8 \times 6 = 48$

$11 \times 4 =$ 44

Change the fact to 4 × 10 = 40 + 4.

11×4 is 44.

$9 \times 6 =$ 54

Change the fact to 10 × 6 = 60 − 6.

9×6 is 54.

Reflecting

Was there another way you could have changed 9×6? Explain.

I could $9 \times 5 = 45$ and add a group of nine

$9 \times 5 = 45 + 9$

$9 \times 6 = 54$

Chapter 9

Lesson 5 Estimating Products

GOAL

Choose when and how to estimate.

1. Estimate each product. Show your work.

a) 5×44 5 x 40 = 200

b) 8×62 8 x 60 = 480

c) 9×28 10 x 28 = 280 or 9 x 30 = 270

d) 7×31 7 x 30 = 210

e) 3×82 3 x 80 = 240

f) 4×73 4 x 70 = 280

2. Decide whether you can estimate to answer. Then answer.

a) Lang, Ken, and Joshua each have $42. Do they have enough money to buy a second-hand bike for $150?

42 x 3 =
40 x 3 = 120
no, they only have about $120.

Check
40 + 2
x 3
120
+ 6
126

b) Each bookcase contains 64 books. There are 4 bookcases. Are there more than 200 books?

64 x 4 =
60 x 4 = 240
Yes, there is over 200 books.

Check
60 + 4
x 4
240
+ 16
256

c) 5 cartons hold 54 juice boxes each. Are there enough juice boxes for 250 students?

54 x 5 = ___
50 x 5 = 250
Yes, there is over 250.

check
50 + 4
x 5
250
+ 20
270

Multiplying with an Algorithm

Goal **Multiply using a procedure.**

1. Estimate each product.

a) 139 × 9

139 × 10 = 1390

140 × 10 = 1400

b) 358 × 8

350 × 10 = 3500

400 × 8 = 3200

c) 729 × 2

700 × 2 = 1400

d) 298 × 5

300 × 5 = 1500

e) 498 × 6

500 × 6 = 3000

At-Home Help

One multiplication **algorithm**, or **procedure** to multiply, is this:

$$\begin{array}{r} {\scriptstyle 3\,2} \\ 174 \\ \times\ 5 \\ \hline 870 \end{array}$$

Because
4 ones × 5 = 20,
or 2 tens **0 ones.**
7 tens × 5 + 2 tens more =
350 + 20 = 370, or
3 hundreds **7 tens.**
1 hundred × 5 + 3 hundreds
more = 500 + 300 = 800,
or **8 hundreds.**

2. You should have 3 estimates that are 1500 or less.
Calculate their products.

Yes d) 1500
c) 1400
a) 1400 or 1390

3. Estimate and then calculate.

a) 396 × 7

300 + 90 + 6
× 7
2100
630
+ 42
2772

400 × 7 = 2800

b) 629 × 5

600 + 20 + 9
× 5
3000
100
+ 45
3145

600 × 5 = 3000

L Name: _____ Date: _____

9.6 Communicating about Solving Problems Page 1

Math Journal

Student Book pages 328–329

DU A-C
1 & 2
pg 329

GOAL

Explain your thinking when solving a problem.

Problem

Horses age more quickly than humans.

For every year a horse lives, it ages 3 human years.

Ken wondered how old his 8-year-old horse would be in human years.

How can Ken explain how he solved the problem?

Understand the Problem

What do you know?

For every 1 year a horse ages is the same as 3 human years

A horse this old...	...is like a human this old
1	3
2	6
3	9
4	12
5	15
6	18
7	21
8	24

Make a Plan

8 x 3 = 24

The horse will be 24 years old.

Multiply to find the answer.

How do you know that you can multiply?

I want to know how old the horse will be in people years when it's 8. 8 x 3 = ?

L Name: _____ Date: _____

9.6 Communicating about Solving Problems Page 2

Carry Out the Plan

What is the age of the horse?

8 x 3 = ? I can round 10 x 3 = 30

10 x 3 = 30 − 6 (minus 2 groups of 3 to make 8x3)

8 x 3 = 24

Look Back to Check

Is your answer reasonable?

Yes because 8 x 3 = 24 so the horse will be 24 humans years old.

Reflecting

How could Ken have explained his plan more clearly?

He could of told what strategy he used to calculate.

Look at the Communication Checklist.

Do you think you have given a good explanation to how you solved the horse problem?

Why or why not?

Yes because 10 x 3 = 30 which is 2 groups of 3 less 8 x 3 = 24, which is a close estimate

Communication Checklist

- ✔ Did you show the right amount of detail?
- ✔ Did you explain your thinking?

Chapter 9 Lesson 6

Name: Grade 4 answer key Date: _____

Communicating about Solving Problems

Page 331
#1–11

GOAL

Explain your thinking when solving a problem.

1. Emily earns $28 each week for doing yard work. How much money can she earn in 5 weeks?

$5 \times 28 = 140$ $5 \times 20+8$

$5 \times 20 = 100$

$5 \times 8 = 40$

$100 + 40 = 140$

Emily can earn $140 in 5 weeks.

At-Home Help

Follow these steps to help you communicate about solving problems:

Step 1 Make sure you understand the problem.

Step 2 Make a plan.

Step 3 Carry out the plan.

Step 4 Look back to check.

Communication Checklist

- ✔ Did you show the right amount of detail?
- ✔ Did you explain your thinking?

2. Jade, Cole, Michael, and Hailey each brought 46 brownies to the school bake sale. How many brownies did they bring in total?

$4 \times 46 = 4 \times 40 + 4 \times 6$

$= 160 + 24$

$4 \times 46 = 184$

The 4 students brought 184 brownies altogether.

3. Ken earned 72 points on the first day of the summer fair. If he earns the same number of points each day for 3 days will he win the prize for 290 points? Explain your solution.

1. I made sure I understood the problem – had all the data available: Day 1 72 points
   Day 2 72 points
   Day 3 72 points
2. I figured the operation $72 \times 3 = 216$
3. I calculated 216. That isn't enough to win the prizes for 290 points. Answer my question and explain why.

Calculate
$70+2$
$\times \quad 3$
6
$+210$
216
2×3
70×3

Communicate About Solving Problems

Goal **Explain your thinking when solving a problem.**

1. Name the steps that Chantal used to solve this problem.
Chantal's baby brother is 17 weeks old.
How many days old is he?

Step 1 understanding the problem

My brother is 17 weeks old.
I know there are 7 days in 1 week.

Step 2 figure out the operation 17 × 7

I will multiply 17 and 7.

Step 3 using a strategy to calculate: here she use expanded form 17 is turned into 10+7 × 7

$$\begin{array}{r} 10 + 7 \\ \times\ 7 \\ \hline 70 \\ +\ 49 \\ \hline 119 \end{array}$$

My brother is 119 days old.

Step 4 Then she estimated to check is answer is close to correct

If my brother were 20 weeks old, he would be 140 days old.
So 119 days is reasonable for 17 weeks old. estimate ✓
20 × 7 = 140

At-Home Help

Problem solving involves
- understanding the problem
- making a plan to solve the problem
- carrying out the plan
- looking back to check

2. Show the steps as you solve each problem.

a) At a party there are 36 tables. Each table will have 5 balloons.
How many balloons will there be in all?

1. understand the problem - how many balloons at 36 tables
2. What operation(s) 36 × 5
3. strategy to solve - expanded form
4. Check validity - use estimation 40 × 5 = 200 - is close.

$$\begin{array}{r} 30 + 6 \\ \times\ 5 \\ \hline 30 \\ +\ 150 \\ \hline 180 \end{array}$$

b) It rained for 3 days. How many hours did it rain?

1. understand the problem - how many hours did it rain in 3 days.
2. What operation 24 hours in a day × 3 days it rained
3. Use expanded form to multiply 72 hours it rained.
4. Estimate - 25 × 3 = 75 hours ✓

$$\begin{array}{r} 20 + 4 \\ \times\ 3 \\ \hline 12 \\ +\ 60 \end{array}$$

L Name: _____ Date: _____

9.7 Multiplying 2-Digit Numbers Page 1

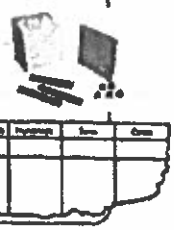
Student Book pages 330–332

GOAL

Multiply 2-digit numbers by 1-digit numbers using expanded form.

You will need

- base ten blocks
- a place value chart



Problem

Diane lives near a beach.

She collected 14 shells in 1 week.

~~She wants to collect the same number of shells each week.~~

How many shells will Diane have in 4 weeks?

There are 4 groups of 14 shells after 4 weeks.

When there are equal groups, you can multiply.

Step 1: Estimate first.

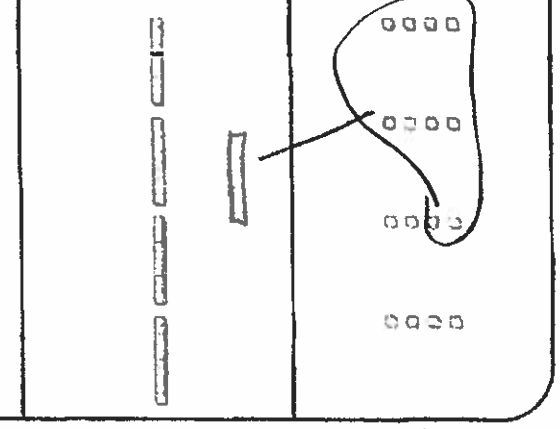
4 × 14 is about 4 × 10 = 40.

I predict that Diane will have more than 40 shells.

Step 2: Make 4 groups of 14 with base ten blocks.

Record them using the expanded form.

Hundreds	Tens	Ones
	5	6



14
× 4
56

10 + 4
× 4
40
+ 16
56

L Name: _____ Date: _____

9.7 Multiplying 2-Digit Numbers Page 2

Step 3: Multiply to show the number of tens first.

$$\begin{array}{r} 14 \\ \times\ 4 \\ \hline \end{array} \qquad \begin{array}{r} 10 + 4 \\ \times\ \ \ 4 \\ \hline 40 \\ + \\ \hline \end{array}$$ (number of tens)

Step 4: Complete the multiplication.

$$\begin{array}{r} 14 \\ \times\ 4 \\ \hline \end{array} \qquad \begin{array}{r} 10 + 4 \\ \times\ \ \ 4 \\ \hline 40 \\ + \ \ 16 \\ \hline 56 \end{array}$$ (number of tens) (number of ones) (total)

Diane will have 56 shells in 4 weeks.

Reflecting

Suppose that you multiplied the ones first. Would the product be the same? Explain.

Yes, because you add the products of 4 times both digits. for both expanded form $10 + 4$ $\times\ 4$ and traditional: 14×4

C&P Name: _____ Date: _____

9.7 Multiplying 3-Digit Numbers Page 1

Student Book pages 330–332

4

GOAL

Multiply 3-digit numbers by 1-digit numbers using expanded form.

You will need

- base ten blocks

Checking

1. Model with base ten blocks. Multiply.

a) 300 + 20 + 7 is the same as 327

× 5 × 5

Make 5 groups of 327 with base ten blocks.

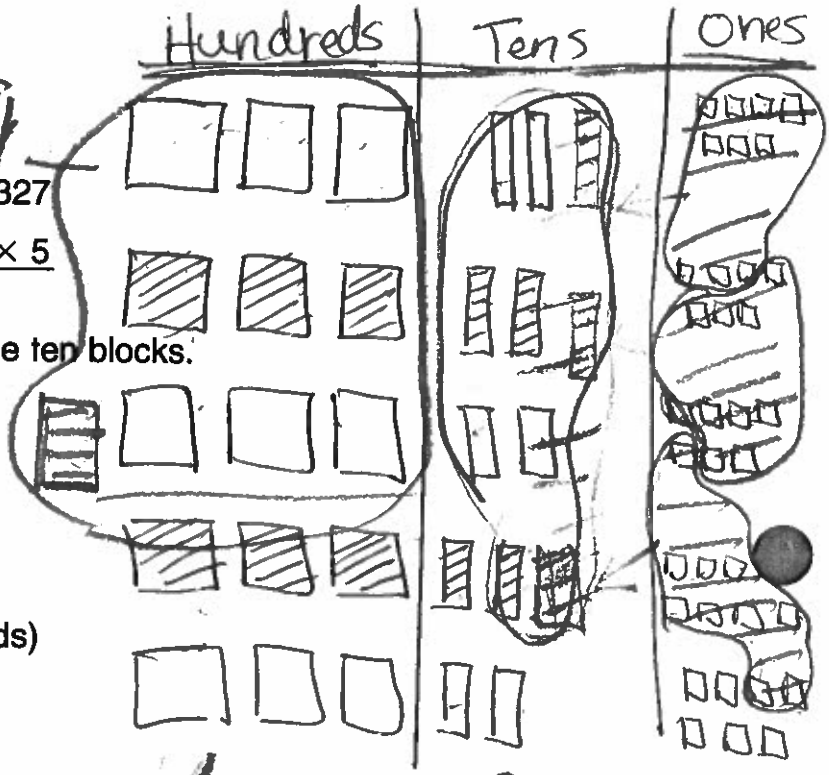
Do not regroup.

Fill in the rest of the question.

300 + 20 + 7

× 5

5×300)	1500	(number of hundreds)
1×20)	100	(number of tens)
5×7)	+ 35	(number of ones)
	1635	(total altogether)



1 6 3 5

Hund. Tens Ones.

b) Model 5 groups of 327 with base ten blocks.

Remember, do not regroup.

1 6 3 5

	327	
×	5	
	35	(number of ones)
	100	(number of tens) 5×20.
+	1500	(number of hundreds) 5×300.
	1635	(total altogether)

C&P Name: _____ Date: _____

9.7 Multiplying 3-Digit Numbers Page 2

Practising

7. Estimate, then calculate.

a) 3 × 986

986 is close to 1 000 so I can estimate by multiplying 3 × 1000 = 3000.

900 + 80 + 6

```
  986
×   3
 2700   (number of hundreds)  3x900
  240   (number of tens)      3 x 80
+  18   (number of ones)      3x6
 2958   (total altogether)
```

b) 5 × 181

181 is close to 200 so I can estimate by multiplying 5 × 200 = 1000.

100 + 80 + 1 × 5

```
 181
×  5
500   ←100 x 5
400   ←80 x 5
  5     1 x 5
905
```

c) 7 × 332

332 is close to 300 so I can estimate by multiplying 7 × 300 = 2100

300 + 30 + 2 × 7

```
 332
×  7
2100   7 x 300
 210   7 x 30
+ 14   7x2
2324
```

Name: Answer Key Date: _____

Chapter 9 Lesson 7

Multiplying 3-Digit Numbers

Page 331 #1-11

GOAL

Multiply 3-digit numbers by 1-digit numbers using expanded form.

1. Multiply.

a) $3 \times 242 = \blacksquare$

$200 + 40 + 2$

$\times 3$

6 (2×3)
120 (40×3)
600 (200×3)
726

b) $2 \times 567 = \blacksquare$

$500 + 60 + 7$

$\times 2$

14 (7×2)
120 (60×2)
+1000 (500×2)
1134

At-Home Help

You can use expanded form to multiply 3-digit numbers by 1-digit numbers. For example:

I want to know 4×321.
I know that 321 is the same as $300 + 20 + 1$.
I will multiply each part separately by 4.

$300 + 20 + 1$
$\times 4$
1200
80
$+ 4$
1284
$4 \times 321 = 1284$

2. Multiply.

a) 2×122

$100+20+2$
$\times 2$
4 (2×2)
40 (20×2)
+200 (100×2)
244

c) 3×254

$200+50+4$
$\times 3$
12 (4×3)
150 (50×3)
+600 (200×3)
762

e) 4×197

$100+90+7$
$\times 4$
400
360
+ 28
788

b) 5×316

$300+10+6$
$\times 5$
1500 (300×5)
50 (10×5)
+ 30 (6×5)
1580

d) 6×624

$600+20+4$
$\times 6$
3600 (600×6)
120 (20×6)
+ 24 (4×6)
3744

f) 2×472

$400+70+2$
$\times 2$
800 (400×2)
140 (70×2)
+ 4 (2×2)
944

3. Estimate to check your answer for each part of Question 2.

a) 2 × 100 = 200

b) 5 × 300 = 1500

c) 3 × 300 = 900

d) 6 × 600 = 3600

e) 4 × 200 = 800

f) 2 × 500 = 1000

Multiplying 3 Digits by 1 Digit

Goal **Multiply 3-digit numbers by 1-digit numbers using expanded form.**

1. Complete.

372 × 3 is about 1200

400 × 3 = 1200

300 + 70 + 2
× 3

900 (3 × 300)
210 (3 × 70)
+ 6 (3 × 2)
1116

At-Home Help

Estimating helps you to check that your answers are reasonable.

298 × 5 is about 300 × 5, or 1500.

200 + 90 + 8
× 5
1000
450
+ 40
1490

2. A bottle of vitamins contains 120 tablets.
How many tablets are in 8 bottles?
Circle the most reasonable estimate.

A. more than 800 **B.** less than 800 **C.** more than 1600 **D.** more than 80

Explain how you know.

120 × 8 = 960

100 + 20 + 8
× 8
800
+ 160
960

estimate
100 × 8 = 800

I can estimate 800 is low so its more.

3. Connor's family's cable bill is $126 every 2 months.

120 × 6 = □

a) Estimate how much they pay in 1 year.

100 + 20
× 6
120
+ 600
720

about 720

b) Calculate how much they pay in 1 year.

126 × 6 = 756

100 + 20 + 6
× 6
36 (6 × 6)
120 (20 × 6)
+ 600 (100 × 6)
756

4. Jasmine often visits her grandmother on weekends.
It is 247 km there and back.

a) Create a 1-digit by 3-digit multiplication problem about Jasmine's visits.

how many km does she travel after 4 visits.

247 × 4 = 988 km.

b) Estimate the answer.

200 × 4 = 800

about 800km.

c) Calculate the answer.

200 + 40 + 7
× 4
28 (7 × 4)
+ 800 (40 × 4, 200 × 4)

L Name: _____ Date: _____

9.8 Multiplying Another Way Page 1

Student Book pages 334–337

GOAL

Multiply, regrouping as you go.

You will need

- base ten blocks

Problem

Michael has 56 hockey cards. Pedro has twice as many.

How many cards does Pedro have?

Twice as many means 2 times as many.

Multiply 56 cards by 2.

$2 \times 56 = \square$

Step 1: Estimate 2 × 56 first.

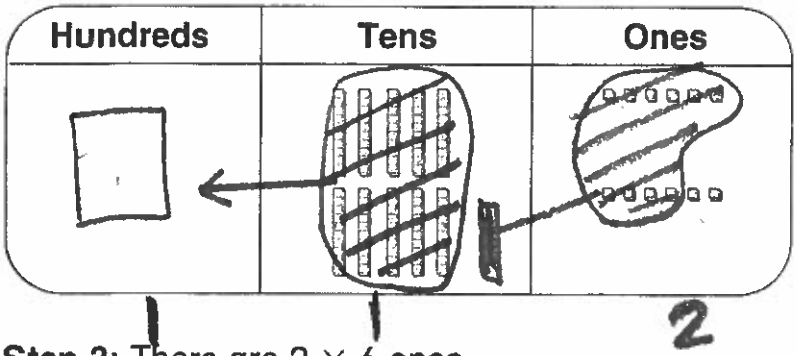
I know that 2 × 50 = 100.

So Pedro has more than 100 cards.

estimate 1st

Step 2: Multiply by making 2 groups of 56.

Use base 10 blocks.



2 × 56 = 112

+1 +1

5 6

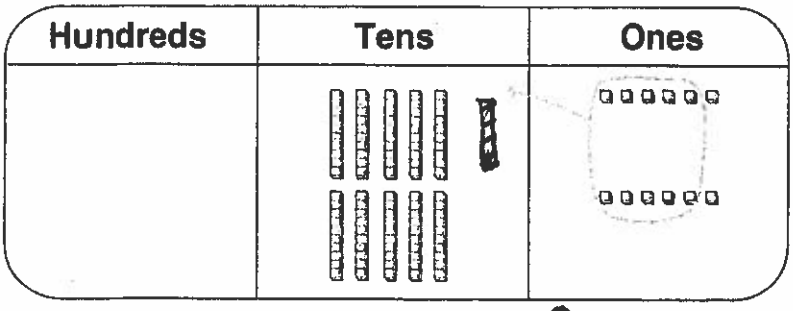
× 2

1 1 2

Step 3: There are 2 × 6 ones.

2 × 6 = 12

Regroup 12 ones as 1 ten, 2 ones.



2 × 56 = __

+1

5 6

× 2

2

Regroup

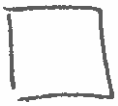
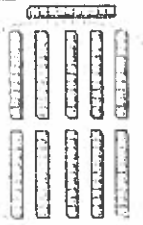
L Name: _____ Date: _____

9.8 Multiplying Another Way Page 2

Step 4: There are 2 × 5 tens + 1 ten.

There are 11 tens.

Regroup 11 tens as 1 hundred, 1 ten.

Hundreds	Tens	Ones
		

2 × 56 = __

$$\begin{array}{r} {\scriptstyle 1\ 1\ \ } \\ 5\ 6 \\ \times\quad 2 \\ \hline 1\ 2 \end{array}$$

Step 5: Add.

100 + 10 + 2 = 112

2 × 56 = 112

So, Pedro has 112 cards.

Reflecting

How did using the place value chart help you to multiply 2-digit numbers?

The place value chart showed why we regroup.

b)

	+3			
	2	6	0	
	x		5	
1	3	0	0	

c)

	+5	+1		
	2	9	3	
	x		6	
1	1	5	8	

d)

	+1	+3		
	4	2	9	
	x		4	
1	7	1	6	

9×4=

Name: ______________________ Date: ______________

Chapter 9

Lesson 8 Multiplying Another Way

GOAL

Multiply, regrouping as you go.

1. Multiply by regrouping.

a) 43 × 5 = 215

b) 152 × 4 = 608

c) 461 × 6 = 2766

d) 243 × 5 = 1215

e) 548 × 2 = 1096

f) 617 × 7 = 4319

g) 492 × 3 = 1476

h) 129 × 5 = 645

i) 257 × 2 = 514

At-Home Help

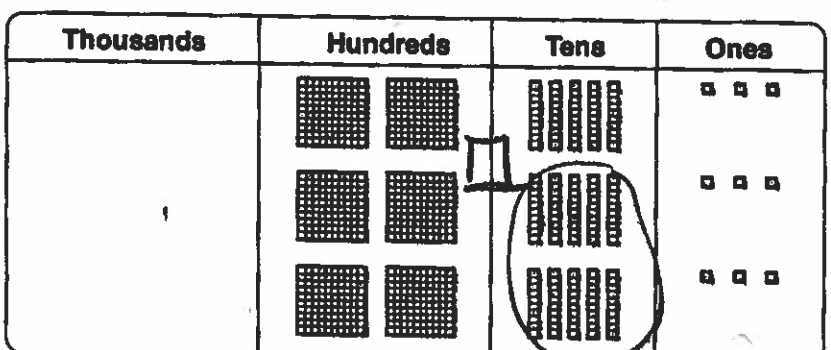
You can multiply by regrouping. For example:

I want to know 3 × 384.
As I multiply, I will regroup ones, tens, and hundreds.

```
  2 1
  3 8 4
  ×   3
  1152
```

3 × 384 = 1152

2. a) What multiplication equation does this model show? 253 × 3



b) Calculate the product. 7 5 9

253 × 3 = 759

```
  253
×   3
  759
```

Name _____

Multiplication

43

★ When you multiply large numbers by a 1-digit number, multiply each digit of the top number by the bottom number, starting with the ones place. Regroup if the product is 10 or above.

$$\overset{+1}{230} \times 4 = 920$$

Solve.

1)	$\overset{+1}{45} \times 3 = 135$	$\overset{+3}{36} \times 5 = 180$	$\overset{+3}{15} \times 7 = 105$	$40 \times 8 = 320$	$73 \times 2 = 146$	$84 \times 1 = 324$
2)	$\overset{+2}{19} \times 3 = 57$	$\overset{+4}{36} \times 8 = 288$	$\overset{+1}{47} \times 2 = 94$	$\overset{+4\,+1}{152} \times 9 = 1368$	$\overset{+4}{261} \times 8 = 2088$	$\overset{+1}{350} \times 2 = 700$
3)	$\overset{+1}{428} \times 2 = 856$	$\overset{+2\,+2}{579} \times 3 = 1737$	$\overset{+1}{920} \times 5 = 4600$	$\overset{+1\,+4}{327} \times 7 = 2289$	$\overset{+1}{206} \times 3 = 618$	$\overset{+1}{713} \times 6 = 4278$
4)	$\overset{+3\,+3}{179} \times 4 = 716$	$803 \times 1 = 803$	$\overset{+1}{263} \times 3 = 789$	$+4\ \overset{+3}{3917} \times 5 = 19585$	$\overset{+4\,+4\,+1}{5782} \times 6 = 34692$	$+2\ \overset{+1\,+4}{1429} \times 5 = 7145$

5) At Pancho's Restaurant, 310 burritos are sold each year. Pancho's has been open for 5 years. How many burritos have been sold since Pancho's opened? $310 \times 5 = 1550$

6) Plane tickets from Miami, Florida, to Denver, Colorado, cost $522 each. The 4 members of the Wilson family are buying tickets from Miami to Denver. How much will the tickets cost? $2088

$522 \times 4 = 2088$

7) Megan bought 5 large bags of peanuts. There are 210 peanuts in each bag. How many peanuts does she have in all? 1050

$210 \times 5 = 1050$

L Name: _____ Date: _____

9.9 Choosing a Method for Multiplying Page 1

Student Book pages 338–340

GOAL

Choose whether to estimate or calculate, and explain your multiplication method.

You will need

- base ten blocks

Problem

Sometimes you can find an answer using estimation.

Sometimes you can solve a problem using mental math.

Sometimes you need materials to solve a problem.

How can you solve each problem?

1. You and your friend are buying 2 bottles of water.

   1 bottle of water costs $1.25.

   You want to make sure you have enough money to buy 2 bottles.

   Would you estimate or calculate the cost of 2 bottles?

   Explain or show what you would do.

$1.25

(Table)

me	1.25
friend	2.50

I can use a chart to show skip counting. I would need $2.50. I could estimate to check. ($2.00 x 2 = $4.00)

2. There are 45 pencils in a box.

   You want to know if there are more than 150 pencils in 3 boxes.

   Would you estimate or calculate the number of pencils?

   Explain or show what you would do.

We could estimate higher 50 x 3 = 150 There would be less than 150 pencils per box.

Name: _____ Date: _____

9.9 Choosing a Method for Multiplying Page 2

3. 5 schools are getting together for a checkers tournament.

Each school is bringing 100 students.

How many students will be at the tournament altogether?

Would you estimate or calculate the number of students?

Explain or show what you would do.

I can use mental math $5 \times 100 = 500$

I can calculate easily $5 \times 100 = 500$

4. The grocery store sells eggs in cartons of 12.

If you buy 3 cartons of eggs, will you have more or less than 30 eggs?

Would you estimate or calculate the number of eggs?

Explain or show what you would do.

$3 \times 12 = 36$

$3 \times 10 = 30$ We know that there will be more than 30.

Reflecting

How did you decide when to use mental math?

Whenever you don't need an exact number but within a range altogether (+) or difference (−) = actual

How did you decide when to estimate?

I can estimate when I see "about" how many or to check the validity of a number.

Chapter 9 Lesson 9

Name: _____ Date: _____

Choosing a Method for Multiplying

Math Journal 339-340 # 1-13 answer

GOAL

Choose whether to estimate or calculate, and explain your multiplication method.

1. Jade can string 76 beads every hour. Which question could you answer by estimating?

A. How many beads can Jade string in 10 hours?

B. How many beads can Jade string in 12 hours?

C. Would Jade use more than 200 beads in 3 hours?

D. How many hours would it take for Jade to use 380 beads?

At-Home Help

Here are 3 methods you can use to solve multiplication problems:

- estimate
- calculate using mental math
- calculate using materials

2. How would you answer each question: by estimating, using mental math, or using base ten blocks?

a) A skateboard costs $325. Can you buy 2 skateboards for $600? estimate

b) Joshua earned 279 points at the school fair. Diane earned 3 times as many points. How many points did Diane earn? base 10 blocks

c) Aneela can type 42 words in a minute. How many words can she type in 5 minutes? mental math

3. Matt and Hailey want to solve this problem:

A box of crayons holds 54 crayons. About how many crayons are in 9 boxes?

Matt says, "I will use mental math to solve the problem. $9 \times 50 = 450$, and $9 \times 4 = 36$. The answer is $450 + 36 = 486$."

Hailey says, "I will estimate to solve the problem. 9 is close to 10. $10 \times 54 = 540$, so the answer is about 540."

Can both answers be correct? Explain your answer. Yes, both answers can be right because one is for an estimate and the other is an exact calculation

Choosing a Method to Multiply

4

Goal **Choose and justify a multiplication method.**

Use these facts in the questions below.

- The average Canadian consumes 25 kg of fresh fruit in juices in 1 year.
- The average Canadian child watches 884 hours of TV in 1 year.
- A small roast beef submarine sandwich has 954 kilojoules of energy.

At-Home Help

Look at the question to decide if an estimate will do.
Look at the numbers in a problem to decide if you can solve it mentally or if you need to use pencil and paper.

1. You want to find out how many kilograms of fresh fruit in juices a family of 6 consumes in 1 year. Would you use pencil and paper or mental math? Explain your choice. Solve the problem.

25 × 6 = 150

I could use mental math

25 × 5 = 125 + 25

25 × 6 = 150

I calculate 25 × 5 then add another group

20 + 5
× 5
25
+100
125 kg. of fresh fruit.

2. You want to find out about how many hours of TV a child would watch in 9 years. Would you estimate or do an exact calculation? Explain your choice. Solve the problem.

estimate 884 × 10 = 8840

I rounded the nine to 10. Or I can round 1000 × 9 = 9000 and get a range. I only needed an approximate.

3. You want to find out how many kilojoules of energy a person would get from eating 1 small roast beef submarine sandwich each day for a week. Would you use pencil and paper or mental math? Why? Solve the problem.

954 × 7

I would calculate

You would have 6,678 Kj of energy a week.

900 + 50 + 4
×
7
28
350
+6300

(7 × 4)
(7 × 50)
(7 × 900)

C&P Name: _____ Date: _____

9.10 Creating Multiplication Problems

Student Book page 341

GOAL

Create and solve multiplication problems.

How can you create a story about multiplication?

Step 1: Understand the Problem

What do you have to do?

Have a repeated number, then groups 45 x 5

Step 2: Make a Plan

What is your story going to be about?

We made it about Math minutes

What kinds of multiplication problems will be in the story?

We can calculate using a variety of strategies: old school, expanded form, and chunking

What strategies will you use to find the answer to these multiplication problems?

We can estimate to find a range or calculate

Step 3: Carry Out the Plan

Write the pages of your story. Show how you solved the multiplication problems.

45 x 5 = 225

old school

$$\begin{array}{r} 45 \\ \times\ 5 \\ \hline 225 \\ {\scriptstyle 20} \end{array}$$

Step 4: Look Back

How do you know you made multiplication problems in your book?

Because I can answer them.

L Name: _____ Date: _____

9.10 Creating Multiplication Problems

Student Book page 341

GOAL

Create and solve multiplication problems.

You will need

- pencil
- crayons

Problem

Alec wrote a page for a book about multiplication.

He included a picture and a multiplication story.

He also wrote a multiplication fact.

His story told the answer to the problem.

7 x 15

Kelly practised piano 15 minutes a day every day of the week. That makes 105 minutes.

How can you create a story about multiplication?

Hint: First think of equal groups of things for a story.

Write the multiplication fact that goes with your story.

Write your story.

End your story with the answer to the multiplication problem.

How many minutes of math do we get a week, if we do it every day for 45 minutes. $45 \times 5 = \square$

estimate
$50 \times 5 = 250$
$45 \times 10 = 450$.

expanded form

$40 + 5$

$\times \quad 5$

25

5×5

40×5 $+200$

225

chunk

$40 \times 5 + 5 \times 5$

$200 + 25$

$= 225$

Old school

$\overset{+2}{45}$

$\times \quad 5$

225

We have 225 minutes of math each week.

Name: _____ Date: _____

Chapter 9 Lesson 10

Creating Multiplication Problems

GOAL

Create and solve multiplication problems.

1. Fill in the blanks to write your own multiplication problems.

a) 3 × 26

$$\begin{array}{r} {}^{+1}26 \\ \times\ 3 \\ \hline 78 \end{array}$$

Diane made 26 cookies every day. How many cookies did she make in 3 days?

Diane made 78 cookies.

b) 3 × 42

$$\begin{array}{r} 42 \\ \times\ 3 \\ \hline 126 \end{array}$$

Ken earns $ 42 every week. How much does he earn in 3 weeks?

Ken earns $ 126 in 3 weeks.

At-Home Help

Follow these steps to create your own multiplication problem.

Step 1 Think of 2 numbers to multiply (e.g., 125 × 4).

Step 2 Write a problem using your 2 numbers (e.g., There are 125 raisins in a bag. How many raisins are in 4 bags?).

Step 3 Solve your problem (e.g., 500 raisins are in 4 bags).

Your own **c)** 5 × 150

$$\begin{array}{r} {}^{+2}150 \\ \times\ 5 \\ \hline 750 \end{array}$$

Jade made 5 necklaces with 150 beads in each necklace. How many beads did Jade use?

Jade used 750 beads.

2. Write a multiplication problem that uses the numbers 4 and 213. Solve your problem.

Oswald has $213 earned in one week. How much money will he have in 4 weeks?

$$\begin{array}{r} 2{}^{+1}13 \\ \times\ 4 \\ \hline 852 \end{array}$$

He would have $852.

5 Multiplying 2-digit Numbers by 1-digit Numbers

EXAMPLE

4 x 23 = ?

Long way:

$$\begin{array}{r} 23 \\ \times\ \ 4 \\ \hline 12 \\ 80 \\ \hline 92 \end{array}$$

← align the numbers on the right-hand side

← 4 x 3 = 12

← 4 x 20 = 80

← 12 + 80 = 92

Short way:

$$\begin{array}{r} 23 \\ \times\ \ 4 \\ \hline \end{array}$$

↑ align the numbers on the right-hand side

$$\begin{array}{r} {\scriptstyle 1}\,2\,3 \\ \times\ \ 4 \\ \hline 2 \end{array}$$

↑ 4 x 3 = 12

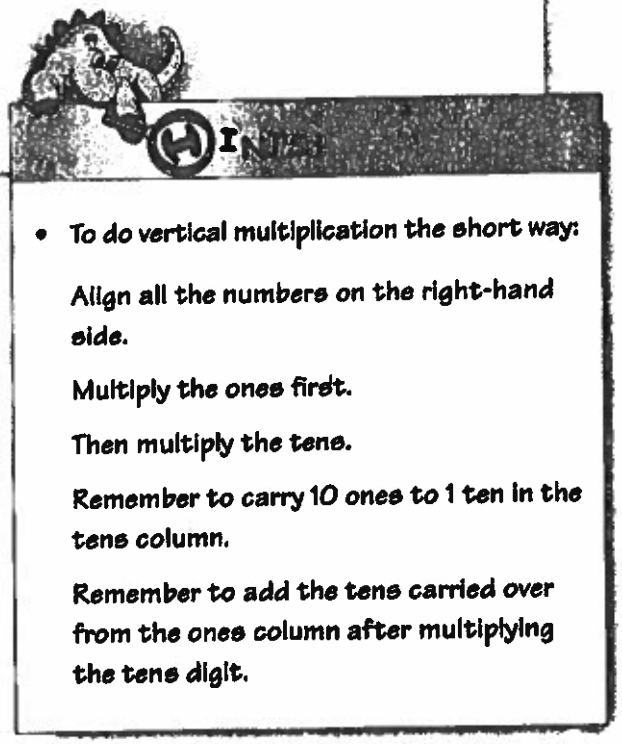
carry 10 ones to the tens column; keep 2 ones in the ones column

$$\begin{array}{r} {\scriptstyle 1}\,2\,3 \\ \times\ \ 4 \\ \hline 92 \end{array}$$

↑ 9 = 4 x 2 + 1

carried over from the ones column

4 x 23 = 92



- To do vertical multiplication the short way:

  Align all the numbers on the right-hand side.

  Multiply the ones first.

  Then multiply the tens.

  Remember to carry 10 ones to 1 ten in the tens column.

  Remember to add the tens carried over from the ones column after multiplying the tens digit.

Multiply the long way.

① $\begin{array}{r} 12 \\ \times\ \ 4 \\ \hline 8 \\ +\ 40 \\ \hline 48 \end{array}$ ← 4 x 2 ← 4 x 10

② $\begin{array}{r} 24 \\ \times\ \ 3 \\ \hline 12 \\ +\ 60 \\ \hline 72 \end{array}$

③ $\begin{array}{r} 32 \\ \times\ \ 4 \\ \hline 8 \\ +\ 120 \\ \hline 128 \end{array}$

④ $\begin{array}{r} 19 \\ \times\ \ 5 \\ \hline 45 \\ +\ 50 \\ \hline 95 \end{array}$

⑤ $\begin{array}{r} 31 \\ \times\ \ 6 \\ \hline 6 \\ +\ 180 \\ \hline 186 \end{array}$

⑥ $\begin{array}{r} 47 \\ \times\ \ 6 \\ \hline 42 \\ +\ 240 \\ \hline 282 \end{array}$

Name: _____ Date: _____

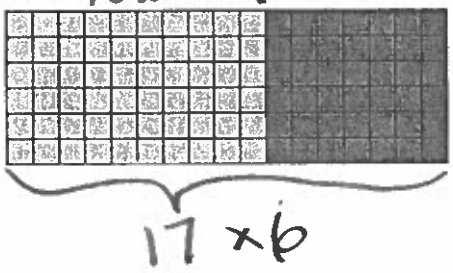
Chapter 9 Test Yourself

Circle the correct answer.

1. What is the product? $5 \times 300 =$ ▩ 1500

A. 1100 **B.** 1200 **C.** 1500 **D.** 1800

2. Which number sentence does this array show? 10x6 + 7x6



17 x6

A. $6 \times 10 = 60$

B. $6 \times 17 = 6 \times 10 + 6 \times 7$

C. $7 \times 12 = 7 \times 10 + 7 \times 2$

D. $10 \times 60 = 600$

3. What is the expanded form of 853?

A. 800 + 50 + 3 **B.** 85 + 30 **C.** 8 + 5 + 3 **D.** $8 \times 5 \times 3$

4. Matt made 6 models. Each model used 29 small sticks. About how many small sticks did Matt use?

A. 220 **B.** 180 **C.** 120 **D.** 300

5. Jade used 521 beads for each of 4 necklaces. How many beads did she use?

521
x 4
2084

A. 2840 **B.** 2804 **C.** 2484 **D.** 2084

6. Which multiplication equation does this model show?

Hundreds	Tens	Ones
▩	▮▮▮	▫▫▫ ▫▫▫
▩	▮▮▮	▫▫▫ ▫▫▫

A. 3×236

B. 3×136

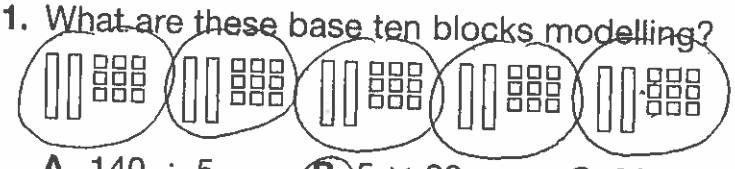
C. 136×2

D. 1×266

Test Yourself

Circle the correct answer.

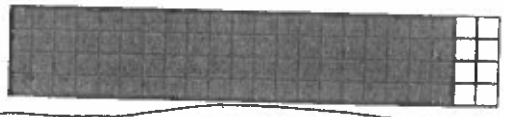
1. What are these base ten blocks modelling?



29 x 5 5 groups of 29.

A. 140 ÷ 5 **B.** 5 × 29 **C.** 29 × 4 **D.** 30 + 30 + 30 + 30 + 30

2. Which multiplication equation is modelled by this array?



4 x 22 or 4 x 20 + 4 x 2

E. 4 × 22 = 4 × 20 + 4 × 2

F. 23 × 4 = 20 × 4 + 3 × 4

G. 4 × 20 = 4 × 10 + 4 × 10

H. 4 × 20 = 2 × 20 + 2 × 20

3. The array in Question 2 could be broken into other arrays. Which of these is possible?

4 x 22
4 x 11 + 4 x 11

A. 4 × 9 + 4 × 14 **C.** 2 × 23 + 2 × 23

B. 4 × 11 + 4 × 11 **D.** 25 × 4 + 3 × 4

4. Miki used expanded form. What problem was she solving?

100 + 20 + 9
× 7
700
140
+ 63
903

E. How many eggs are in 129 dozen? No - 129 x 12

F. How many weeks are in 129 days? 7|129 - No

G. How many hours are in 7 days? 24 x 7 - No.

H. How many days are in 129 weeks? 129 x 7

5. Which estimate is the most reasonable for the product of 389 × 4?

300 x 4 = 1200 or 400 x 4 = 1600

389 x 4 = 1556

A. 1200 **B.** 1600 **C.** 2000 **D.** 700

6. What is the product of 638 × 6?

E. 3828 **F.** 3688 **G.** 3728 **H.** 3888

638 x 6 = 3828 (8x6, 30x6, 600x6)

7. The average Canadian eats 183 kg of vegetables in 1 year. How much does a family of 4 eat in 2 years?

A. 366 kg **B.** 732 kg **C.** 1464 kg **D.** 1098 kg

183 x 2 = 366 - 2 years

366 x 4 = 1464 - 4 over 2 years