Name: _____ Date: _____

Chapter 6: Multiplication

1. Calculate each product.

a) $6 \times 2 =$ _____

b) $5 \times 5 =$ _____

c) $3 \times 6 =$ _____

d) $4 \times 4 =$ _____

e) $3 \times 7 =$ _____

f) $4 \times 7 =$ _____

g) $5 \times 7 =$ _____

h) $6 \times 6 =$ _____

i) $6 \times 4 =$ _____

j) $6 \times 8 =$ _____

k) $7 \times 9 =$ _____

l) $9 \times 8 =$ _____

2. Calculate.

a) $7 \times 10 =$ _____

b) $7 \times 60 =$ _____

c) $4 \times 90 =$ _____

d) $50 \times 8 =$ _____

e) $30 \times 9 =$ _____

f) $20 \times 8 =$ _____

g) $3 \times 100 =$ _____

h) $7 \times 100 =$ _____

i) $9 \times 500 =$ _____

j) $700 \times 7 =$ _____

k) $300 \times 8 =$ _____

l) $600 \times 2 =$ _____

Name: _____ Date: _____

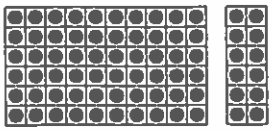
Multiplication of greater numbers

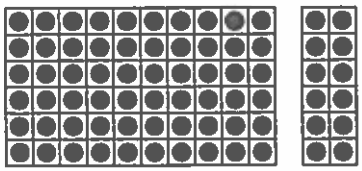
You can multiply using arrays.

$6 \times 12 = 6 \times 10 + 6 \times 2$

$= 60 + 12$

$= 72$





You can multiply using expanded form.

$$\begin{array}{r} 27 \\ \times\ 4 \\ \hline 80 \\ +\ 28 \\ \hline 108 \end{array} \qquad \begin{array}{r} 20 + 7 \\ \times 4 \\ \hline 80 \\ +\ 28 \\ \hline 108 \end{array}$$

3. Estimate each product.

a) 6×29 is about _____.

b) 9×15 is about _____.

c) 8×21 is about _____.

d) 5×49 is about _____.

e) 8×32 is about _____.

f) 6×17 is about _____.

4. Calculate.

a) 8×32

b) 4×71

c) 6×17

d) 5×48

e) 5×120

f) 3×251

Name: _____ Date: _____

6.1 Multiplication Strategies Page 1

Student Book pages 176–179

GOAL

Multiply one-digit numbers using mental math strategies.

You will need

- counters

- a blank multiplication table

Owen swims 6 days a week.

How many days does Owen swim in February?

February has 4 weeks.

Owen swims _____ times a week.

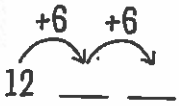
The total number of days is 4 × _____.

There are different ways to solve this problem.

First way: Skip counting

Start with 2 × 6 = 12.

Skip count by 6 two times to get to 4 × 6.

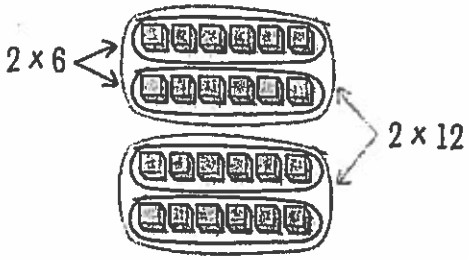


Owen swam _____ days in February.

Second way: Doubling

Start with 2 × 6.

Then double the groups.



1 group of 6 is 1 × 6 = _____.

2 groups of 6 is 2 × _____ = _____.

4 groups of 6 is _____ × _____ = _____.

Owen swam _____ days in February.

Name: _____ Date: _____

6.1 Multiplication Strategies Page 2

Third way: Using known multiplication facts

Suppose that February had 5 weeks.

You know that $5 \times 6 = 30$.

However, February has 4 weeks.

4 is _____ less than 5, so there are _____ $\times$ 6 = _____ fewer swim days.

$4 \times 6 = 30 -$ _____

$4 \times 6 =$ _____

Owen swam _____ days in February.

Reflecting

Owen related 4×6 to 2×6.

How can you relate 4×6 to 3×6 instead?

Hint: $3 \times 6 = 18$.

Ami doubled 2×6 to get 4×6. What other multiplication facts can you calculate by doubling?

Name: _____ Date: _____

6.1 Multiplication Strategies Page 1

Student Book pages 176–179

Checking

Gr. 5.

You will need

- counters

- a blank multiplication table

1. a) Calculate 7×3 in 2 ways.

First way:

Use $1 \times 3 =$ _____.

Skip count by 3s.

3, 6, _____, _____, _____, _____, _____

$7 \times 3 =$ _____

Second way:

Use $3 \times 3 =$ _____.

Skip count by 3s.

9, _____, _____, _____, _____

$7 \times 3 =$ _____

b) Calculate 6×6 using 3×6.

$3 \times 6 =$ _____

Double your answer.

$2 \times$ _____ = _____

6×6 is the same as the double of 3×6.

$6 \times 6 =$ _____

Communication Tip

You can say "double" to mean the same as "multiply by 2."

2. Aaron practises piano 5 times a week.

How many times did he practise in February?

February has 4 weeks.

The number of times he practised is $4 \times$ _____.

I know $2 \times 5 =$ _____, so I can double _____ to calculate 4×5.

$4 \times 5 =$ _____

C&P Name: _____ Date: _____

6.1 Multiplication Strategies Page 2

Practising

3. Describe a strategy for calculating each product.

Then write the product.

a) 7×6

I know $5 \times 6 =$ _____, so I can skip count by 6s from _____.

_____, _____, _____

$7 \times 6 =$ _____

Another strategy I can use is _____

_____.

b) 6×5

I know $3 \times 5 =$ _____, so I can double _____ to calculate 6×5.

$6 \times 5 =$ _____

Another strategy I can use is _____

_____.

8. There are 7 days in a week.

How many days are in 8 weeks?

Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
						
Walk the dog.	Do math homework.	Play soccer.	Help with supper.	Have piano lesson.	Go to BBQ in park.	Swim in pool.

I need to calculate _____ × _____.

I know _____, so I can _____

_____.

L Name: _____ Date: _____

6.2 Special Products Page 1

Student Book pages 180–182

GOAL

Use special strategies to multiply by 8 and 9.

Marko's mother embroidered 8 flowers to make this pillowcase.
She made 6 pillowcases as gifts for her family.

How many flowers did Marko's mother embroider?

How many flowers are on 1 pillowcase? _____

How many pillowcases did she make? _____

The total number of flowers is _____ × _____.

How can you double 6 × 2 to get 6 × 8?

The double of 2 is _____.

The double of 4 is _____.

The double of 6 × 2 is 6 × _____.

The double of 6 × _____ is 6 × 8.

6 × 2 = _____

6 × _____ = _____

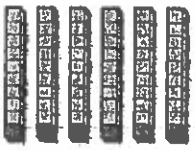
6 × 8 = _____

Marko's mother embroidered _____ flowers.

L Name: _____ Date: _____

6.2 Special Products Page 2

Look at the diagram shown to the right.



How many groups of 10 are in the diagram? _____ groups of 10

Write the multiplication sentence for the diagram.

_____ × _____ = _____

Count how many squares are covered in each group of 10. _____

Write the multiplication sentence for the squares that are not covered.

_____ × _____ = _____

How does the diagram show that $6 \times 9 = 60 - 6$?

_____

_____

Use $6 \times 9 = 54$ to calculate 6×8.

6×9 is 6 groups of _____.

6×8 is 6 groups of _____.

6×8 has _____ less group of _____ than 6×9.

$6 \times 8 = 54 -$ _____ = _____

Marko's mother embroidered _____ flowers.

Reflecting

How can you calculate 8×8 by doubling?

Hint: Start with 2×8.

_____

_____

You learned $6 \times 9 = 60 - 6$. Use this strategy to multiply other 1-digit numbers by 9.

Hint: Use this strategy with 5×9 if you cannot think of a 1-digit number.

_____

_____

_____

C&P Name: _____ Date: _____

6.2 Special Products Page 1

Student Book pages 180–182

Checking

1. a) Calculate 8 × 7 by doubling.

8 × 7 is double 4 × 7.

4 × 7 is double 2 × 7.

2 × 7 = _____

4 × 7 = _____ because _____ + _____ = _____.

8 × 7 = _____ because _____ + _____ = _____.

b) Calculate 8 × 9 using 2 different strategies.

First way: Doubling

2 × 9 = _____

4 × 9 = _____ because _____ + _____ = _____.

8 × 9 = _____ because _____ + _____ = _____.

Second way: Subtracting groups

8 × 10 = _____

8 × 1 = _____

8 × 9 is the same as 8 × 10 minus 8 × 1.

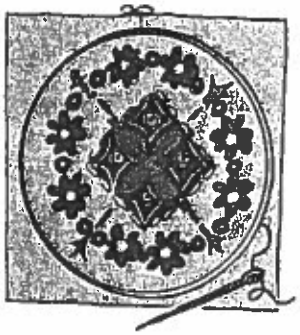
8 × 9 = _____ − _____ = _____

2. The pillowcase design has 4 leaves.

How many leaves will be on 9 pillowcases?

I need to calculate _____ × _____.

I know _____ = _____, so I can double _____ to calculate _____.

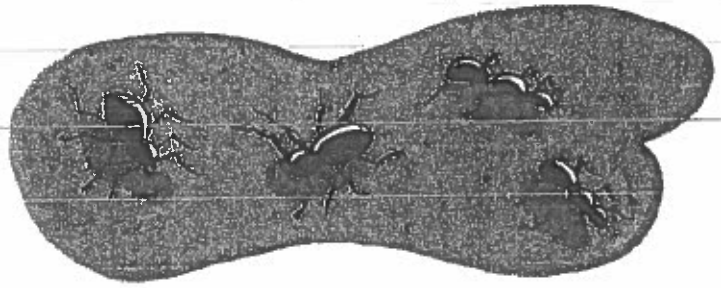


C&P Name: _____ Date: _____

6.2 Special Products Page 2

Practising

4. Spiders have 8 legs.
Ants have 6 legs.



a) How many more legs do 8 spiders have than 8 ants?

8 spiders have 8×8 legs.

I know _____, so I can _____

_____.

$8 \times 8 =$ _____

8 ants have 8×6 legs.

I know _____, so I can _____

_____.

$8 \times 6 =$ _____

_____ legs on 8 spiders − _____ legs on 8 ants = _____.

8 spiders have _____ more legs than 8 ants.

b) How many more legs do 9 spiders have than 9 ants?

9 spiders have _____ × _____ legs.

I can calculate the total number of legs by _____

_____.

9 ants have _____ × _____ legs.

I can calculate the total number of legs by _____

_____.

_____ legs on 9 spiders − _____ legs on 9 ants = _____.

9 spiders have _____ more legs than 9 ants.

B-B Name: _____ Date: _____

6.3 Relating Multiplication Facts

Student Book page 183

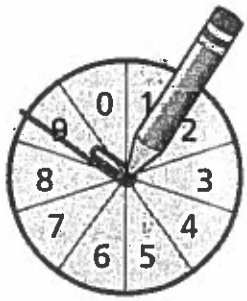
GOAL

Describe how multiplication facts are related.

You will need

- a spinner with the numbers 0 to 9
- a paper clip

How can you calculate the second multiplication fact you spin using the first fact you spin?



Step 1: Spin the spinner once. Write the number below.

5 × _____

Step 2: Spin the spinner again. Write the number below.

5 × _____

Step 3: Use your fact from Step 1 to calculate the fact in Step 2.

Explain your strategy below.

Hint: Use doubling or repeated addition.

_____

_____

_____

Step 4: Play again.

Explain how you related the first fact to calculate the second fact.

5 × _____

5 × _____

_____

_____

What strategy are you most comfortable working with?

_____

_____

E-A Name: _____ Date: _____

6.3 Relating Multiplication Facts

Student Book page 183

Brandon and Jay are playing Fact Spin.

You will need

- a spinner with the numbers 0 to 9
- a paper clip

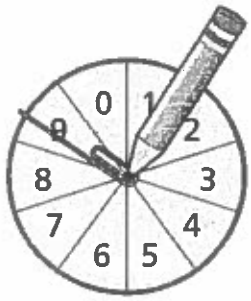
How can you calculate the second multiplication fact you spin using the first fact you spin?

Step 1: Spin the spinner twice. Write the 2 numbers below.

_____ × _____

Step 2: Spin the spinner twice again. Write the 2 numbers below.

_____ × _____



Step 3: Use your fact from Step 1 to calculate the fact in Step 2.

Explain your strategy below.

Hint: Use 1 of these strategies: doubling, halving, adding groups, or subtracting groups.

_____

_____

_____

_____

Step 4: Play again.

What strategies are you most comfortable working with?

_____

_____

_____

_____

L Name: _____ Date: _____

6.4 Multiplying by Tens, Hundreds, and Thousands Page 1

Student Book pages 184–187

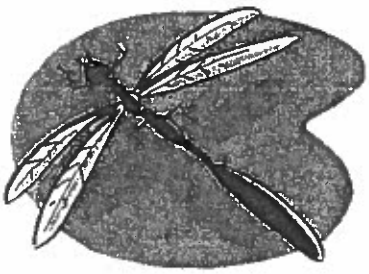
GOAL

Calculate products with multiples of tens, hundreds, or thousands using mental math.

You will need

- base ten blocks

Ami is creating problems that can be solved using multiplication.



Dragonfly
30 wing beats in 1 s

How many times does each insect beat its wings in 10 s?

A dragonfly beats its wings 30 times in 1 s.

10 s = 10 × _____ beats

A. Why can you think of 10 × 30 as 10 × 3 tens?

_____

Model 30 with base ten blocks.

Sketch the blocks in the space to the right.

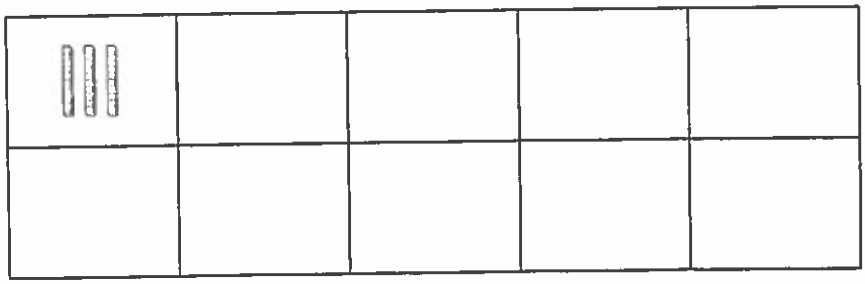
How many groups of 10 are in your model? _____

30 = _____ tens

B. How many tens is 10 × 3 tens?

Model 10 groups of 3 tens with base ten blocks.

Sketch the model below. The first one is done for you.



How many tens altogether? _____

10 × 3 tens = _____ tens

_____ tens = _____

Hint: Count all the tens blocks by 10.

A dragonfly beats its wings _____ times in 10 s.

Communication Tip

You can use the symbol "s" to represent seconds. For example, you can write "5 s" instead of "5 seconds."

Name: _____ Date: _____

6.4 Multiplying by Tens, Hundreds, and Thousands Page 2

C. A bee beats its wings 200 times in 1 s.

10 s = 10 × _____ beats

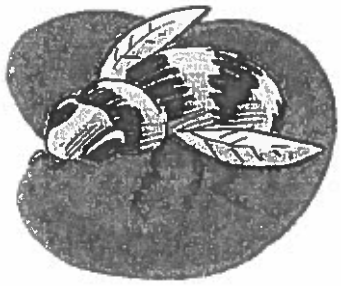
Model 200 with base ten blocks.

Sketch the blocks in the space to the right.

How many groups of hundreds? _____

200 = _____ hundreds

10 × 200 = 10 × _____ hundreds

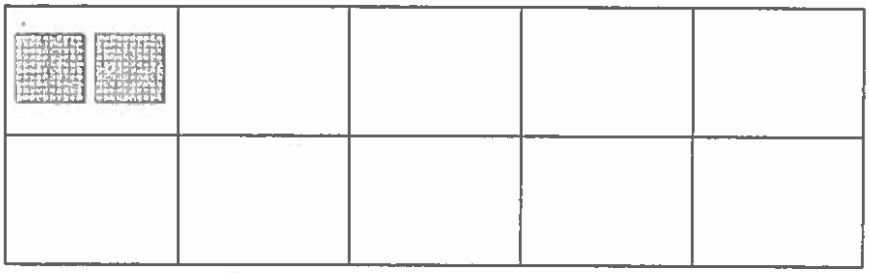


Bee

200 wing beats in 1 s

D. Model 10 groups of _____ hundreds with base ten blocks.

Sketch the model below. The first one is done for you.



How many hundreds altogether? _____

10 × _____ hundreds = _____ hundreds

_____ hundreds = _____

A bee beats its wings _____ times in 10 s.

Reflecting

How are the following calculations involving tens, hundreds, and thousands related to 2 × 3?

2 × 30 2 × 300 2 × 3000 20 × 30

C&P Name: _____ Date: _____

6.4 Multiplying by Tens, Hundreds, and Thousands Page 1

Student Book pages 184–187

Checking

1. Some dragonflies beat their wings about 40 times in 1 s.

How many times does 1 dragonfly beat its wings in 20 s?

20 s is 20 × 40 beats.

40 = _____ tens

20 × _____ tens = _____ tens

20 × 40 = _____

A dragonfly beats its wings _____ times in 20 s.

Communication Tip

You can use the symbol "s" to represent seconds. For example, you can write "5 s" instead of "5 seconds."

2. Calculate.

a) 20 × 70

20 × 70 = 20 × _____ tens

20 × 70 = _____ tens

20 × 70 = _____

b) 7 × 300

7 × 300 = 7 × _____ hundreds

7 × 300 = _____ hundreds

7 × 300 = _____

c) 6 × 1000

6 × 1000 = 6 × _____ thousands

6 × 1000 = _____ thousands

6 × 1000 = _____

d) 2000 × 4

2000 × 4 = _____ × _____

2000 × 4 = _____

2000 × 4 = _____

Name: _____ Date: _____

6.4 Multiplying by Tens, Hundreds, and Thousands Page 2

Practising

4. Sketch an array to show each calculation.

a) 2×600

How many rows of hundreds? _____

How many columns of hundreds? _____

$2 \times 600 =$ _____

b) 2×6000

How many rows of thousands? _____

How many columns of thousands? _____

$2 \times 6000 =$ _____

5. Multiply. Explain your strategy.

a) 40×80

_____

_____

b) 90×90

_____

_____

c) 6×2000

_____

_____

d) 5×700

_____

_____

L Name: _____ Date: _____

6.5 Halving and Doubling to Multiply Page 1

Student Book pages 188–191

GOAL

Multiply by halving and doubling.

You will need

- counters

Justine is putting winter carnival photos on CDs.

She bought 8 packs of CDs with 25 CDs in each pack.

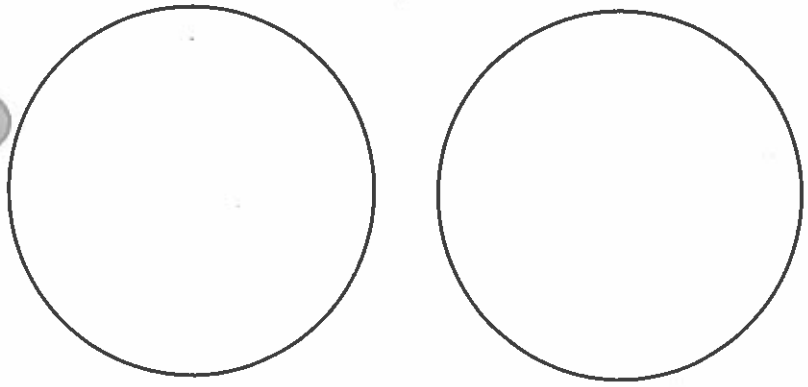
How many CDs did Justine buy?

The total number of CDs is 8 × _____.

Step 1: Figure out half of 8.

Count out 8 counters. Make 2 equal groups.

Draw the number of counters in each group.



Each group has _____ counters.

Half of 8 is _____.

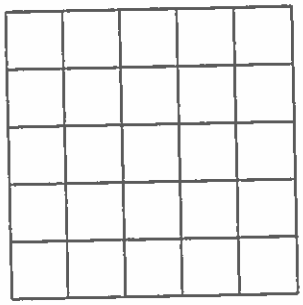
8 ÷ 2 = _____

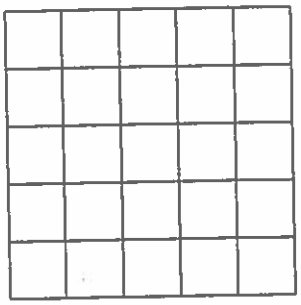
L Name: _____ Date: _____

6.5 Halving and Doubling to Multiply Page 2

Step 2: Figure out the double of 25.

Hint: Count by tens to figure out 50 + 50.





25 + 25 = _____ 25 × 2 = _____

Step 3: Multiply.

8 × 25 = (8 ÷ 2) × (25 × 2)

8 × 25 = _____ × _____

Hint: Look at your answers in Steps 1 and 2.

Skip count to figure out the answer.

50, 100, _____, _____

Justine bought _____ CDs.

Reflecting

Why was it helpful to use the **half/double strategy**?

_____

_____

_____

_____

In what other multiplication situations would the half/double strategy be useful?

_____

_____

_____

_____

half/double strategy

To calculate a product, you can divide one number by 2 to get half and double the other number. Then you can multiply.

For example:

8 × 5 = (8 ÷ 2) × (5 × 2)

8 × 5 = 4 × 10

8 × 5 = 40

C&P Name: _____ Date: _____

6.5 Halving and Doubling to Multiply Page 1

Student Book pages 188–191

Checking

1. Use the half/double strategy to solve these problems.

a) How many straws are in 14 boxes of 200 straws?

Step 1: Figure out the half and double of the numbers.

Half: $14 \div 2 =$ _____

Double: $200 \times 2 =$ _____

Step 2: Multiply (use your answers from Step 1).

$14 \times 200 = (14 \div 2) \times (200 \times 2)$

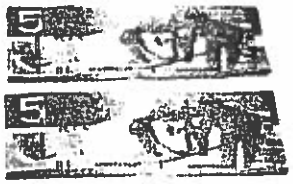
$14 \times 200 =$ _____ $\times$ _____

$14 \times 200 =$ _____ because _____

_____.

There are _____ straws in all the boxes.

b) What is the value of 22 $5 bills?



Step 1: Figure out the half and double of the numbers.

Half: $22 \div 2 =$ _____

Double: _____ $\times 2 =$ _____

Step 2: Multiply (use your answers from Step 1).

$22 \times 5 = (22 \div 2) \times ($_____ $\times 2)$

$22 \times 5 =$ _____ $\times$ _____

$22 \times 5 =$ _____ because _____

_____.

The value of all the $5 bills is $_____.

C&P Name: _____ Date: _____

6.5 Halving and Doubling to Multiply Page 2

Practising

6. Rewrite each equation by making one factor 10, 100, or 1000 and keeping the product the same.

a) $24 \times 5 = ?$

Half: $24 \div 2 =$ _____

Double: $5 \times 2 =$ _____ (factor of 10)

$? = (24 \div 2) \times (5 \times 2)$

$? =$ _____ $\times$ _____

$? =$ _____

b) $? = 50 \times 14$

Double: _____ $\times 2 = 100$

Half: _____ $\div 2 =$ _____

? = (answer from doubling) $\times$ (answer from halving)

$? =$ _____ $\times$ _____

$? =$ _____

c) $8 \times 500 = ?$

Double: _____ $\times 2 = 1000$

Half: _____ $\div 2 =$ _____

? = (answer from doubling) $\times$ (answer from halving)

$? =$ _____ $\times$ _____

$? =$ _____

d) $? = 500 \times 18$

Explain how you can rewrite the equation. Show all the steps.

_____

_____

_____

Calculate the answer.

_____

Name: _____ Date: _____

Scaffolding for Lesson 5, Question 4

STUDENT BOOK PAGE 190

4. Calculate each product using the half/double strategy. Look for numbers that can be halved or doubled to make 10, 100, or 1000.

a) 5×12

Which factor of 5×12 can be doubled to 10? _____

Double the 5 and halve the 12: _____ × _____

$5 \times 12 =$ _____

b) 9×200

Which factor of 9×200 can be halved to 100? _____

Double the _____ and halve the _____: _____ × _____

$9 \times 200 =$ _____

c) 500×14

Which factor of 500×14 can be doubled to 1000? _____

Double the _____ and halve the _____: _____ × _____

$500 \times 14 =$ _____

d) 50×24

Double the _____ and halve the _____: _____ × _____

$50 \times 24 =$ _____

e) $200 \times 18 = 100 \times$ _____

$200 \times 18 =$ _____

f) $18 \times 500 =$ _____ × _____

$18 \times 500 =$ _____

Name: _____ Date: _____

Mid-Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 192

Q: What strategies can you use to multiply one-digit numbers?

A: _____

_____

_____

_____

_____

Q: How can you multiply by multiples of tens, hundreds, or thousands?

A: _____

_____

_____

_____

_____

Q: How can you simplify a calculation using the half/double strategy?

A: _____

_____

_____

_____

_____

C&P Name: _____ Date: _____

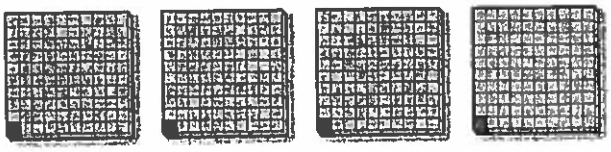
6.6 Multiplying Numbers Close to Tens Page 1

Student Book pages 194–197

Checking

1. a) A building with 4 floors has 99 windows on each floor.

How does this model show that 4×99 is 4 less than 400?



4 floors with 100 is 4×100.

But each floor has 99 windows, so I need to subtract _____ from 100.

Since there are 4 floors, I have to take away _____ altogether.

b) How can you use your answer from part a) to calculate 4×99?

$4 \times 100 =$ _____

$4 \times 99 =$ (answer from 4×100) $-$ _____

$4 \times 99 =$ _____

2. Which is greater: 9×80 or 9×82?

$9 \times 80 = (10 \times 80) - 80$

$= $ _____ $- 80$

$= $ _____

$9 \times 82 = (10 \times 82) - 82$

$= $ _____ $- 82$

$= $ _____

_____ is greater than _____ because _____

_____.

How much greater? _____ $-$ _____ $=$ _____

C&P Name: _____ Date: _____

6.6 Multiplying Numbers Close to Tens Page 2

Practising

3. a) 3×29 is 3 less than 3×30.

3×30 has _____ groups of 30.

Sketch a picture in the space below to show how you know.

29 is _____ less than 30, so I have to subtract _____ from each group.

That's _____ less in total.

b) How can you use your answer from part a) to calculate 3×29?

$3 \times 30 = 3 \times$ _____ tens

$3 \times 30 =$ _____ tens

$3 \times 30 =$ _____

$3 \times 29 =$ (answer from 3×30) $-$ _____

$3 \times 29 =$ _____ $-$ _____

$3 \times 29 =$ _____

5. Grace walks 9 km a day.

a) There are 28 days in February. How many kilometres did she walk in February?

_____

_____

b) There are 31 days in March. How can you use your answer from part a) to calculate 9×31?

Hint: March has 3 more days than February.

_____

_____

_____

L Name: _____ Date: _____

6.6 Multiplying Numbers Close to Tens Page 1

Student Book pages 194–197

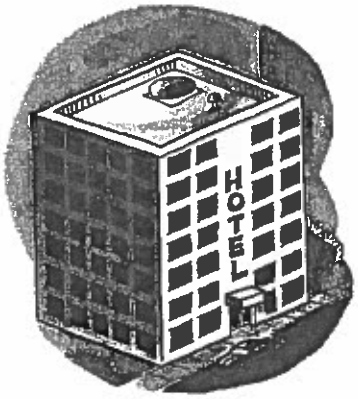
GOAL

Multiply using a simpler, related question.

You will need

- base ten blocks

A hotel has 7 floors. There are 19 windows on each floor.



How many windows does the hotel have in total?

The total number of windows is 7 × _____.

Step 1: Use 7 × 20 = 140 to find the answer.

Model 7 groups of 20 using base ten blocks.

Sketch the model below. The first one is done for you.

L Name: _____ Date: _____

6.6 Multiplying Numbers Close to Tens Page 2

Step 2: There are 19 windows, not 20.

Take _____ away from each group.

How many did you take away altogether? _____

$7 \times 20 = 140$

$7 \times 19 = 140 -$ _____

$7 \times 19 =$ _____

The hotel has _____ windows in total.

Reflecting

Why did you multiply 7×20?

_____

_____

_____

Explain how you could use a similar strategy if there had been 18 windows on each floor.

Hint: Is 18 close to 10 or 20?

The total number of windows is 7×18. The closest tens fact you can use is $7 \times$ _____.

This is what you can do:

_____

_____

_____

What if there had been 21 windows on each floor?

Hint: What ten is 21 closest to?

You need to calculate _____ × _____.

The closest tens fact you can use is _____ × _____.

This is what you can do:

_____

_____

_____

C&P Name: _____ Date: _____

6.7 Estimating Products Page 1

Student Book pages 198–200

Checking

1. Suppose your class is going to play a version of the counting game with 19 sticks.

a) Estimate the number of sticks your class will need.

How many students are in your class? _____

The number of sticks your class will need is _____ × 19.

Place the number of students in your class on the number line below.

Which group of ten is your number closest to? _____

Place 19 on the number line.

19 is closest to _____.

The number of sticks is close to _____ × _____, which is _____.

b) Calculate the number of boxes of 150 sticks that your class will need.

Complete the chart below.

Number of boxes	Number of sticks
1	150
2	300
3	
4	

How many boxes will your class need? Use your estimate from part a).

_____

_____

_____

C&P Name: _____ Date: _____

6.7 Estimating Products Page 2

Practising

2. Estimate.

a) 42 × 26

42 is between 40 and _____.

26 is between 20 and _____.

Multiply the lower estimates: 40 × 20 = _____

Multiply the higher estimates: _____ × _____ = _____

42 × 26 is more than _____ and less than _____.

b) 31 × 21

31 is between 30 and _____.

21 is between 20 and _____.

Multiply the lower estimates: 30 × 20 = _____

Multiply the higher estimates: _____ × _____ = _____

31 × 21 is more than _____ and less than _____.

c) 38 × 72

38 is between 30 and _____.

72 is between _____ and _____.

Multiply the lower estimates: 30 × _____ = _____

Multiply the higher estimates: _____ × _____ = _____

38 × 72 is more than _____ and less than _____.

4. Cara's mother is buying 4 blankets for $84 each.

Why does she estimate high by multiplying 4 × $90?

Hint: What would happen if she estimated low?

_____

_____

_____

L Name: _____ Date: _____

6.7 Estimating Products Page 1

Student Book pages 198–200

GOAL

Estimate to solve problems.

Ami's class of 24 students are playing a Cree game of counting sticks.
One player in each pair divides 19 sticks into 2 bundles and holds 1 bundle in each hand.
The other player guesses which hand holds an even number of sticks.

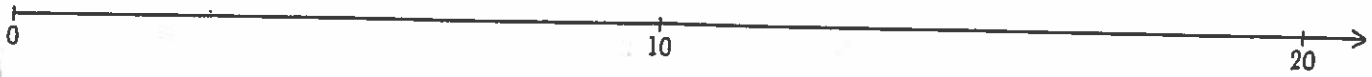
How many boxes of 150 sticks does the class need to play the game?

There are 12 pairs of students.

Each pair needs 19 sticks.

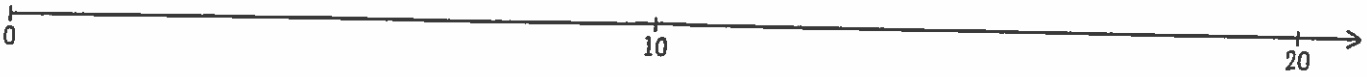
The number of boxes needed is _____ × _____.

Step 1: Put 12 on the number line.



12 is between _____ and _____.

Step 2: Put 19 on the number line.



19 is between _____ and _____.

Step 3: Multiply the lower numbers: _____ × _____

Multiply the higher numbers: _____ × _____

12 × 19 is between _____ × _____ and _____ × _____.

Step 4: (Circle) the correct answer.

Is 12 closer to 10 or 20? 10 20

Is 19 closer to 20 or 30? 20 30

Multiply the numbers you circled. _____ × _____

L Name: _____ Date: _____

6.7 Estimating Products Page 2

Step 5: (Circle) the correct answer.

Is 24 students closer to 25 or 30? 25 30

Is 19 sticks closer to 20 or 30? 20 30

Multiply the numbers you circled. _____ × _____

It's half this number because _____

_____.

Step 6: Determine the number of sticks the class needs.

I learned that the number of sticks is close to 10 × 20.

10 × 10 = _____

10 × 20 = _____ + _____

10 × 20 = _____

1 box has 150 sticks in them so I need _____ boxes because _____

_____.

Reflecting

Think about the estimation strategies you just used. Which one would you use to estimate the number of sticks?

_____

_____

_____

Why is it better to estimate high than to estimate low in this problem?

_____

_____

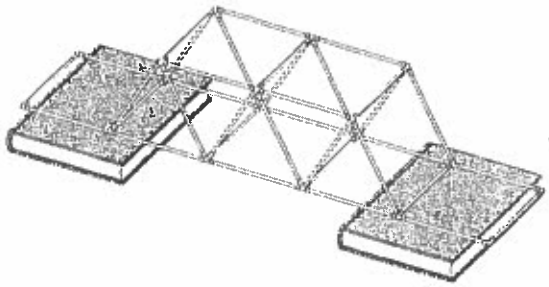
_____

Name: _____ Date: _____

Scaffolding for Lesson 7, Question 8

STUDENT BOOK PAGE 200

8. A class of 36 students is having a bridge-building contest. Each group of 4 students has 35 straws to make a bridge. The straws come in bags of 50. Calculate the number of bags needed for the class by following the steps below.



How many groups of 4 are in 36? $36 \div 4 =$ _____ groups

How many straws does each group have? _____ straws

How can you estimate the total number of straws needed for all groups?

_____ × _____

How many bags of straws does the class need? Explain.

_____

_____

_____

E-A Name: _____ Date: _____

6.8 Multiplying Two-Digit Numbers

Student Book page 201

According to a book called *In The Next Three Seconds*, "Every 3 s, 95 airplanes will take off."

How many airplanes will take off in 45 s, 75 s, and 99 s?

Step 1: Calculate how many airplanes will take off in 45 s.

3 s = 95 airplanes

3 × 15 = 45 s

45 s = 15 × 95 airplanes = _____ airplanes

Explain your strategy for calculating how many airplanes will take off in 45 s.

_____

_____

_____

Step 2: Calculate how many airplanes will take off in 75 s. Explain your strategy.

Hint: Use your answer from Step 1.

3 × _____ = 75 s

75 s = _____ × 95 airplanes = _____ airplanes

_____

_____

_____

Step 3: Calculate how many airplanes will take off in 99 s. Explain your strategy.

Hint: Use a strategy from previous lessons.

3 × _____ = 99 s

99 s = _____ × 95 airplanes = _____ airplanes

_____

_____

_____

E-B Name: _____ Date: _____

6.8 Multiplying Two-Digit Numbers

Student Book page 201

GOAL

Multiply two-digit numbers using your choice of strategies.

According to some statistics, every 1 s, 30 airplanes will take off.

How many airplanes will take off in 10 s, 20 s, and 100 s?

Step 1: Calculate how many airplanes will take off in 10 s.

1 s = 30 airplanes

10 s = _____ × 30 airplanes = _____ airplanes

Explain your strategy for calculating how many airplanes will take off in 10 s.

_____

_____

_____

Step 2: Calculate how many airplanes will take off in 20 s. Explain your strategy.

Hint: Use your answer from Step 1.

1 s = 30 airplanes

20 s = _____ × 30 airplanes = _____ airplanes

_____

_____

_____

Step 3: Calculate how many airplanes will take off in 100 s. Explain your strategy.

Hint: Use base ten blocks to model the groups.

1 s = 30 airplanes

100 s = _____ × 30 airplanes = _____ airplanes

_____

_____

_____

L Name: _____ Date: _____

6.9 Multiplying with Base Ten Blocks Page 1

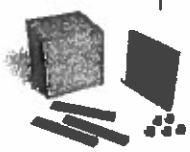
Student Book pages 202–205

GOAL

Represent the products of two-digit numbers.

You will need

- base ten blocks



Rebecca is making a chart to record information about 13 of her friends in her class. The chart has 13 rows of 11 cells.

Given name	Family name	E-mail address
Brandon	Hughes	brandon@home.com
Jay	Lebeau	jay@home.com
Ami	Jin	ami@home.com

How many cells are in Rebecca's chart?

Rebecca needs to calculate 13 × _____.

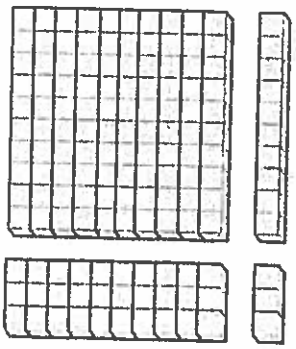
Step 1: Think of 13 as 10 + _____.

Think of 11 as 10 + _____.

Complete this array of 13 rows of 11 squares.

_____

_____



Step 2: Write a multiplication sentence for the 4 smaller parts.

Top left: 10 groups of 10

10 × 10 = _____

Top right: _____ groups of 1

_____ × 1 = _____

Bottom left: _____ groups of 10

_____ × 10 = _____

Bottom right: _____ groups of 1

_____ × 1 = _____

L Name: _____ Date: _____

6.9 Multiplying with Base Ten Blocks Page 2

Step 3: Add the 4 products together to find the total.

$$\begin{array}{rl} & 11 \\ \times & 13 \\ \hline & \text{top left total} \\ + & \text{top right total} \\ & \text{bottom left total} \\ \hline & \text{bottom right total} \end{array}$$

There are _____ cells in Rebecca's chart.

Reflecting

Why might you record your work like this?

$$\begin{array}{rll} & 11 & \\ \times & 13 & \\ \hline & 13 & (13 \times 1) \\ + & 130 & (13 \times 10) \\ \hline & 143 & \end{array}$$

Hint: Think about mental math strategies you might know.

_____

_____

_____

Why did it make sense for you to build an array using the 4 parts?

Hint: Think of how you feel about multiplying numbers ending with a 0.

_____

_____

_____

C&P Name: _____ Date: _____

6.9 Multiplying with Base Ten Blocks Page 1

Student Book pages 202–205

Checking

You will need

- base ten blocks

1. Calculate 15×22 using base ten blocks.

Think of 15 as $10 + 5$ and 22 as $20 + 2$.

Model an array with 15 rows of 22 squares.

Sketch the base ten blocks below.

	20	2
10	10 rows of 20	10 rows of 2
5	5 rows of 20	5 rows of 2

Calculate the 4 parts of the array.

$10 \times 20 =$ _____

$10 \times 2 =$ _____

$5 \times 20 =$ _____

$5 \times 2 =$ _____

Add the parts together.

_____ + _____ + _____ + _____ = _____

$15 \times 22 =$ _____

C&P Name: _____ Date: _____

6.9 Multiplying with Base Ten Blocks Page 2

Practising

3. Calculate the number of cells in each chart.

a) 16 rows of 12 cells

16 is 10 + _____. 12 is 10 + _____.

16 × 12 is the same as (10 + _____) × (10 + _____).

Model an array with 16 rows of 12 squares with base ten blocks.

Calculate the 4 parts of the array.

10 × 10 = _____

10 × _____ = _____

_____ × 10 = _____

_____ × _____ = _____

16 × 12 is _____ + _____ + _____ + _____ = _____.

b) 18 rows of 22 cells

18 is 10 + _____. 22 is _____ + 2.

18 × 22 is the same as (10 + _____) × (_____ + 2).

Model an array with 18 rows of 22 squares with base ten blocks.

Calculate the 4 parts of the array.

10 × _____ = _____

10 × 2 = _____

_____ × _____ = _____

_____ × 2 = _____

18 × 22 is _____ + _____ + _____ + _____ = _____.

8. The floor of a hall has 12 rows of 14 tiles.

How many tiles cover the floor? Explain your thinking.

Hint: Think of 12 × 14 as (_____ + _____) × (_____ + _____).

_____

_____

_____

L Name: _____ Date: _____

6.10 Multiplying with Arrays Page 1

Student Book pages 206–207

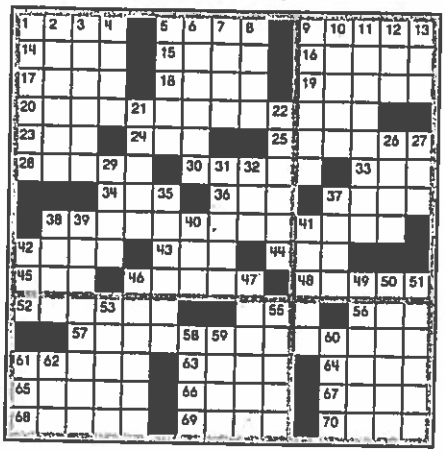
GOAL

Multiply two-digit numbers using arrays.

You will need

- grid paper

A crossword puzzle has 15 rows and 15 columns.



How many small squares are in the crossword puzzle?

The total number of small squares is _____ × _____.

Step 1: Determine the number of rows and columns in each part of the puzzle.

Part A (upper left):

How many rows down? _____

How many columns across? _____

Part A = _____ × _____

Part B (upper right):

How many rows down? _____

How many columns across? _____

Part B = _____ × _____

Part C (lower left):

How many rows down? _____

How many columns across? _____

Part C = _____ × _____

Part D (lower right):

How many rows down? _____

How many columns across? _____

Part D = _____ × _____

L Name: _____ Date: _____

6.10 Multiplying with Arrays Page 2

Step 2: Determine the number of small squares in each part.

Part A (upper left) = _____ × _____ = _____ small squares

Part B (upper right) = _____ × _____ = _____ small squares

Part C (lower left) = _____ × _____ = _____ small squares

Part D (lower right) = _____ × _____ = _____ small squares

Step 3: Determine the number of squares in the whole puzzle.

Add the 4 totals together.

$$\begin{array}{rll} & 15 & \\ \times & 15 & \\ \hline & & \text{part A total} \\ + & & \text{part B total} \\ & & \text{part C total} \\ \hline & & \text{part D total} \end{array}$$

There are _____ small squares in the whole puzzle.

Reflecting

You can use the same strategy for a 25-by-25 puzzle. Why would you organize the puzzle like this to find the total number of small squares?

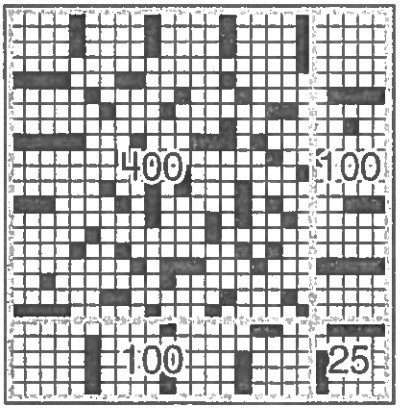
The 4 parts are:

_____ × _____

_____ × _____

_____ × _____

_____ × _____



Hint: Look at the 4 parts and decide how you feel about using those numbers.

_____

_____

_____

C&P Name: _____ Date: _____

6.10 Multiplying with Arrays Page 1

Student Book pages 206–207

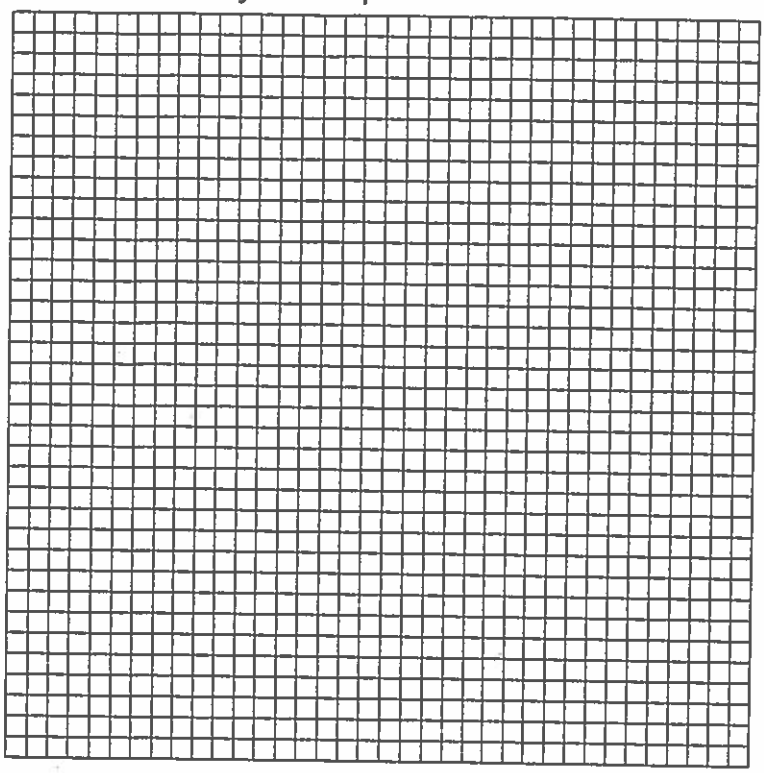
Checking

You will need

- grid paper

1. A puzzle has 36 rows of 36 squares.

Divide the array into 4 parts.



Top parts:

30 rows of 30 columns

30 rows of 6 columns

Bottom parts:

6 rows of 30 columns

6 rows of 6 columns

Calculate the partial products.

Top parts: $30 \times 30 =$ _____

$30 \times 6 =$ _____

Bottom parts: $6 \times 30 =$ _____

$6 \times 6 =$ _____

Add the partial products together.

_____ + _____ + _____ + _____ = _____

There are _____ squares.

C&P Name: _____ Date: _____

6.10 Multiplying with Arrays Page 2

Practising

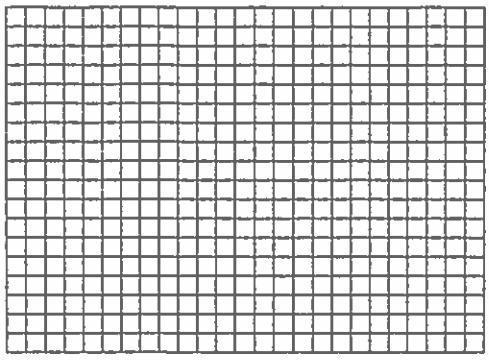
2. Mia used 18 spools of thread to finish a towel.

Each spool held 25 m of thread.

How much thread did she use?

Divide the array into 4 parts.

Write the partial products of each part.



Top parts: _____ × _____ = _____

_____ × _____ = _____

Bottom parts: _____ × _____ = _____

_____ × _____ = _____

Add the partial products together.

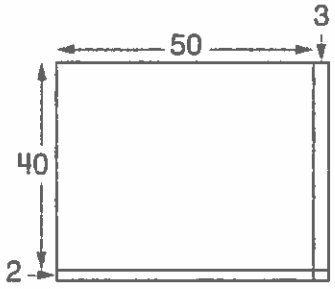
_____ + _____ + _____ + _____ = _____

Mia used _____ m of thread.

5. How does the model show that both of the following equations are true?

$42 \times 53 = (40 + 2) \times (50 + 3)$

$42 \times 53 = (40 \times 50) + (40 \times 3) + (2 \times 50) + (2 \times 3)$



The array shows 42 as (_____ + _____) and 53 as (_____ + _____).

So 42 × 53 = (_____ + _____) × (_____ + _____).

The 4 sections of the rectangle show 4 small arrays.

Write each of them, starting at the top.

_____ × _____, _____ × _____, _____ × _____, _____ × _____

Write them together.

42 × 53 = (_____) + (_____) + (_____) + (_____)

Name: _____ Date: _____

6.11 Communicating about Multiplication Methods Page 1

Student Book pages 208–209

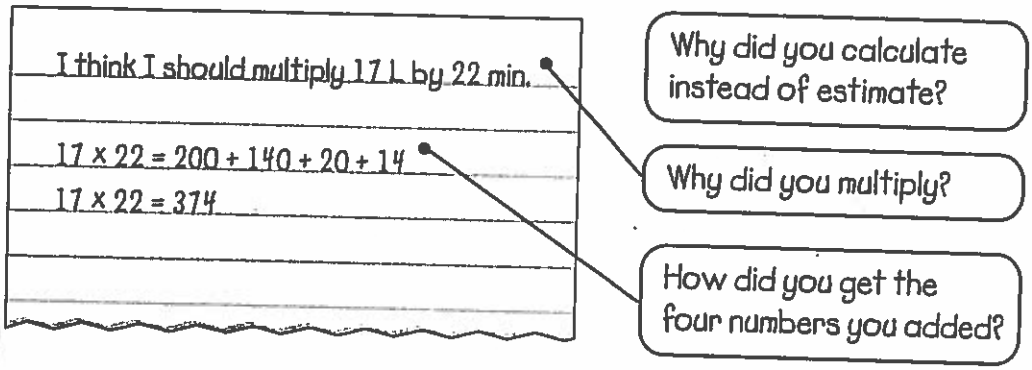
GOAL

Explain your calculation method when solving a problem.

Jay read that a sprinkler sprays about 17 L of water in 1 minute.
His sprinkler was on for 22 minutes.

How much water did the sprinkler spray?

This is Jay's Solution.



Use Maya's questions and the Communication Checklist to improve Jay's solution.

Communication Checklist

- ✔ Did you explain your thinking?
- ✔ Did you show all the steps?
- ✔ Did you use math language?

Why didn't Jay estimate?

_____

_____

_____

Why did Jay multiply?

Hint: Think of 1 minute as a group of 17.

_____

_____

_____

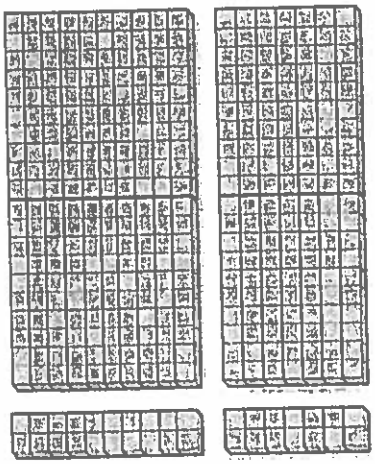
_____

L Name: _____ Date: _____

6.11 Communicating about Multiplication Methods Page 2

How did Jay get the 4 numbers he added?

Hint: Calculate the 4 parts of the 17 × 22 array below.



Top left = _____ rows × _____ columns = _____ × _____ = 200

Top right = _____ rows × _____ columns = _____ × _____ = 140

Bottom left = _____ rows × _____ columns = _____ × _____ = 20

Bottom right = _____ rows × _____ columns = _____ × _____ = 14

Add the 4 totals together.

	17	
×	22	
	200	top left total
+	140	top right total
	20	bottom left total
	14	bottom right total

The sprinkler sprayed _____ L of water.

Reflecting

Why is it important to communicate clearly when you solve a problem?

_____

_____

C&P Name: _____ Date: _____

6.11 Communicating about Multiplication Methods Page 1

Student Book pages 208–209

Checking

1. Using a diagram can help you communicate more clearly.

How can you use a diagram to improve Jay's Solution?

Hint: Explain how you can use arrays or base ten blocks to calculate 17×22.

_____

_____

_____

_____

_____

_____

Practising

2. How many months will you be on your 14th birthday?

How many months are in a year? _____

What can you multiply to solve the problem? _____ × _____

Are you going to estimate or calculate the answer? _____

Why?

_____

_____

Solve the problem using your own strategy.

_____

_____

_____

_____

_____

_____

C&P Name: _____ Date: _____

6.11 Communicating about Multiplication Methods Page 2

3. A tour bus holds 48 passengers. There are 15 tour buses.

Can these buses take 600 visitors?

What can you multiply to solve the problem? _____ × _____

Are you going to estimate or calculate the answer? _____

Why?

_____

_____

Solve the problem using your own strategy.

_____

_____

_____

_____

_____

_____

4. Sebastian can walk 47 cm in 2 steps. How far can he walk in 50 steps?

What can you multiply to solve the problem? _____ × _____

Are you going to estimate or calculate the answer? _____

Why?

_____

_____

Solve the problem using your own strategy.

_____

_____

_____

_____

_____

_____

Name: _____ Date: _____

Chapter 9: Multiplication and Division of Decimals

1. Estimate each product. Will your estimate be higher or lower than the actual answer? Explain.

a) 24×7 is about _____

b) 36×8 is about _____

c) 5×18 is about _____

d) 21×6 is about _____

2. Predict which products are between 200 and 300. How do you know?

a) 5×37 _____

b) 8×27 _____

c) 6×35 _____

d) 7×51 _____

3. Calculate each product.

a) $39 \times 7 =$ _____

b) $42 \times 8 =$ _____

c) $15 \times 4 =$ _____

d) $41 \times 7 =$ _____

e) $25 \times 9 =$ _____

f) $42 \times 16 =$ _____

g) $29 \times 17 =$ _____

h) $81 \times 12 =$ _____

i) $21 \times 22 =$ _____

j) $11 \times 14 =$ _____

k) $27 \times 41 =$ _____

l) $38 \times 12 =$ _____

4. Explain why $8 \times 12 = 4 \times 24$ without actually calculating the product.

_____

_____

_____

Name: _____ Date: _____

5. Estimate each quotient. Will your estimate be higher or lower than the actual answer? Explain.

a) 29 ÷ 7 is about _____

b) 426 ÷ 7 is about _____

c) 115 ÷ 8 is about _____

d) 242 ÷ 6 is about _____

6. Calculate each quotient.

a) 161 ÷ 7 _____

b) 176 ÷ 8 _____

c) 204 ÷ 4 _____

d) 112 ÷ 7 _____

e) 315 ÷ 9 _____

f) 360 ÷ 5 _____

g) 203 ÷ 7 _____

h) 243 ÷ 3 _____

i) 168 ÷ 8 _____

j) 44 ÷ 4 _____

k) 162 ÷ 6 _____

l) 342 ÷ 9 _____

7. The Grade 6 class picnic is going to cost about $330. Each Grade 6 student contributes $6. How many students are in the class? Explain your thinking.

_____

_____

_____

8. A family of 4 has 362 cellphone minutes to share equally.

a) How many minutes would each member get? Explain your thinking.

_____

_____

b) Would there be any minutes left over? Explain your thinking.

_____

_____

Name: _____ Date: _____

Chapter 6
Lesson 1

Multiplication Strategies

GOAL

Multiply one-digit numbers using mental math strategies.

1. Calculate.

a) $3 \times 5 =$ _____ **c)** $8 \times 2 =$ _____

b) $4 \times 7 =$ _____ **d)** $6 \times 5 =$ _____

2. Use doubling to calculate.

a) $2 \times 4 =$ _____, so $4 \times 4 =$ _____

b) $3 \times 3 =$ _____, so $3 \times 6 =$ _____

3. Use each fact to calculate. The first one is partly done for you.

a) $5 \times 5 = 25$, so 5×6 is the same as

25 + 5 = _____

b) $2 \times 7 = 14$, so 3×7 is the same as

_____

c) $8 \times 4 = 32$, so 8×3 is the same as

_____

4. Calculate.

a) $2 \times 9 =$ _____ **b)** $5 \times 7 =$ _____ **c)** $6 \times 4 =$ _____

5. a) Four students are in Justine's reading group. Each student has three books. How many books do they have in all?

b) Describe how you calculated the answer.

_____

At-Home Help

Here are some strategies to help you multiply. For example, suppose you don't know the product of 4×5.

Skip counting up
You can use a known fact like $2 \times 5 = 10$. Skip count up by adding two groups of 5.

+5 +5
10, 15, 20

Skip counting down
You can use a known fact like $5 \times 5 = 25$. Skip count down by subtracting one group of 5.
$25 - 5 = 20$

Doubling
You can double 5 to get $2 \times 5 = 10$, and then double again to get $4 \times 5 = 20$.

Name: _____ Date: _____

Chapter 6 Lesson 2

Special Products

GOAL

Use special strategies to multiply by 8 and 9.

1. Calculate 8×9 using each strategy.

a) doubling

_____

_____

b) first multiplying by 10, and then subtracting

_____

2. How could you calculate each product? Describe the strategy you would use. Then calculate.

a) 9×5 _____

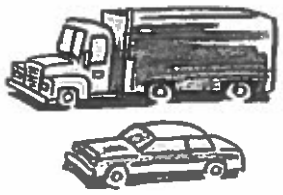
_____

b) 5×8 _____

_____

3. Cars have four wheels and many trucks have six wheels.

a) How many more wheels do eight trucks have than eight cars?



b) How many more wheels do nine trucks have than nine cars?

At-Home Help

Here is another strategy to help you multiply.

To multiply by 8 or 9, first multiply by 10, and then subtract.

For example, to calculate 7×9, first calculate $7 \times 10 = 70$. Then subtract 7 to get $70 - 7 = 63$.

To calculate 7×8, first calculate $7 \times 10 = 70$. Then subtract two 7s to get $70 - 7 - 7 = 56$.

Name: _____ Date: _____

Chapter 6
Lesson 3

Relating Multiplication Facts

GOAL

Describe how multiplication facts are related.

1. Describe how to use the first multiplication fact to calculate the second fact. The first one is partly done for you.

a) I know $2 \times 5 = 10$, and I want to know 4×5.

I will double the answer to the first fact.

10 + 10 = 20, so 4 x 5 = _____

b) I know $3 \times 5 = 15$, and I want to know 6×5.

I will _____

_____

c) I know $10 \times 6 = 60$, and I want to know 9×6.

I will _____

_____

d) I know $7 \times 4 = 28$, and I want to know 7×5.

I will _____

_____

At-Home Help

You can use one multiplication fact to help you calculate another fact.

For example:
I know $4 \times 9 = 36$.

I can use this fact to calculate 5×9. 5×9 is the same as 4×9 plus one more 9. So $5 \times 9 = 36 + 9$, and $5 \times 9 = 45$.

I can use the same fact to calculate 8×9. 8 is double 4, so 8×9 is the same as double 4×9. So $8 \times 9 = 36 + 36$, and $8 \times 9 = 72$.

2. Use $4 \times 8 = 32$ to calculate each multiplication fact. Show your work.

a) 5×8 **b)** 8×8 **c)** 3×8

3. Jay knows that $7 \times 7 = 49$.
How can he use this fact to calculate 7×5?

_____

Name: _____ Date: _____

Chapter 6 Lesson 4

Multiplying by Tens, Hundreds, and Thousands

GOAL

Calculate products with multiples of tens, hundreds, or thousands using mental math.

1. Use each fact to calculate.

a) 5 × 5 tens = 25 tens, so 5 × 50 = _____

b) 7 × 2 hundreds = 14 hundreds, so 7 × 200 = _____

c) 4 × 8 tens = 32 tens, so 4 × 80 = _____

d) 7 × 3 thousands = 21 thousands, so 7 × 3000 = _____

At-Home Help

When you multiply by tens, hundreds, and thousands, it helps to rename numbers.

For example, calculate 30 × 50.
30 × 50 is the same as 30 × 5 tens.
30 × 5 tens = 150 tens, or 1500.
For example, calculate 4 × 3000.
4 × 3000 is the same as 4 × 3 thousands.
4 × 3 thousands = 12 thousands, or 12 000.

2. Calculate.

a) 80 × 3 tens = 240 tens, so 80 × 30 = _____

b) 20 × 9 tens = 180 tens, so 20 × 90 = _____

c) 10 × 2 hundreds = 20 hundreds, so 10 × 200 = _____

d) 50 × 3 hundreds = 150 hundreds, so 50 × 300 = _____

3. Calculate. Explain what you did.

a) 4 × 200 = _____

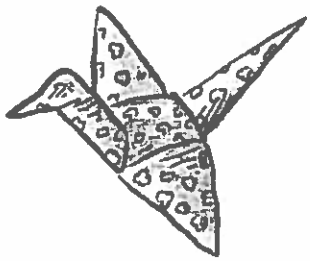
b) 90 × 30 = _____

c) 6 × 3000 = _____

4. Calculate.

a) 20 × 30 _____ **b)** 50 × 60 _____ **c)** 40 × 70 _____

5. Sydney can make 20 paper cranes in 1 day. How many paper cranes can she expect to make in 20 days?



Name: _____ Date: _____

Chapter 6 Lesson 5

Halving and Doubling to Multiply

GOAL

Multiply by halving and doubling.

1. Use the half/double strategy to calculate. The first one is done for you.

a) $8 \times 3 =$ 4 x 6, so $8 \times 3 =$ 24

b) $20 \times 4 =$ _____, so $20 \times 4 =$ _____

c) $6 \times 500 =$ _____, so $6 \times 500 =$ _____

2. Rewrite each equation by making one factor 10, 100, or 1000, and keeping the product the same. The first one is done for you.

a) 5×4 is the same as 10 x 2

b) 8×500 is the same as _____

c) 50×14 is the same as _____

3. Calculate.

a) 50×8

b) 500×18

c) 20×500

d) 12×50

4. What is the value of 500 toonies?

5. What is the value of 16 $50 bills?

At-Home Help

Here is another strategy to help you multiply.

Divide one number by 2 to get half, and double the other number to make easier numbers to multiply.

For example, to calculate 6×5, you can use half of 6 and double 5.

$6 \times 5 = 3 \times 10$
$6 \times 5 = 30$

Name: _____ Date: _____

Chapter 6
Lesson 6

Multiplying Numbers Close to Tens

GOAL

Multiply using a simpler, related question.

1. Calculate the first product. Use the answer to calculate the second product. The first one is partly done for you.

a) $50 \times 3 =$ 150 , so 51×3 is the same as

$150 + 3 =$ _____

b) $40 \times 6 =$ _____ , so 39×6 is the same as

_____

c) $80 \times 3 =$ _____ , so 82×3 is the same as

_____

2. Calculate. Show what you did.

a) 3×31 _____

b) 89×2 _____

c) 7×19 _____

d) 8×101 _____

3. A building has 38 windows on each floor.

a) How many windows are on 2 floors?

_____

b) How many windows are on 6 floors?

_____

4. Rebecca earns $8 every Saturday morning.
How much does Rebecca earn in 49 Saturdays?

_____

At-Home Help

Here is a strategy to help you multiply numbers that are close to tens.

Calculate the easier, related question first. Then add or subtract to answer the original question.

For example, calculate 29×6.

This question is close to 30×6. I will calculate this easier question first.

$30 \times 6 = 180$

I need to subtract one 6 to answer the original question.

$180 - 6 = 174$, so $29 \times 6 = 174$

Name: _____ Date: _____

Chapter 6 Lesson 7

Estimating Products

GOAL

Estimate to solve problems.

1. Estimate.

a) 19 × 5 is about _____

b) 31 × 2 is about _____

c) 78 × 3 is about _____

2. 76 students are going on a class trip. The teacher wants to know if 3 buses will be enough to take all the students. 23 students can go on each bus. Why do you think the teacher estimated high by multiplying 25 × 3?

_____

_____

3. Estimate. Describe what you did.

a) 21 × 50

_____

b) 89 × 20

_____

c) 62 × 39

_____

4. Owen's class is making kites. Each kite needs 35 m of string. There are 25 students in the class. About how much string does the class need?

_____

_____

At-Home Help

When you estimate, think about whether to estimate high or to estimate low. For example:

Ami saved 52 $5 bills. She wants to estimate if she has enough money for a $250 bike.

Solution: I will estimate low, to make sure there is enough money. I will estimate using 50. 50 × 5 is the same as 25 × 10 = 250. Ami has about $250. She has enough money for the bike.

Name: _____ Date: _____

Chapter 6
Lesson 8

Multiplying Two-Digit Numbers

GOAL

Multiply two-digit numbers using your choice of strategies.

Jolie and Desmond timed their blinks, breaths, and heartbeats for one minute. They recorded their results in a chart.

	Jolie	Desmond
Blinks in 1 min	38	25
Breaths in 1 min	15	13
Heartbeats in 1 min	60	72

1. Use any strategy to calculate. Show your work.

a) How many times would Jolie's heart beat in 30 min?

b) How many times would Desmond breathe in 19 min?

c) How many times would each person blink in 60 min?

2. Write and solve your own question about Jolie or Desmond.

Chapter 6 Lesson 9

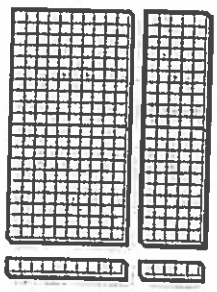
Name: _____ Date: _____

Multiplying with Base Ten Blocks

GOAL

Represent the products of two-digit numbers.

1. Complete the multiplication for the model.



$$\begin{array}{r} 15 \\ \times\ 21 \\ \hline 200 \\ 100 \\ \square\square \\ +\quad\ \square \\ \hline \square\square\square \end{array}$$

2. Calculate. Sketch a model to help you.

a) 21×21

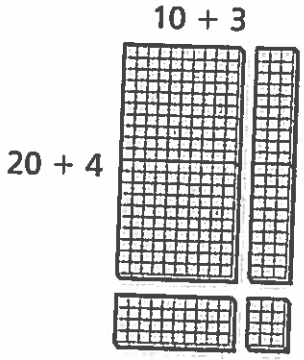
b) 17×11

3. Grace has 14 sets of blocks.
Each set has 12 blocks.
How many blocks does she have in total?

At-Home Help

You can use base ten blocks to model 24×13.

Think of 24 as $20 + 4$, and 13 as $10 + 3$.



The size of each part of the array is the product of the number of rows and columns.

Add the four products to get the total product.

$$\begin{array}{r} 24 \\ \times\ 13 \\ \hline 200 \quad (20 \times 10) \\ 60 \quad (20 \times 3) \\ 40 \quad (10 \times 4) \\ +\ 12 \quad (4 \times 3) \\ \hline 312 \end{array}$$

Name: _____ Date: _____

Chapter 6 Lesson 10

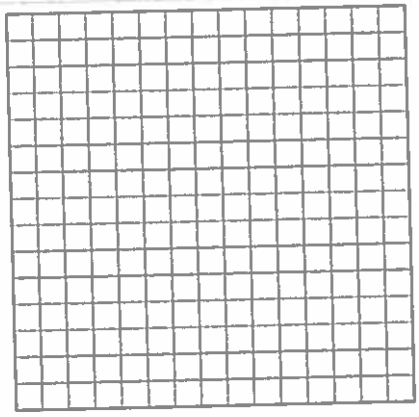
Multiplying with Arrays

GOAL

Multiply two-digit numbers using arrays.

You will need grid paper.

1. a) Sketch an array that shows 15 × 12.



b) Divide your array into four parts that are easier to calculate.

c) Calculate each product and add them to get the total product.

2. Calculate.

a) 11 × 19

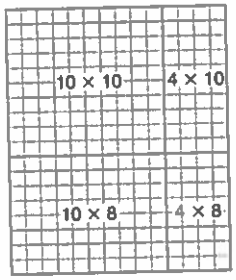
b) 23 × 29

c) 71 × 42

At-Home Help

Here is an example of using an array to multiply 18 × 14. This method is very similar to using base ten blocks.

- First, sketch an array of 18 by 14 squares on grid paper.
- Next, divide the array into four parts that are easier to calculate. For example, divide it into 10 × 10, 10 × 8, 4 × 10, and 4 × 8.



- Add the four products to get the total product: 100 + 80 + 40 + 32 = 252, so 18 × 14 = 252

Name: _____ Date: _____

Chapter 6 Lesson 11

Communicating about Multiplication Methods

GOAL

Explain your calculation method when solving a problem.

1. Owen explained how he calculated 30 × 81.

"81 is close to 80, so first I did 30 x 80. Then I added the leftover part to find the total. The answer is 2430."

Write a better explanation for 30 × 81.
Use the Communication Checklist.

_____

_____

_____

_____

At-Home Help

Communication Checklist

- ✔ Did you explain your thinking?
- ✔ Did you show all the steps?
- ✔ Did you use math language?

2. Ami's house is 72 m away from the school. Over two weeks, Ami walked back and forth 19 times. How many metres did she walk? Show your thinking as completely as possible.

3. There are 30 cards in a set of baseball cards. Sydney has 48 sets of cards in her collection. How many baseball cards does she have?

Name: _____ Date: _____

Chapter 6 Test Yourself

Circle the correct answer.

1. How can you use $4 \times 3 = 12$ to help you calculate 8×3?

A. multiply 3 by 10 and then subtract 4

B. skip count from 4 three times

C. halve the 4 and the 12

D. double the 4 and the 12

2. Which multiplication fact is the most useful to help you multiply 9×5?

A. $10 \times 5 = 50$ **B.** $8 \times 8 = 64$ **C.** $2 \times 3 = 6$ **D.** $6 \times 6 = 36$

3. Calculate 30×40.

A. 12 **B.** 120 **C.** 1200 **D.** 12 000

4. Calculate 8×3000.

A. 24 **B.** 240 **C.** 2400 **D.** 24 000

5. Which multiplication fact is the same as 50×14?

A. $51 \times 13 = 663$ **B.** $100 \times 7 = 700$ **C.** $25 \times 7 = 175$ **D.** $100 \times 28 = 2800$

6. Calculate 40×500.

A. 20 000 **B.** 40 000 **C.** 10 000 **D.** 2000

7. Calculate 4×49.

A. 215 **B.** 302 **C.** 77 **D.** 196

8. Estimate to decide which answer is reasonable for 81×19.

A. 167 **B.** 1539 **C.** 2970 **D.** 735

9. Calculate 33×100.

A. 3300 **B.** 330 **C.** 33 000 **D.** 330 000

10. Calculate 29×13.

A. 389 **B.** 358 **C.** 377 **D.** 319

Name: _____ Date: _____

Chapter 6 Test Page 1

31

1. List three multiplication facts that you can use to help you calculate 5 × 8. How can you use each fact?

_____

_____

_____

6

2. Joe fills a box with six muffins.

   a) How many muffins does he need to fill eight boxes?

1

   b) How would the number change if he fills nine boxes?

1

3. How can you use base ten blocks to show that 30 × 40 = 1200? Sketch your model.

2

4. Use a sketch to show that 18 × 50 = 9 × 100.

2

5. How much greater is 4 × 96 than 4 × 90? How do you know?

_____

_____

2

14

Name: _____ Date: _____

Chapter 6 Test

6. One boat can hold 15 passengers to ferry them across a lake.
About how many passengers can 21 boats hold?
Describe your estimation strategy.

2

_____

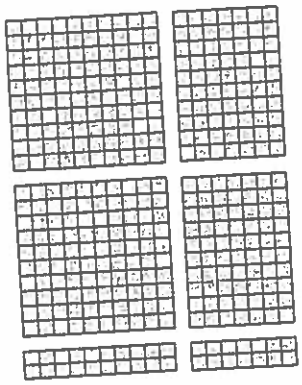
_____

7. About 14 cars pass over a small bridge every 6 hours.
About how many cars pass over the bridge in a week?

3

8. Calculate.

a) 22×17



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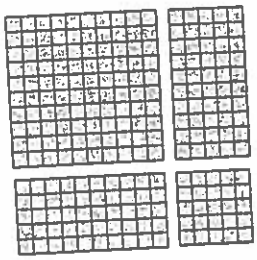
b) 15×15



3

9. Josie's heart beats 73 times in a minute.

a) How many times will her heart beat in 12 min?

12

b) How many times will her heart beat in 35 min?

12

c) How many times will her heart beat in 41 min?

12

17