

Finding Patterns in the Multiplication Table

NCTM Standards 1, 2, 6, 7, 8, 9

- 1 Fill in the table. Use patterns you know to help you.

| × | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----|---|---|---|---|---|---|---|---|---|---|----|----|----|
| 0 | 0 | | | | | | | | | | | | |
| 1 | | 1 | | | | | | | | | | | |
| 2 | | | 4 | | | | | | | | | | |
| 3 | | | | 9 | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |

Use facts in the table to complete these number sentences.

2 $28 \div 4 = \underline{\quad}$

3 $55 \div 11 = \underline{\quad}$

4 $72 \div 6 = \underline{\quad}$

5 $65 \div 5 = \underline{\quad}$

6 $108 \div 9 = \underline{\quad}$

7 $81 \div 9 = \underline{\quad}$



8 There are 27 students in a class. No more than 6 students may ride in each van. How many vans are needed to take all the students on a field trip?

Tell or show how you know.

Write the fact family that uses the given numbers.

9 6, 48, 8

$$6 \quad \otimes \quad 8 \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \otimes \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$48 \quad \div \quad 6 \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \div \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

10 7, 9, 63

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

11 54, 9, 6

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

12 7, 56, 8

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

Challenge

13 8, 64, 8

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

14 14, 126, 9

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \quad \bigcirc \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}}$$

Splitting Area Models

NCTM Standards 1, 2, 7, 9, 10

Complete the area models and puzzles.

1

| | | |
|---|----|---|
| | 10 | 3 |
| 8 | 80 | |

| | | | |
|---|----|---|----|
| × | 10 | 3 | 13 |
| 8 | | | |

2

| | |
|----|---|
| | 4 |
| 10 | |
| 5 | |

| | | | |
|---|----|---|----|
| × | 10 | 5 | 15 |
| 4 | | | |

3

| | |
|---|---|
| | 5 |
| 9 | |
| 7 | |

| | | | |
|----|--|--|--|
| × | | | |
| 16 | | | |

4

| | |
|----|---|
| | 7 |
| 6 | |
| 11 | |

| | | | |
|----|--|--|--|
| × | | | |
| 17 | | | |

5

| | | |
|----|---|----|
| | 6 | 10 |
| 8 | | |
| 20 | | |

| | | | |
|----|---|----|----|
| × | 6 | 10 | 16 |
| 8 | | | |
| 20 | | | |
| 28 | | | |

6

| | | |
|---|---|---|
| | 8 | 4 |
| 5 | | |
| 7 | | |

| | | | |
|----|--|--|----|
| × | | | 12 |
| 12 | | | |

Complete the puzzles.

| | | | | |
|----|---|---|----|--|
| 7 | × | 6 | 10 | |
| 20 | | | | |
| 4 | | | | |
| | | | | |

| | | | | |
|----|---|----|----|----|
| 8 | × | 4 | 9 | |
| | | 28 | | 91 |
| | | | 72 | |
| 15 | | | | |

| | | | | |
|----|---|----|----|----|
| 9 | × | 10 | | 21 |
| | | | 99 | |
| | | 30 | | |
| 12 | | | | |

| | | | | |
|----|---|----|---|-----|
| 10 | × | | 2 | |
| 9 | | 81 | | |
| | | 81 | | |
| | | | | 198 |

For 11 and 12, draw lines (one vertical and one horizontal) to split each area model. Write the new factors. Complete puzzles to match.

11

| | | | |
|----|--|--|----|
| × | | | 14 |
| | | | |
| | | | |
| 18 | | | |

12 Challenge

| | | | |
|----|--|--|----|
| × | | | 25 |
| | | | |
| | | | |
| 34 | | | |

Doubling and Adding

NCTM Standards 1, 2, 6, 7, 8, 9, 10

Complete the table. You might want to double or add other numbers in a column to complete it.

| | 1 | 2 | 3 | 4 |
|----|-----|-----|-----|-----|
| × | 11 | 12 | 13 | 14 |
| 1 | 11 | 12 | 13 | 14 |
| 2 | 22 | 24 | 26 | 28 |
| 3 | 33 | 36 | | 42 |
| 4 | 44 | | 52 | |
| 5 | 55 | | 65 | 70 |
| 6 | 66 | 72 | | 84 |
| 7 | 77 | 84 | 91 | 98 |
| 8 | 88 | | 104 | |
| 9 | 99 | 108 | 117 | 126 |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | 182 |
| 14 | | | 182 | 196 |
| 15 | | 180 | 195 | 210 |
| 16 | 176 | 192 | 208 | 224 |
| 17 | 187 | 204 | 221 | 238 |
| 18 | 198 | 216 | 234 | 252 |
| 19 | | | | |
| 20 | | | | |

Complete the table row. Then answer the question.

| | | | | | | | | | | | |
|----|---|----|---|---|---|---|---|-----|-----|-----|----|
| 5 | × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 18 | | 18 | | | | | | 126 | 144 | 162 | |



6 All 18 students in the class are supposed to bring a dozen cookies to sell at a bake sale. How many cookies will the class have to sell? Explain.

Complete the table row. Then answer the question.

| | | | | | | | | | | | |
|----|---|----|---|---|---|---|---|-----|-----|-----|----|
| 7 | × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 16 | | 16 | | | | | | 112 | 128 | 144 | |



8 There were 18 boxes of mini muffins with 16 muffins in a box. If the class sells 14 boxes of muffins at the bake sale, how many muffins will they sell? Explain.

9 **Challenge** Complete the table row.

| | | | | | | | | | | |
|----|----|---|---|---|---|---|---|---|---|----|
| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 19 | 19 | | | | | | | | | |

Multiplying by Multiples of 10

NCTM Standards 1, 2, 7, 8, 9, 10

Complete the area model and puzzles.

1

| | | |
|----|----|---|
| | 20 | 2 |
| 10 | | |
| 4 | 80 | |

| | | | |
|----|----|---|----|
| × | 20 | 2 | 22 |
| 10 | | | |
| 4 | 80 | | |
| 14 | | | |

2

| | | | |
|----|----|----|--|
| × | 30 | 40 | |
| 30 | | | |
| 8 | | | |
| | | | |

3

| | | | |
|----|----|---|--|
| × | 60 | 9 | |
| 5 | | | |
| 20 | | | |
| | | | |

4

| | | | |
|----|---|----|--|
| × | 8 | 70 | |
| 2 | | | |
| 20 | | | |
| | | | |

5

| | | | |
|----|----|----|--|
| × | 30 | 50 | |
| 30 | | | |
| 20 | | | |
| | | | |



6 What is the connection between 2×3 and 20×30 ?

Complete the number sentences.

7 $4 \times 2 = \underline{\hspace{2cm}}$
 $4 \times 20 = \underline{\hspace{2cm}}$
 $2 \times 40 = \underline{\hspace{2cm}}$
 $20 \times 40 = \underline{\hspace{2cm}}$

8 $3 \times 8 = \underline{\hspace{2cm}}$
 $30 \times 8 = \underline{\hspace{2cm}}$
 $80 \times 3 = \underline{\hspace{2cm}}$
 $30 \times 80 = \underline{\hspace{2cm}}$

9 $5 \times 8 = \underline{\hspace{2cm}}$
 $50 \times 80 = \underline{\hspace{2cm}}$
 $5 \times 80 = \underline{\hspace{2cm}}$
 $8 \times 50 = \underline{\hspace{2cm}}$

10 $12 \times 6 = \underline{\hspace{2cm}}$
 $120 \times 6 = \underline{\hspace{2cm}}$
 $60 \times 12 = \underline{\hspace{2cm}}$
 $60 \times 120 = \underline{\hspace{2cm}}$

11 Challenge Complete the puzzle.

| | | | | |
|-----|---|--|--|-----|
| | × | | | 150 |
| | | | | |
| | | | | |
| 120 | | | | |

Working with Large Numbers

NCTM Standards 1, 2, 7, 9

Write numbers to match the words.

- 1 Nine hundred ninety-nine billion, nine hundred ninety-nine million, nine hundred ninety-nine thousand, nine hundred ninety-nine
-

- 2 Four hundred five million, seven hundred thousand, five hundred four
-

- 3 Eight hundred six billion, three hundred ten million, seventy-two thousand, fifty-eight
-

For each group of numbers, write 1, 2, or 3 in the boxes to rank the numbers in order from greatest to least.

4

 4,203,615

 4,302,516

 4,320,615

5

 16,710,688,420

 16,710,868,420

 16,710,688,240

6

 465,403,555,403

 465,555,403,403

 465,403,403,555

Complete the number sentences.

7

$$4,502,000 = (4 \times 1,000,000) + (5 \times \underline{\hspace{2cm}}) + (2 \times \underline{\hspace{2cm}})$$

8

$$30,020,008 = (3 \times \underline{\hspace{2cm}}) + (2 \times \underline{\hspace{2cm}}) + (8 \times \underline{\hspace{1cm}})$$

9

$$\underline{\hspace{2cm}} = (4 \times 1,000,000) + (8 \times 10,000) + (5 \times 1,000) + (9 \times 100)$$

10

$$\underline{\hspace{2cm}} = (9 \times 10,000,000) + (6 \times 100,000) + (3 \times 100)$$

Write >, <, or = to complete the number sentences.

11 351,007,298 351,070,298

12 10,000,000,000 100,000,000

13 46,644,464,646 46,644,464,446

14 Challenge Write the number that is forty thousand greater than four hundred twenty billion, three hundred twenty-five million, six hundred sixty-seven thousand, eight hundred ten.

Estimating Products

NCTM Standards 1, 2, 4, 6, 7, 8, 9

Round and estimate.

1 98×42

Estimate:

100 \times _____ = _____

2 35×81

Estimate:

_____ \times _____ = _____

3 67×48

Estimate:

_____ \times _____ = _____

4 56×112

Estimate:

_____ \times _____ = _____

Complete the number sentences.

5

$60 \times 3 =$ _____

$60 \times 30 =$ _____

$60 \times 300 =$ _____

6

$20 \times 400 =$ _____

$200 \times 400 =$ _____

$200 \times 40 =$ _____

7

$500 \times 60 =$ _____

$50 \times 600 =$ _____

$500 \times 600 =$ _____

8

$19 \times 20 =$ _____

$19 \times 200 =$ _____

$190 \times 20 =$ _____

$190 \times 200 =$ _____

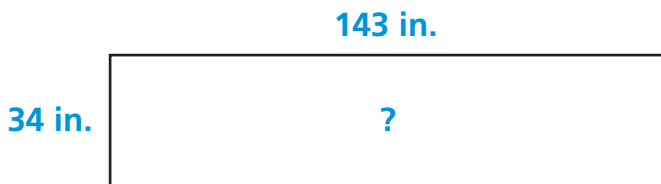
Figure out how many tickets were bought in a year if . . .

- 9 30 people each bought 40 tickets. _____ tickets
- 10 30 people each bought 400 tickets. _____ tickets
- 11 40 people each bought 300 tickets. _____ tickets



12 Solve the problem.

Kim and her mother want to plant a border garden of wildflowers in their backyard. Kim drew this sketch showing the garden's measurements.



In order to buy wildflower seeds, Kim and her mother need an estimate of the product 34×143 (the area of the garden). How can they estimate the product to be certain that they buy enough seeds? Explain your estimate.

Estimate: _____ \times _____ = _____ sq in.

13 Challenge Show how you could estimate the number of square feet in Kim's garden.

_____ \times _____ = _____ sq ft

Estimating in Various Ways

NCTM Standards 1, 2, 7, 8, 9

Estimate the products.

$$23 \times 82$$

Example 1

Estimate:

$$\underline{25} \times \underline{80} = \underline{2,000}$$

Example 2

Estimate:

$$\underline{20} \times \underline{80} = \underline{1,600}$$

1 49×22

Estimate:

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

2 32×11

Estimate:

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

3 39×93

Estimate:

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

4 24×37

Estimate:

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

5 66×64

Estimate:

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

6 122×41

Estimate:

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

7 Show two different ways to estimate the product 26×42 .

Estimate 1

_____ \times _____ = _____

Estimate 2

_____ \times _____ = _____



8 How can you use the fact $33 \times 3 = 99$ to estimate 332×29 ?

Estimate:

_____ \times _____ = _____



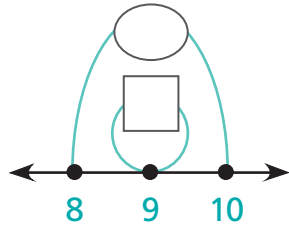
9 **Challenge** Jenna estimated the product 42×14 by using the product 40×10 . Her friend Miccah used the estimate 45×20 . Without calculating the product 42×14 , which estimate do you think is closer? Why do you think that?

Discovering a Useful Multiplication Pattern

NCTM Standards 1, 2, 7, 9, 10

Complete the diagrams and number sentences.

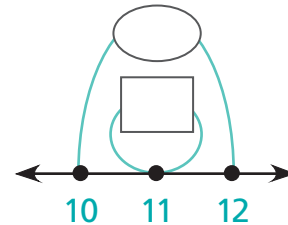
1



$$9 \times 9 = \square$$

$$8 \times 10 = \bigcirc$$

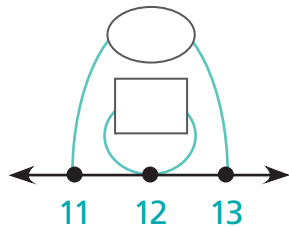
2



$$11 \times 11 = \square$$

$$10 \times 12 = \bigcirc$$

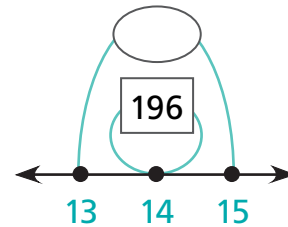
3



$$12 \times 12 = \square$$

$$11 \times 13 = \bigcirc$$

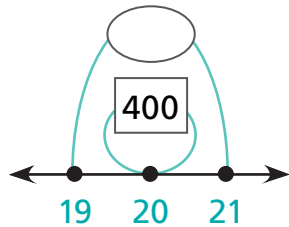
4



$$14 \times 14 = \square$$

$$13 \times 15 = \bigcirc$$

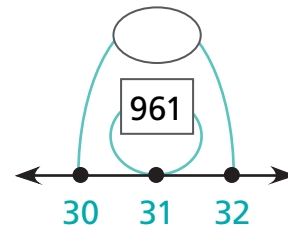
5



$$20 \times 20 = \square$$

$$\underline{\quad} \times \underline{\quad} = \bigcirc$$

6



$$\underline{\quad} \times \underline{\quad} = \square$$

$$\underline{\quad} \times \underline{\quad} = \bigcirc$$

Complete the related number sentences.

7 $25 \times 25 = \boxed{625}$
 $24 \times 26 = \bigcirc$

8 $30 \times 30 = \boxed{900}$
 $29 \times 31 = \bigcirc$

9 $41 \times 41 = \boxed{1,681}$
 $42 \times 40 = \bigcirc$

10 $53 \times 53 = \boxed{2,809}$
 $\underline{\quad} \times \underline{\quad} = \bigcirc 2,808$

Complete the tables by filling in the white boxes.

11

| × | 4 | 5 | 6 | 7 |
|---|----|----|----|----|
| 4 | 16 | | | |
| 5 | | 25 | | |
| 6 | | | 36 | |
| 7 | | | | 49 |

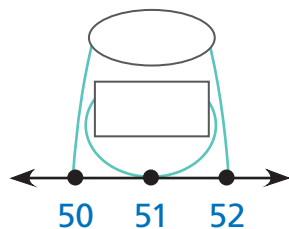
12

| × | 15 | 16 | 17 | 18 |
|----|-----|-----|-----|-----|
| 15 | 225 | | | |
| 16 | | 256 | | |
| 17 | | | 289 | |
| 18 | | | | 324 |

13

| × | 27 | 28 | 29 | 30 |
|----|-----|-----|-----|-----|
| 27 | 729 | | | |
| 28 | | 784 | | |
| 29 | | | 841 | |
| 30 | | | | 900 |

14 **Challenge** Complete the diagram and related sentence.



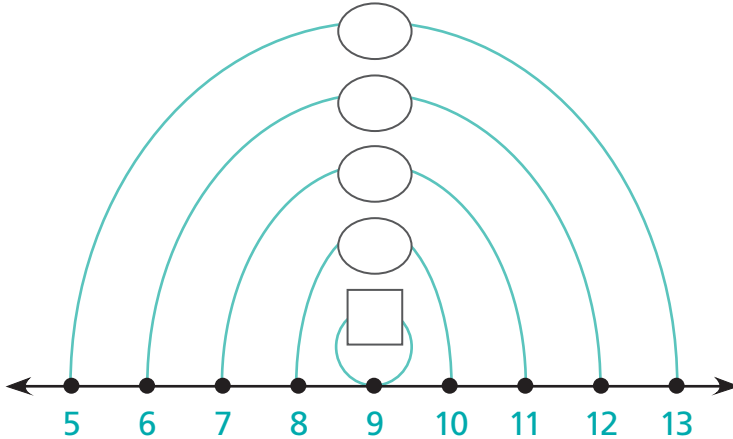
$50 \times 52 = \bigcirc$
 $51 \times 51 = \square$

Extending the Multiplication Pattern

NCTM Standards 1, 2, 7, 8, 9, 10

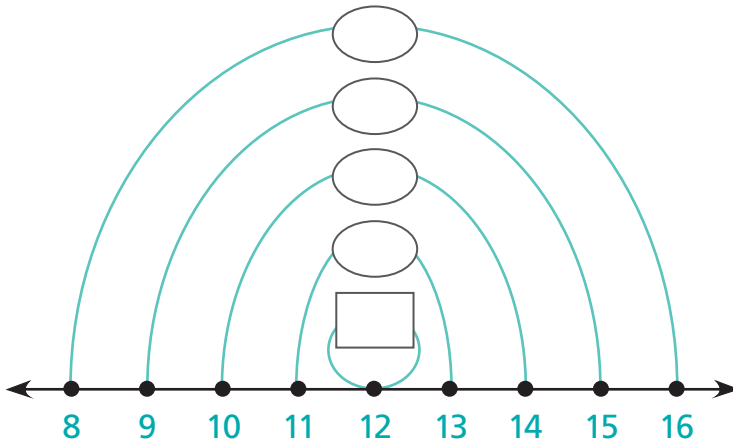
Complete the diagrams and tables.

1



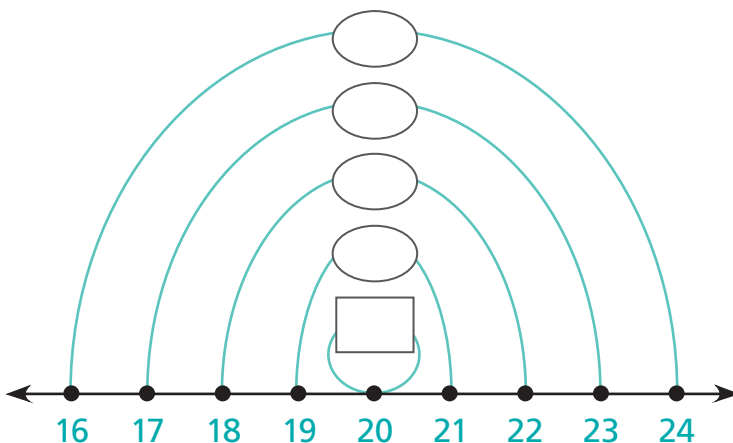
| Steps Away | $9 \times 9 =$ | <input type="text"/> |
|------------|-----------------|----------------------|
| 1 | $8 \times 10 =$ | <input type="text"/> |
| 2 | $7 \times 11 =$ | <input type="text"/> |
| 3 | $6 \times 12 =$ | <input type="text"/> |
| 4 | $5 \times 13 =$ | <input type="text"/> |

2



| Steps Away | $12 \times 12 =$ | <input type="text"/> |
|------------|--|----------------------|
| 1 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |
| 2 | $10 \times \underline{\quad} =$ | <input type="text"/> |
| 3 | $\underline{\quad} \times 15 =$ | <input type="text"/> |
| 4 | $8 \times 16 =$ | <input type="text"/> |

3



| Steps Away | $20 \times 20 =$ | <input type="text"/> |
|------------|--|----------------------|
| 1 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |
| 2 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |
| 3 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |
| 4 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |

Complete the tables.

| | | | |
|----------|-----------------------|---------------------------------|----------------------|
| 4 | Steps Away | $11 \times 11 =$ | <input type="text"/> |
| | 4 | $\underline{\quad} \times 15 =$ | <input type="text"/> |

| | | | |
|----------|-----------------------|--|----------------------|
| 5 | Steps Away | $28 \times 28 =$ | <input type="text"/> |
| | 2 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |

| | | | |
|----------|-----------------------|--|----------------------|
| 6 | Steps Away | $24 \times 24 =$ | <input type="text"/> |
| | 3 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |

| | | | |
|----------|-----------------------|--|----------------------|
| 7 | Steps Away | $54 \times 54 =$ | <input type="text"/> |
| | 2 | $\underline{\quad} \times \underline{\quad} =$ | <input type="text"/> |

Use these square number facts to complete the number sentences.

$25 \times 25 = \boxed{625}$

$26 \times 26 = \boxed{676}$

$27 \times 27 = \boxed{729}$

8

 $24 \times 28 = \text{○}$

9

 $21 \times 29 = \text{○}$

10

 $24 \times 30 = \text{○}$

11

 $22 \times 28 = \text{○}$

12

 $25 \times 29 = \text{○}$

13

 $22 \times 30 = \text{○}$



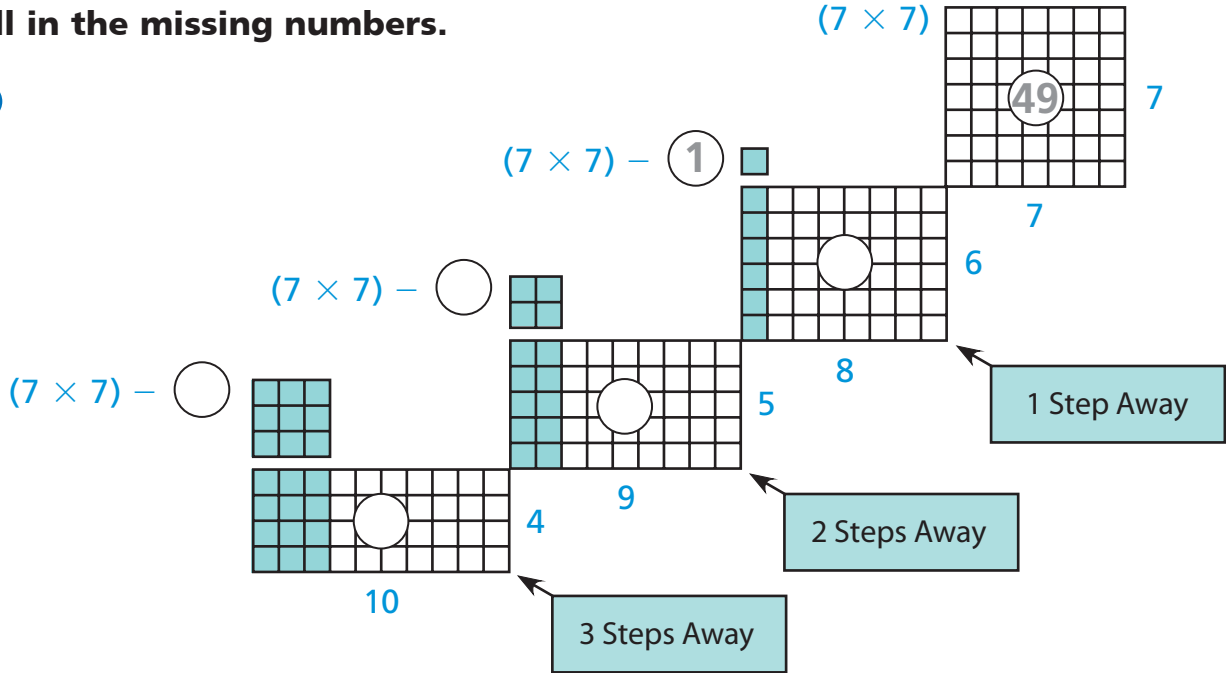
14 Challenge Would you use square numbers and the patterns of steps away to solve 21×24 ? Why or why not?

Investigating Why the Pattern Works

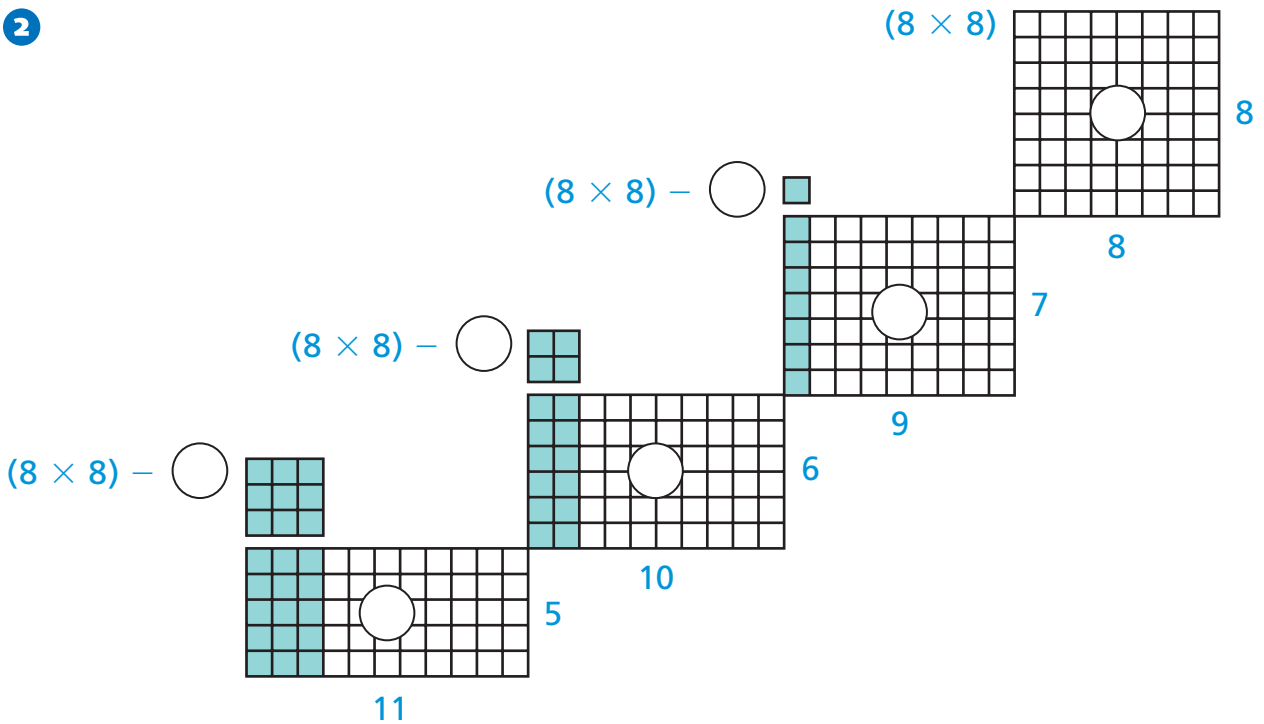
NCTM Standards 1, 2, 7, 8, 9, 10

Fill in the missing numbers.

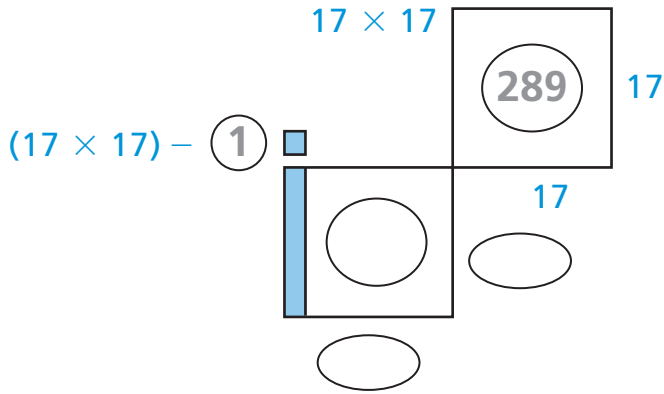
1



2



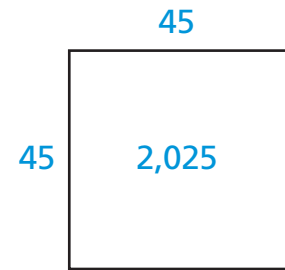
3



Solve each problem.



4 You can use $45 \times 45 = 2,025$ to figure out 41×49 . Explain how this can be done and find the product.



5 James wants to use 1-foot carpet squares to cover a porch floor. The porch is 9 feet by 15 feet. Use $12 \times 12 = 144$ to help you figure out how many carpet squares James will need.

6 Challenge Complete the number sentences.

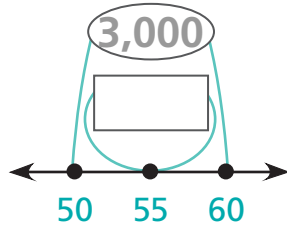
$$\begin{array}{r}
 12 \times 12 = \boxed{} \\
 13 \times 11 = \boxed{} = 144 - 1 \\
 14 \times 10 = \boxed{} = 144 - \underline{} \\
 15 \times 9 = \boxed{} = 144 - \underline{} \\
 16 \times 8 = \boxed{} = \underline{} - \underline{}
 \end{array}$$

Finding Products of Large Factors

NCTM Standards 1, 2, 7, 8, 9, 10

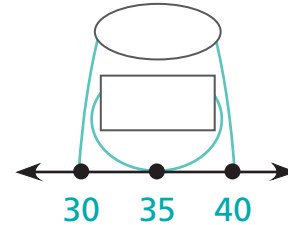
Fill in the missing numbers.

1



$$50 \quad 60 \quad 25 = \boxed{}$$

2



$$35 \quad 35 - \underline{} = \bigcirc$$

Use the product 5 steps away to figure out the square numbers.

$$3 \quad 45 \quad 45 = (40 \quad 50) + 25 = \underline{\hspace{2cm}}$$

$$4 \quad 65 \quad 65 = (60 \quad 70) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

$$5 \quad 35 \quad 35 = (30 \quad \underline{\hspace{1cm}}) + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

Use simpler multiplications to find the products.
You might double and add products, split an area model, or use square numbers.

$$6 \quad 38 \times 42$$

$$7 \quad 64 \times 56$$

Show two different ways to find the product 43×37 .

8 First Method

9 Second Method



10 Which method do you prefer—the first or the second? Explain why.

Use the product 5 steps away to figure out the square numbers.

11 $75 \quad 75 = (\underline{70} \quad \underline{\quad}) + \underline{\quad} = \underline{\quad}$

12 $55 \quad 55 = (\underline{\quad} \quad \underline{\quad}) + \underline{\quad} = \underline{\quad}$

13 Challenge

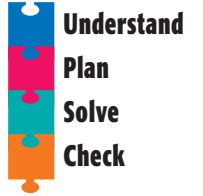
$95 \quad 95 = \underline{\quad}$

$105 \quad 105 = \underline{\quad}$

Problem Solving Strategy

Solve a Simpler Problem

NCTM Standards 1, 2, 6, 7, 8, 9, 10



Solve the problem and check (✓) the strategy you used. If you checked OTHER, tell what you did. Show your work.

- 1** Rachel delivered 21 newspapers a week for the last 19 weeks. How many total newspapers did she deliver?

_____ newspapers

- Made an area model or puzzle
- Used a square number
- Doubled or added products
- Other:

- 2** Twenty-six students in a class each decorated a dozen eggs. The teacher knew she would need to find lots of room to display them all. How many eggs were there?

_____ eggs

- Made an area model or puzzle
- Doubled or added products
- Other:

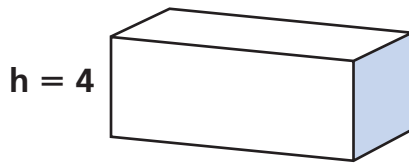
Problem Solving Test Prep

Choose the correct answer.

1 Vicky tosses a small paper cup in the air 50 times. It lands on its side 45 times. From the data what is the probability that the cup will land on its side?

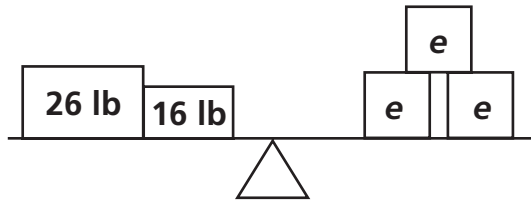
- A. $\frac{4}{5}$ C. $\frac{5}{9}$
 B. $\frac{9}{10}$ D. $\frac{5}{6}$

2 The volume of the rectangular prism is 64 cubic units. Which are the missing dimensions?



- A. l 6, w 2
 B. l 6, w 3
 C. l 8, w 4
 D. l 8, w 2

3 What is the weight of one box labeled e?



- A. 12 pounds C. 16 pounds
 B. 14 pounds D. 18 pounds

4 What is the value of w in the puzzle?

| | | | |
|----|-----|-----|-------|
| × | s | 6 | |
| 10 | t | v | 560 |
| 9 | w | z | 504 |
| | 950 | 114 | 1,064 |

- A. 59 C. 450
 B. 60 D. 500

Show What You Know

Solve each problem. Explain your answer.

5 James brought a plant to class on Monday and it was 8 centimeters tall. On Tuesday, it was 12 centimeters; on Wednesday, 17 centimeters; and on Thursday, 23 centimeters. If the plant's growing pattern continues, how tall will it be on Friday? Explain.

6 The chairs for the school concert were set up in 30 rows with 30 chairs in each row. In order to make an aisle, the chairs are rearranged into 26 rows with 34 chairs in each row. How does the rearrangement change the number of chairs? Explain.

Review/Assessment

NCTM Standards 1, 2, 6, 7, 9, 10

1 Complete the number sentences for the fact family. *Lesson 1*

$$8 \quad 9 = \underline{\quad\quad}$$

$$72 \quad 9 = \underline{\quad\quad}$$

$$9 \quad \underline{\quad} = \underline{\quad\quad}$$

$$\underline{\quad\quad} \quad \underline{\quad} = \underline{\quad\quad}$$

Complete the puzzles. *Lesson 2*

2

| | | | |
|---|-----|--|----|
| × | | | 27 |
| 9 | 180 | | |

3

| | | | |
|----|-----|----|--|
| × | 20 | | |
| | 200 | | |
| 8 | | 16 | |
| 18 | | | |

Complete the table row. *Lesson 3*

4

| | | | | | | | | | | |
|----|---|---|---|---|---|---|----|---|-----|----|
| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 14 | | | | | | | 98 | | 126 | |

Complete the number sentences. *Lesson 4*

| | | | |
|---|--|---|--|
| 5 | $70 \times 3 = \underline{\quad\quad}$ | 6 | $50 \quad 40 = \underline{\quad\quad}$ |
| | $70 \times 30 = \underline{\quad\quad}$ | | $40 \times 500 = \underline{\quad\quad}$ |
| | $30 \times 700 = \underline{\quad\quad}$ | | $50 \times 400 = \underline{\quad\quad}$ |

For each group of numbers, write 1, 2, or 3 in the boxes to rank the numbers in order from greatest to least. *Lesson 5*

- | | | | | | |
|---|-------------------------------------|---|---|---|--|
| 7 | <input type="checkbox"/> 21,468,902 | 8 | <input type="checkbox"/> 63,890,605,300 | 9 | <input type="checkbox"/> 572,872,444,203 |
| | <input type="checkbox"/> 21,648,920 | | <input type="checkbox"/> 63,890,605,030 | | <input type="checkbox"/> 572,782,023,444 |
| | <input type="checkbox"/> 21,468,092 | | <input type="checkbox"/> 63,980,605,300 | | <input type="checkbox"/> 572,782,203,444 |

Estimate the products. Lessons 6 and 7

10 39×23

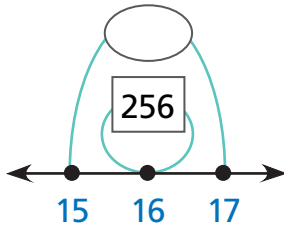
_____ = _____

11 24×42

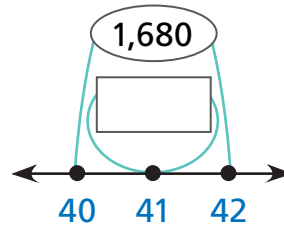
_____ = _____

Complete the diagrams. Lessons 8, 9 and 10

12



13



Show two different ways to find the product 38×42 . Lesson 11

14

15

Solve the problem. Show your work. Lesson 12

16 Chris wants to know how many dozen eggs are closest to 100 eggs. Help him find the answer.

_____ dozen eggs