Name _____ Date _____

# Multiplication Puzzles

## Complete each puzzle.

**1**

|  |  |
|---|---|
|  |  |
| × | 3 |
|  | 5 |

**2**

|  |  |
|---|---|
|  | 3 |
| × |  |
|  | 8 |

**3**

|  |  |
|---|---|
|  | 9 |
| × |  |
| 2 |  |

**4**

|  |  |
|---|---|
|  |  |
| × | 6 |
| 2 |  |

**5**

|  |  |
|---|---|
|  | 7 |
| × |  |
|  | 9 |

**6**

|  |  |
|---|---|
|  |  |
| × | 4 |
| 2 | 0 |

**7**

|  |  |
|---|---|
|  |  |
| × | 4 |
| 4 | 8 |

**8**

|  |  |
|---|---|
|  |  |
| × |  |
| 2 | 5 |

**9**

|  |  |
|---|---|
|  |  |
| × | 8 |
| 5 |  |

**10**

|  |  |
|---|---|
|  |  |
| × | 9 |
|  | 1 |

**11**

|  |  |
|---|---|
| 1 | 0 |
| × |  |
| 7 |  |

**12**

|  |  |
|---|---|
|  | 9 |
| × |  |
|  | 3 |

**13**

| | |
|---|---|
| × | 8 |
| 7 | |

**14**

| | 8 |
|---|---|
| × | |
| 3 | |

**15**

| | |
|---|---|
| × | |
| 6 | 4 |

**16**

| | |
|---|---|
| × | |
| 1 | 3 |

**17**

| 3 | |
|---|---|
| × | |
| 1 | 5 | 0 |

**18**

| | 7 |
|---|---|
| × | |
| 1 | 1 | 9 |

**19**

| 5 | |
|---|---|
| × | |
| 2 | 0 | 0 |

**20**

| | 3 |
|---|---|
| × | |
| 2 | 1 | 2 |

**21**

| | 5 |
|---|---|
| × | |
| 1 | 7 | 0 |

### Challenge

**22**

| | | |
|---|---|---|
| 2 | 2 | 4 | 2 |

**23**

| 4 | | |
|---|---|---|
| | 9 | 2 | 2 |

**24**

| 1 | | 1 |
|---|---|---|
| 5 | 9 | 0 | |

Name _____  Date _____

# Multiples of 10 and 100

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

**Remember the Eraser Store?**
**They sell erasers, and package 10 erasers in a pack,**
**10 packs in a box, and 10 boxes in a crate.**
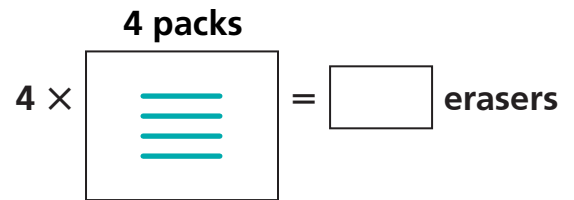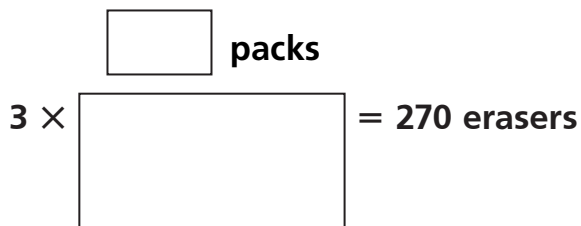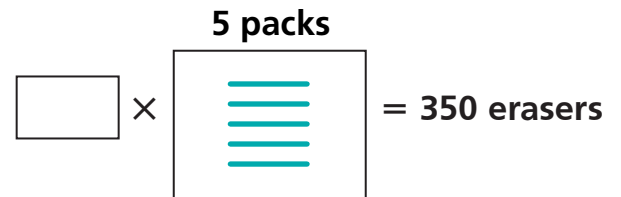
**Find the number of erasers.**

**1**
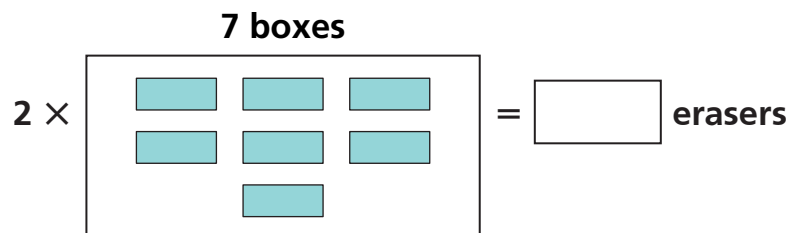
**6 packs**

$5 \times$ [____] = [____] erasers

---

**2**

**3 packs**

8 [____] [____] erasers

**3**

**4 packs**

4 [____] [____] erasers

---

**4**

[____] **packs**

3 [____] **270 erasers**
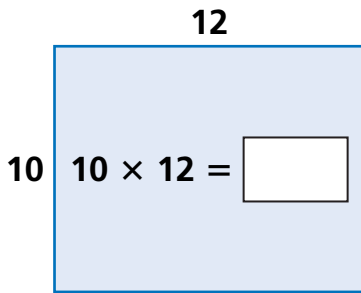
**5**

**5 packs**

[____] [____] **350 erasers**

---

**6**

**7 boxes**

2 [____] [____] erasers
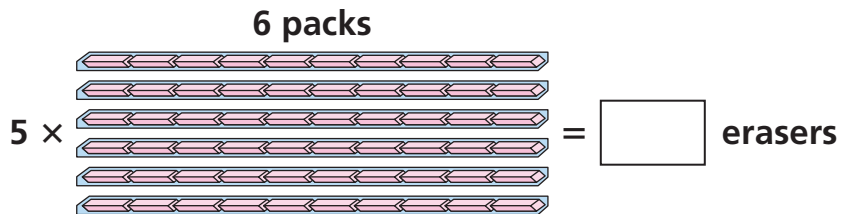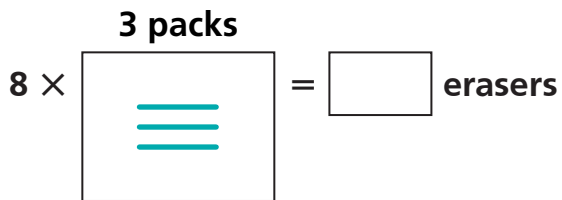
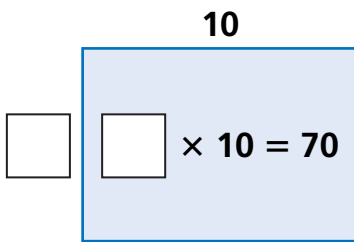**Find the area of each rectangle.**

**7**

12

10 | 10 × 12 = ☐

**8**

15

10 | 10 × 15 = ☐

**9**

30

9 | 9 × 30 = ☐
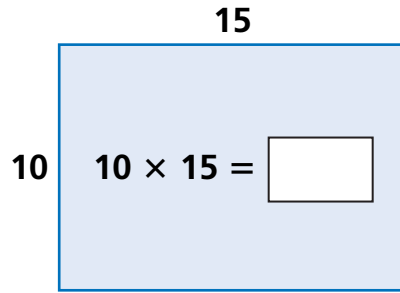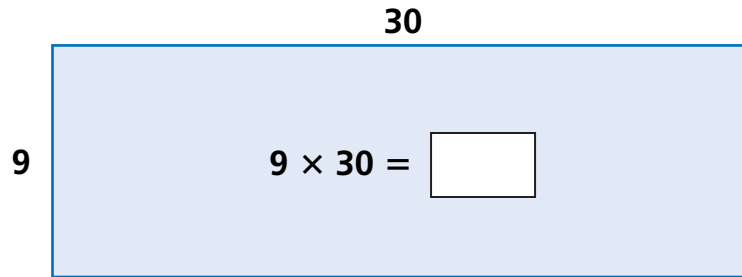
**Find the missing length.**

**10**

10

☐ | ☐ × 10 = 70

**11**

☐

6 | 6 × ☐ = 120

**12**

☐

10 | 10 × ☐ = 180

**13**

☐

10 | 10 × ☐ = 200

**14 Challenge**

100

10 | 
10 × 100 = ☐

**15 Challenge**

200

20 | 
20 × 200 = ☐
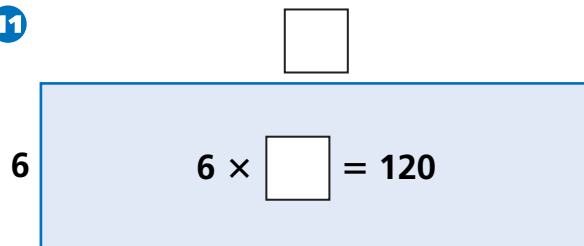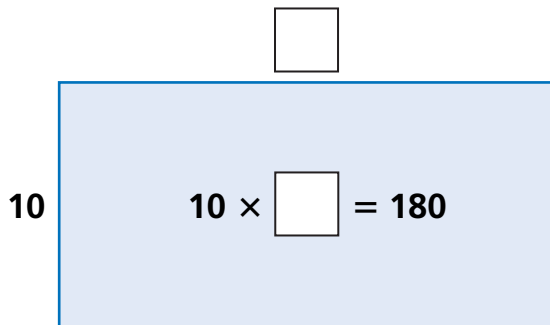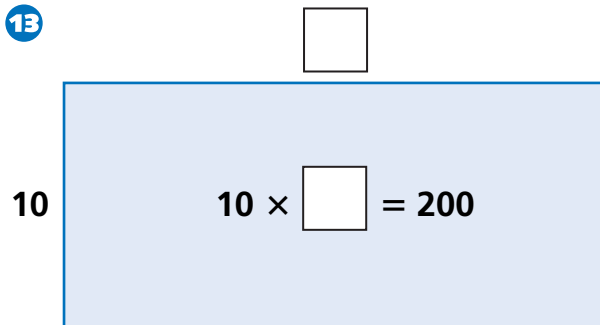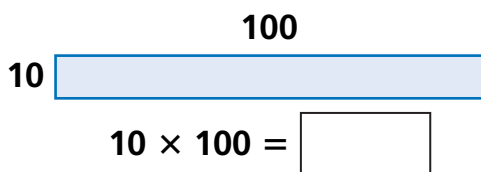
Name _____  Date _____
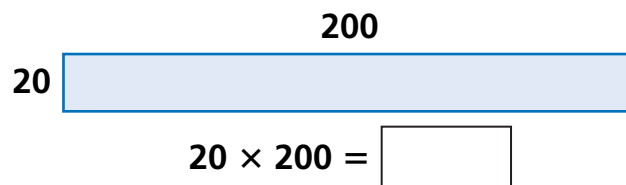
# Using Arrays to Model Multiplication

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

**Complete each chart to find the number of squares in each array.**

**1** 3    12    ☐

| 8 | | 4 |
|---|---|---|

| 3 | 3 × 8 | 3 × 4 |

| × | 8 | 4 | 12 |
|---|---|---|---|
| 3 | | **12** | |
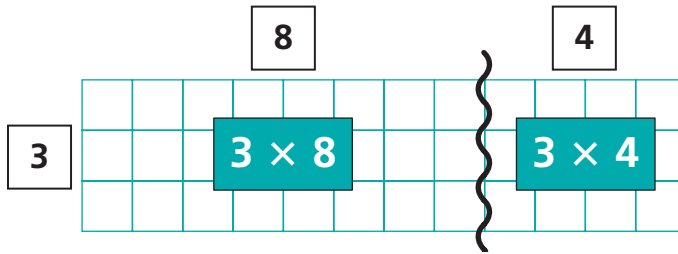
**2** 5    16    ☐
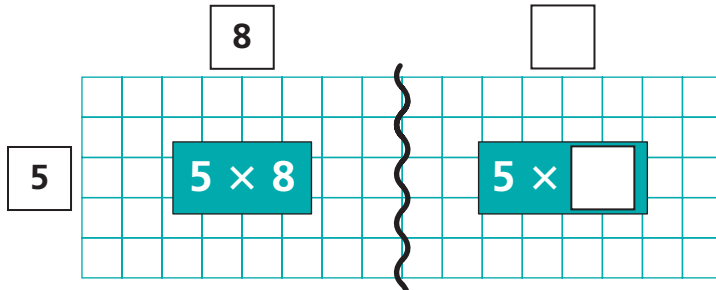
| 8 | | ☐ |
|---|---|---|

| 5 | 5 × 8 | 5 × ☐ |

| × | 8 | 8 | |
|---|---|---|---|
| 5 | | | |

**3** 14    6    ☐    ☐
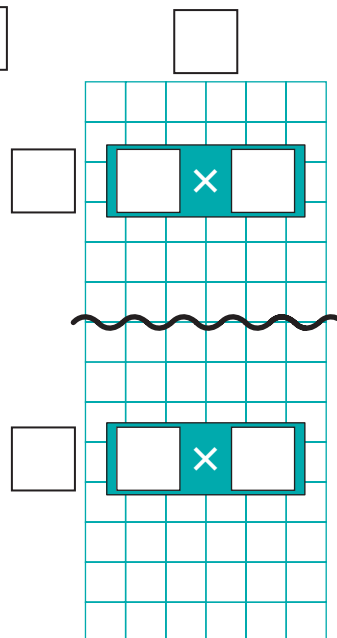
| ☐ | ☐ × ☐ |
|---|---|

| ☐ | ☐ × ☐ |

| × | 6 |
|---|---|
| 6 | |
| 8 | |
| | |

**4** 15   7   ☐
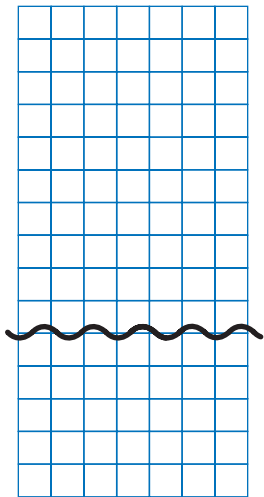


$\times$ | 7
10 |
15 |

**5** 17   9   ☐
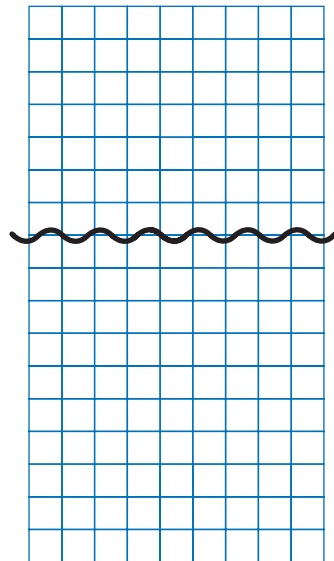


$\times$ | 9
7 |
17 |

**6** 8   13   ☐



$\times$ | | | 13
8 | |

**7** 7   16   112
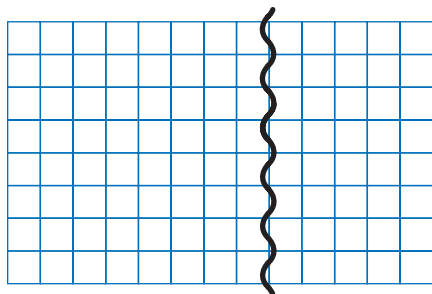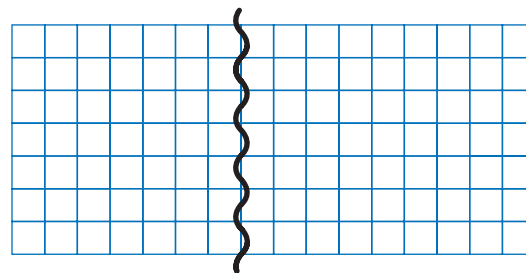


$\times$ | | | 16
7 | |

**8 Challenge** A theater has 12 rows of seats. There are 18 seats in each row. How many seats are there?

☐ seats

Name _____   Date _____

# Splitting Larger Arrays

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

**Use the arrays and charts to solve the multiplication problems.**

**1** 9   8   [ ]

|     | 4 | 5 |
|-----|---|---|
| 5 | 5 × 4 | 5 × 5 |
| 3 | 3 × 4 | 3 × 5 |

| × | 4 | 5 | 9 |
|---|----|----|----|
| 5 | 20 |    |    |
| 3 |    |    |    |
| 8 |    |    |    |

**2** 15   7   [ ]

|     | 8 | 7 |
|-----|---|---|
| 4 | 4 × 8 | 4 × 7 |
| 3 | 3 × 8 | 3 × 7 |

| × | 8 | 7 |   |
|---|---|---|---|
| 4 |   |   |   |
| 3 |   |   |   |
| 7 |   |   |   |

**3** 17   6   [ ]

|     | 11 | 6 |
|-----|----|---|
| 4 | 4 × 11 | 4 × 6 |
| 2 | 2 × 11 | 2 × 6 |

| × | 11 | 6 |   |
|---|----|---|---|
| 4 |    |   |   |
| 2 |    |   |   |
|   |    |   |   |

**4** 19   9   [ ]

|     | 10 | 9 |
|-----|----|---|
| 6 | 6 × 10 | 6 × 9 |
| 3 | 3 × 10 | 3 × 9 |

| × | 10 | 9 |   |
|---|----|---|---|
| 6 |    |   |   |
| 3 |    |   |   |
|   |    |   |   |

**5** 19   18   ☐

10          9



| × | | 9 | 19 |
|---|---|---|---|
| 8 | | | |
| 18 | | | |

**6** 16   14   ☐

8          8

7

7
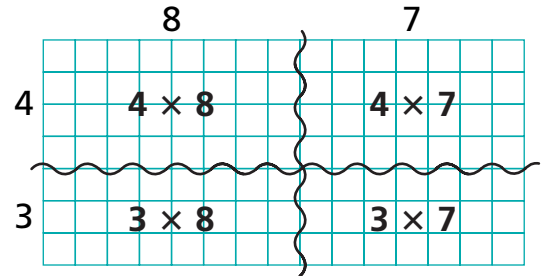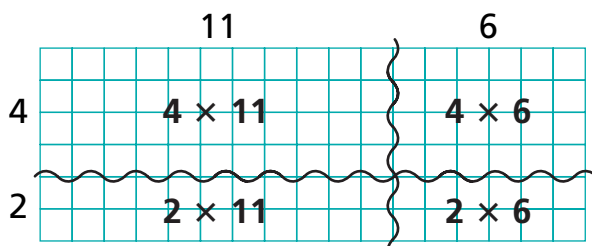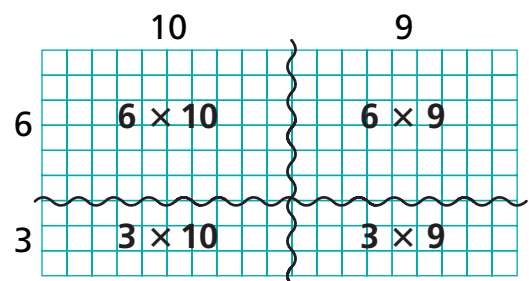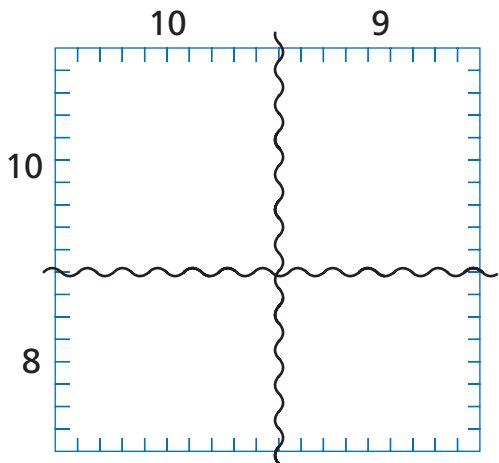


| × | | 8 | 16 |
|---|---|---|---|
| 7 | | | |
| 14 | | | |

**7 Challenge** Jenna is planting a garden that is 11 feet long and 18 feet wide. She wants to plant peas, tomatoes, melons, and onions in separate rectangular sections. Suggest a way she might separate the garden to match the diagram at the right.

| peas | tomatoes |
|------|----------|
| melons | onions |

Areas for:                    Find the areas of the sections you suggest.
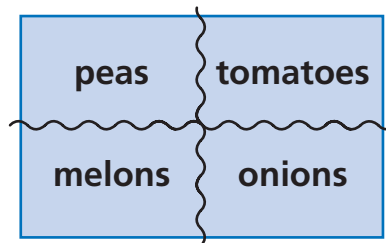
Peas   ☐

Tomatoes   ☐

Melons   ☐

Onions   ☐

Total   ☐

| × | | | 18 |
|---|---|---|---|
| | | | |
| 11 | | | |

Name _____  Date _____

# Choosing Simpler Problems

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

## Solve the multiplication problems.

19   11   ☐

|   | 7 | 12 |
|---|---|----|
| 5 |   |    |
| 6 |   |    |

|   | 8 | 11 |
|---|---|----|
| 9 |   |    |
| 2 |   |    |

|    | 10 | 9 |
|----|----|---|
| 10 |    |   |
| 1  |    |   |
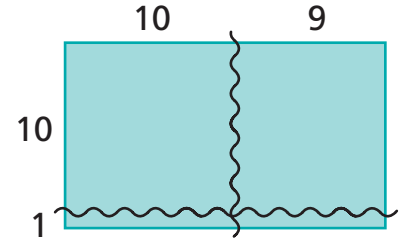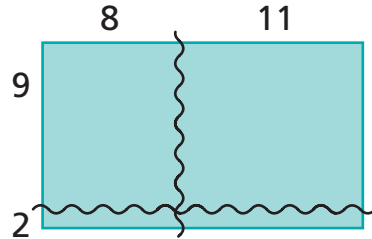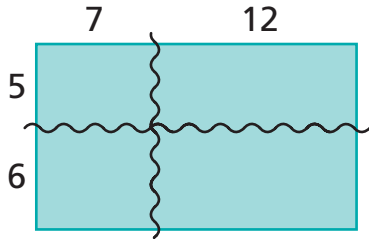
**1**

| × | 7 | 12 | 19 |
|---|---|----|----|
| 5 | 35 |   |    |
| 6 |   |    |    |
| 11 |  |    |    |

**2**

| × | 8 | 11 | 19 |
|---|---|----|----|
| 9 |   |    |    |
| 2 |   |    |    |
| 11 |  |    |    |

**3**

| × | 10 | 9 | 19 |
|---|----|---|----|
| 10 |   |   |    |
| 1 |    |   |    |
|   |    |   |    |

17   16   ☐

**4**

| × | 11 | 6 | 17 |
|---|----|---|----|
| 8 |    |   |    |
|   |    |   |    |
|   |    |   |    |

**5**

| × | 10 | 7 |   |
|---|----|---|---|
| 6 |    |   |   |
|   |    |   |   |
| 16 |   |   |   |

**6**

| × | 9 | 8 |   |
|---|---|---|---|
| 9 |   |   |   |
| 7 |   |   |   |
|   |   |   |   |

**7**   16   16   ☐



**8**   13   19   ☐



**9**   14   17   ☐



**10**   17   18   ☐



**11** **Challenge** Explain why you decided to fill in the chart in Problem 10 the way you did.

_____

_____

_____

_____

Name _____  Date _____

# From Charts to Vertical Records

**Fill in the boxes to complete each problem.**

**1**

6

| | 6 |
|---|---|
| 10 | 6 × 10 |
| 8 | 8 × 6 |

18    6    [   ]

| × | 6 |
|---|---|
| 10 | |
| 8 | |
| 18 | |

10 × 6 →
8 × 6 →
18 × 6 →

| | 1 | 8 |
|---|---|---|
| × | | 6 |
| | 6 | 0 |
| | | |

**2**

30    14    [   ]

| | 30 |
|---|---|
| 10 | |
| 4 | |

| × | 30 |
|---|---|
| 10 | |
| 4 | |
| 14 | |

10 × 30 →
4 × 30 →
14 × 30 →

| | 1 | 4 |
|---|---|---|
| × | 3 | 0 |
| | | |
| | | |

**3**

18    60    [   ]

10   8

60

| × | 10 | 8 | 18 |
|---|---|---|---|
| 60 | | | |

| | 1 | 8 |
|---|---|---|
| × | 6 | 0 |
| | | |
| | | |

**4**

|   | 1 | 6 |
|---|---|---|
| × | 2 | 0 |

**5**

|   | 4 | 0 |
|---|---|---|
| × | 1 | 7 |

**6**

|   | 2 | 5 |
|---|---|---|
| × | 6 | 0 |

**7**

|   | 5 | 0 |
|---|---|---|
| × | 3 | 8 |

**8**

|   | 8 | 0 |
|---|---|---|
| × | 1 | 9 |

**9**

|   | 4 | 1 |
|---|---|---|
| × | 9 | 0 |

**10** **Challenge** Rachel's mom bought 30 books at the book fair. Ten of the books cost $12 each, and the rest of the books cost $11 each. How much did she spend?

$

# Recording Your Process of Multiplication

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

Name _____    Date _____

**Use the chart and vertical record to help you complete each problem.**

**1** 13    18    ☐

| × | 10 | 3 | 13 |
|---|----|---|----|
| 10 | 100 | | |
| 8 | | | |
| 18 | | | |

|  |  | 1 | 3 |
|---|---|---|---|
| | × | 1 | 8 |
| 10 × 10 → | | 1 | 0 | 0 |
| 3 × 10 → | | | | |
| 10 × 8 → | | | | |
| 3 × 8 → | | | | |
| 13 × 18 → | | | | |

**2** 23    14    ☐

| × | 20 | 3 | 23 |
|---|----|---|----|
| 4 | | | |
| 10 | | | |
| 14 | | | |

|  |  | 2 | 3 |
|---|---|---|---|
| | × | 1 | 4 |
| 20 × 4 → | | | | |
| → | | | | |
| → | | | | |
| → | | | | |
| 23 × 14 → | | | | |

**Find the products. Record your work in the boxes below each problem.**

**3**

|   | 2 | 7 |
|---|---|---|
| × | 1 | 6 |

**4**

|   | 3 | 8 |
|---|---|---|
| × | 4 | 3 |

**5**

|   | 2 | 6 |
|---|---|---|
| × | 5 | 4 |

**6**

|   | 6 | 7 |
|---|---|---|
| × | 6 | 8 |

**7**

|   | 6 | 8 |
|---|---|---|
| × | 6 | 8 |

**8**

|   | 6 | 7 |
|---|---|---|
| × | 6 | 9 |

**9 Challenge** 86 people came to the school car wash. The charge for having your car washed was $12. The students spent $150 on supplies. How much money did they make, after paying for supplies?

$ _____

Name _____  Date _____

# Checking for Reasonable Answers

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

## Look for ways to make the multiplication easier. Record as much of your work as you need.

**1**

|   | 6 | 7 |
|---|---|---|
| × | 2 | 3 |

**2**

|   | 3 | 5 |
|---|---|---|
| × | 2 | 6 |

**3**

|   | 3 | 2 |
|---|---|---|
| × | 6 | 5 |

**4**

|   | 5 | 2 |
|---|---|---|
| × | 1 | 8 |

**5**

|   | 8 | 4 |
|---|---|---|
| × | 7 | 6 |

**6**

|   | 7 | 6 |
|---|---|---|
| × | 8 | 4 |

**7**

|   | 6 | 7 |
|---|---|---|
| × | 3 | 8 |

**8**

|   | 6 | 7 |
|---|---|---|
| × | 4 | 8 |

**9**

|   | 6 | 7 |
|---|---|---|
| × | 5 | 8 |

**10**

|   | 8 | 4 |
|---|---|---|
| × | 8 | 7 |

**11**

|   | 1 | 8 | 4 |
|---|---|---|---|
| × |   | 8 | 7 |

**12 Challenge** Amy tried 1,904    21 and got 70,085 as the answer. Describe one quick way to show this is NOT correct, without doing the whole problem.

_____

_____
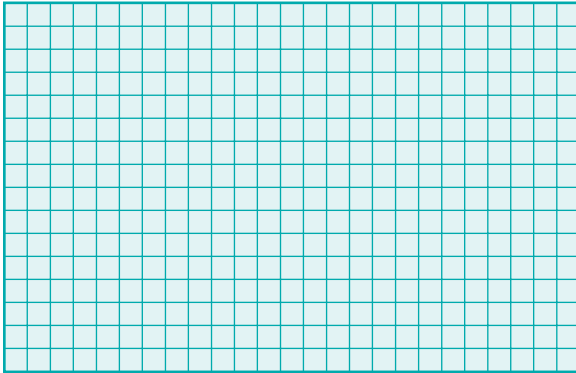
_____

Name _____ Date _____

# Multiplication Situations

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

**All of these problems can be solved using the same numbers. Fill in the missing numbers.**

**1** The kitchen floor is 25 tiles long 16 tiles wide.

[grid image]

☐ tiles are on the kitchen floor.

**2** I have 16 quarters. How much money do I have?



☐

**3** There are 400 ounces in _____ pounds.

    16 ounces    1 pound

**4** A bakery made _____ cakes and cut each cake into 25 pieces. There were 400 pieces to sell.

**5** There are 16 classes in the school. Each class has ☐ students. There are 400 students in the school.

**6** Write another problem that can be solved using 16   25   400.

_____

_____

_____

Ms. Johnson's students raise money for charity at the school store. They sell school supplies to the other students. Solve these problems about the store.

## SCHOOL STORE

| | |
|---|---|
| Eraser . . . . . . . . .19¢ | Pencil . . . . . . . . .34¢ |
| Black Pen . . . . . .47¢ | Red Pen . . . . . . . .96¢ |

**7** A box of markers costs 24 times as much as one eraser. How much does a box of markers cost?

_____

**8** Each student in Ms. Johnson's class works at the school store 27 hours per year. There are 26 students in the class. How many hours do the students work all together?

_____ hours

**9** Ms. Yee bought 37 pencils and 26 erasers. How much did she pay?

_____

**10** Red pens come in packs of 48 pens. How much would an entire pack cost?

_____

**11 Challenge** One morning, **17 students** each bought **one black pen**. How much money did they spend all together?
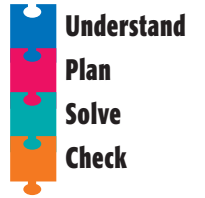
_____

**12 Challenge** The school store earned **$28** this week. The store is open **34 weeks** per year. If the store earns this much money every week, how much money will it earn?
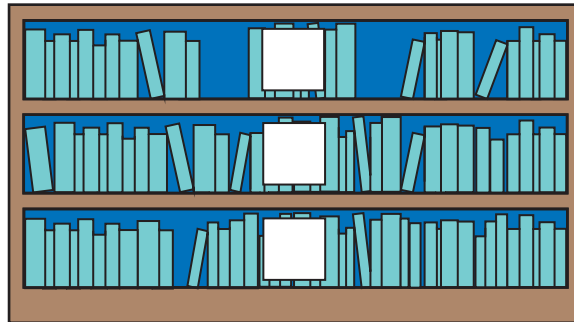
_____

# Problem Solving Strategy
## Guess and Check
NCTM Standards 1, 2, 6, 7, 8, 9, 10

Name _____ Date _____

Understand
Plan
Solve
Check

**1** The sum of two numbers is 25, and their product is 156. What are the numbers?

[ ] and [ ]

**2** All of Laura's 105 books are on 3 shelves. Each shelf has 5 more books than the shelf above it. How many books are on each shelf?
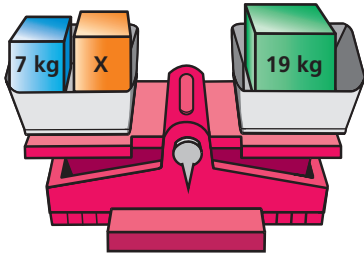


**3** Eight friends shared $192 equally. How much money did each friend get?

[ ]

# Problem Solving Test Prep

**Choose the correct answer.**

**1** What is the weight of box X on the scale?



**A.** 26 kg     **C.** 12 kg

**B.** 25 kg     **D.** 11 kg

**2** What product can you find using the array?

| × |     | 9 |   |
|---|-----|---|---|
| 10 | 100 | 90 |   |
|   | 20 | 18 |   |
|   |     |    |   |

**A.** 10     9          **C.** 12     19

**B.** 10     12         **D.** 19     28

**3** Which number completes the magic square?

| 4 | 20 | 9 |
|---|----|---|
| 16 | 11 | 6 |
| 13 | 2 | ■ |

**A.** 18     **C.** 15

**B.** 17     **D.** 14

**4** Which set of measures is ordered correctly from least to greatest?

**A.** 3 pints, 2 quarts, 5 cups

**B.** 1 gallon, 6 quarts, 11 cups

**C.** 2 gallons, 9 quarts, 24 cups

**D.** 1 gallon, 5 quarts, 21 cups

## ✏️ Show What You Know

**Solve each problem. Explain your answer.**

**5** Ralph has 20 coins. He makes 4 stacks so that each stack has a different number of coins. What is the largest number of coins he could put in any stack? Explain.

_____

_____

_____

**Chapter 6**

# Review/Assessment

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

## Solve. Lessons 1 and 2

**1**

| | 9 |
|---|---|
| × | |
| 6 | |

**2**

| | 7 |
|---|---|
| × | |
| 3 | |

**3**

| | | |
|---|---|---|
| 6 | 7 | |
| 6 | 70 | |
| 60 | 7 | |
| 60 | 70 | |

**4** Use the array and the chart to solve the problem. Lessons 3, 4, and 5

18    26    [ ]

| | 20 | [ ] |
|---|---|---|
| 10 | | |
| [ ] | | |

| × | | |
|---|---|---|
| | | |
| | | |

| | 1 | 8 |
|---|---|---|
| × | 2 | 6 |
| | | |
| | | |
| | | |
| | | |
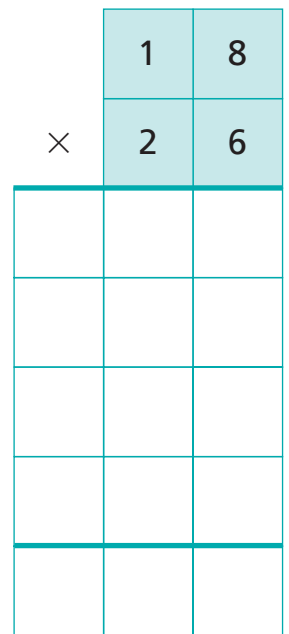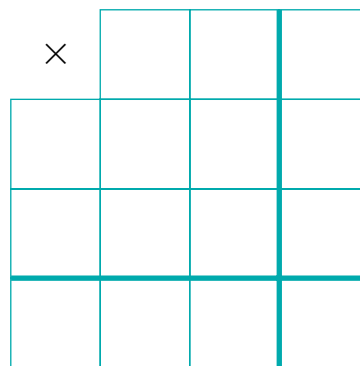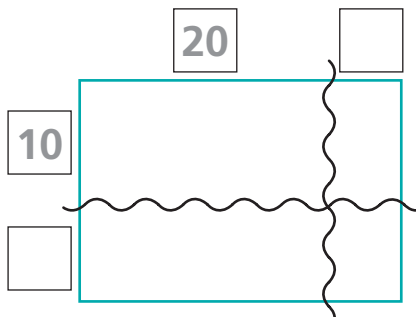
## Find the product.

**5**

|   | 4 | 3 |
|---|---|---|
| × | 4 | 3 |

**6**

|   | 8 | 0 |
|---|---|---|
| × | 7 | 5 |

**7**

|   | 2 | 3 |
|---|---|---|
| × | 1 | 3 |

## Solve.

**8** Stephen read for 30 minutes each night. He read 13 pages per night. How many pages had he read after 14 nights?

_____ pages

**9** Julie unpacked 22 boxes of library books. Evan unpacked 19 boxes of library books. Each box held 28 books. How many books did they unpack?

_____ books

**10** Mr. Myer's class is planning a field trip to the science center. Twelve students and six adults will be on the trip. The total cost for tickets will be $216. Each adult ticket costs $3 more than each student ticket. How much is each student tickets? Explain your answer.

_____

_____