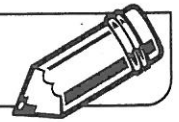
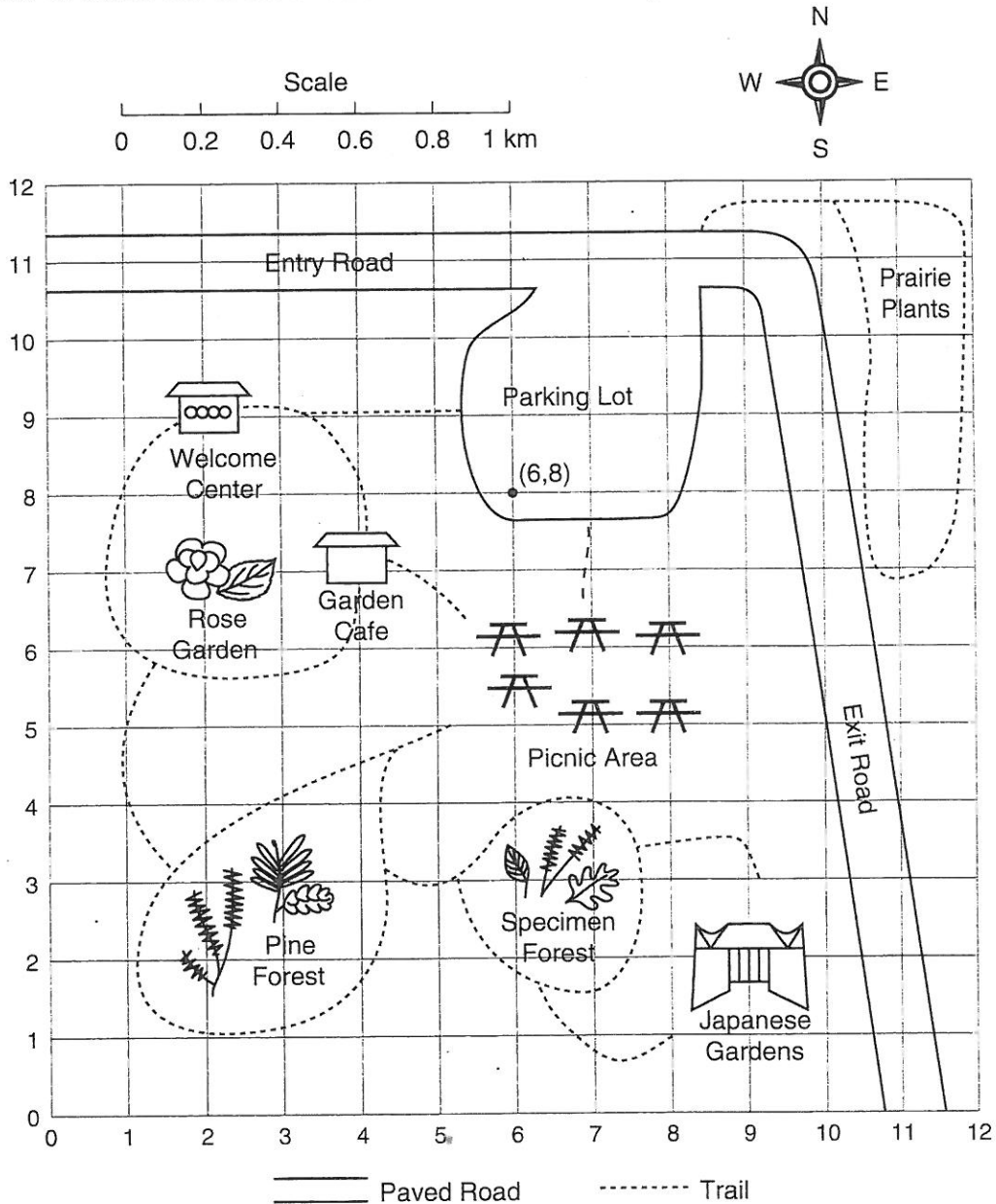


LESSON
9•1

A Botanical Garden Map



A fifth-grade class is visiting a botanical garden. They plan to see every attraction and have lunch in the picnic area. Each student has a copy of the map below. They want to use ordered pairs of numbers to label each attraction and the picnic area.



Find and plot the ordered pairs of numbers for each location.

School Bus (6,8)

Welcome Center _____

Prairie Plants _____

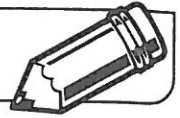
Rose Garden _____

Pine Forest _____

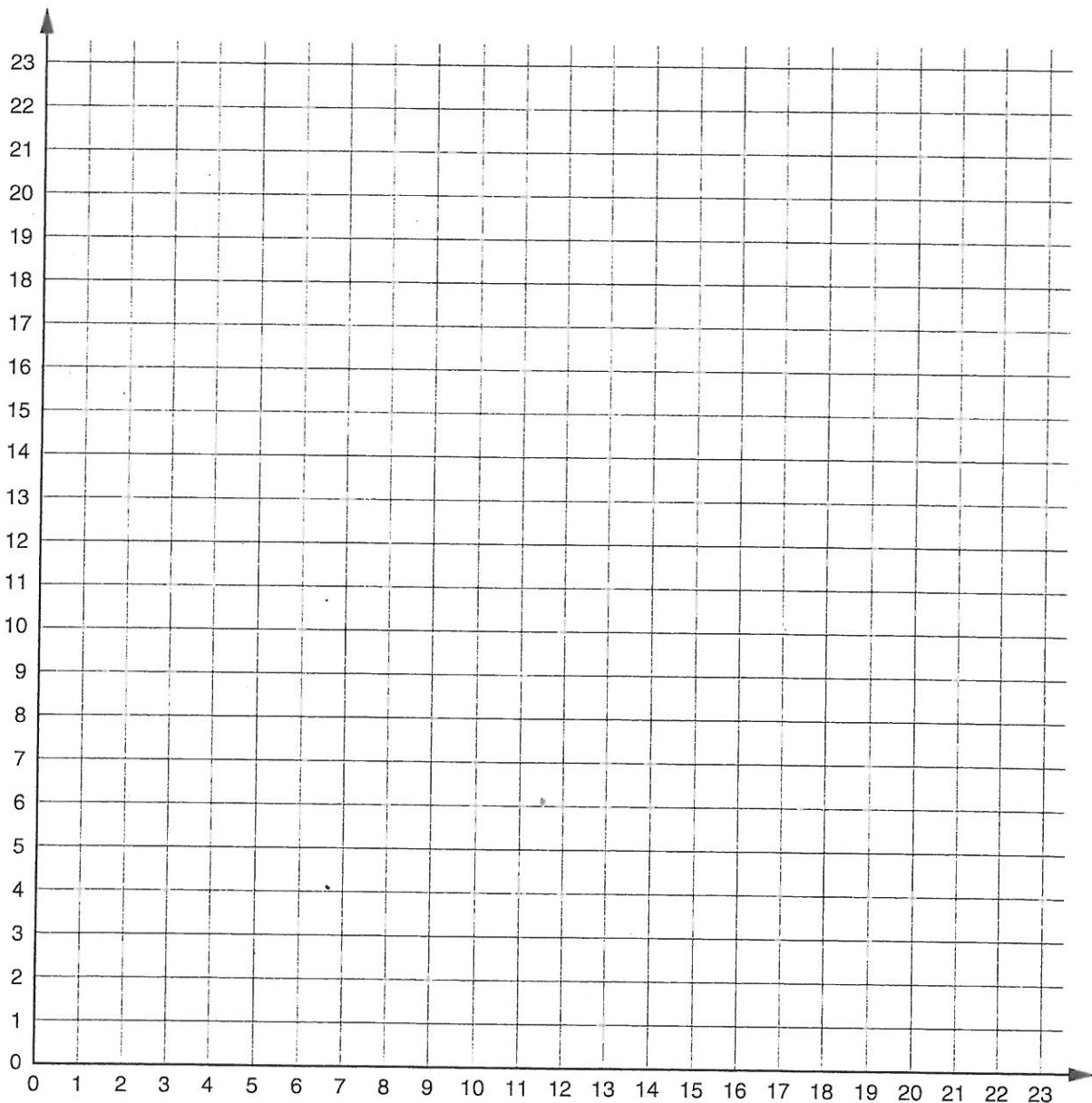
Picnic Area _____

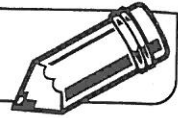
Specimen Forest _____

Japanese Gardens _____

LESSON
9•2**Plotting a Picture**

1. Draw a simple picture on the grid by connecting points with straight lines. (Use at least 8 points, but no more than 14 points.)
2. Record the ordered pairs you have plotted on a separate sheet of paper. Be sure you record your points in the order in which they need to be connected.
3. Give your list of coordinates and a blank grid to your partner, and have your partner reproduce your drawing by plotting and connecting the points.
4. Compare your original picture with your partner's copy.

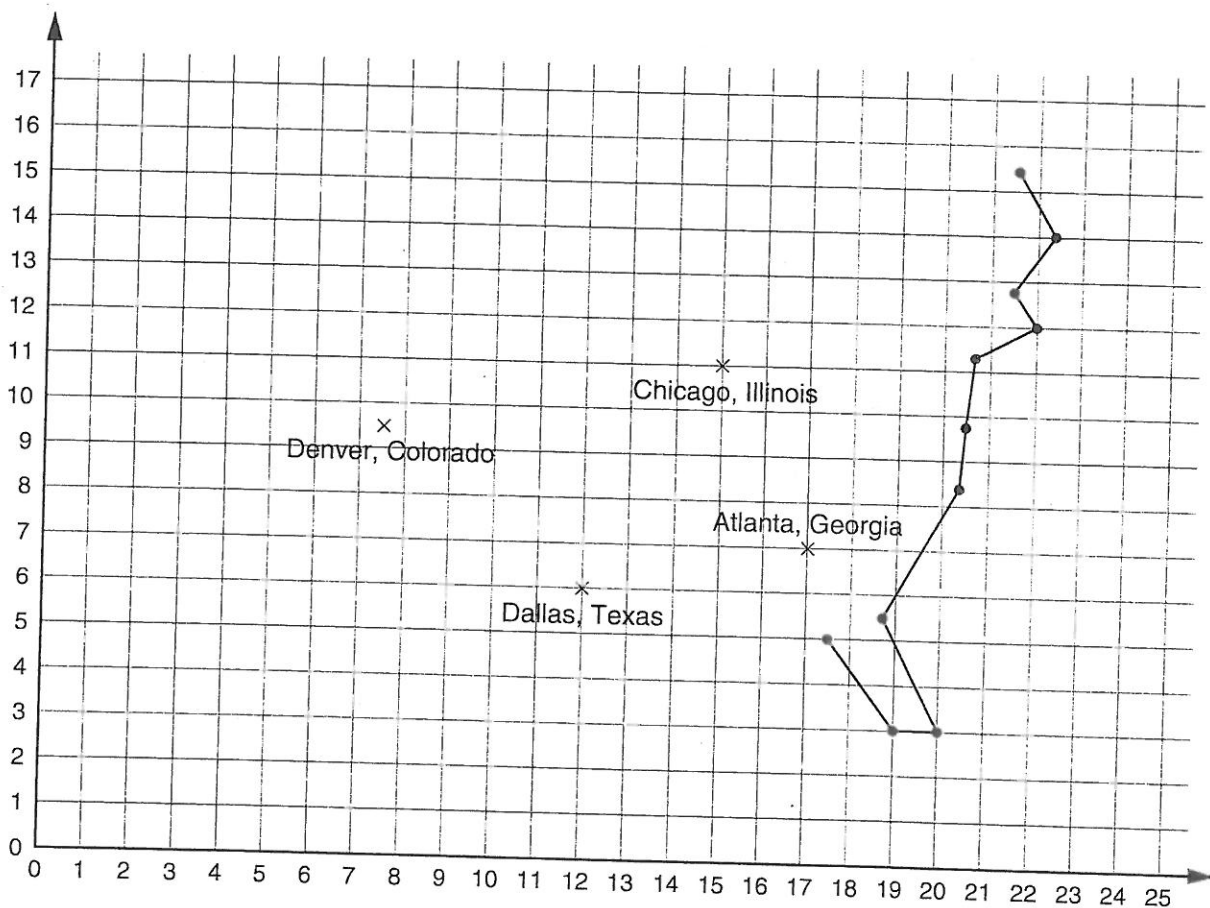


LESSON
9·2
Plotting a Map


1. a. Plot the following ordered number pairs on the grid:

(21,14); (17,11); (17,13); (15,14); (2,16); (1,11);
 (2,8); (3,6); (7.5,5.5); (11,2.5); (12.5,4)

- b. Connect all the points in the same order in which they were plotted. Then connect (12.5,4) to (17.5,5) and (21.5,15.5) to (21,14). When you have finished, you should see an outline map of the continental United States.



2. Write the coordinates of each city.

a. Chicago, Illinois (_____, _____)

b. Atlanta, Georgia (_____, _____)

c. Dallas, Texas (_____, _____)

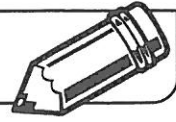
d. Denver, Colorado (_____, _____)

3. Plot each city on the grid and write in the city name.

a. Billings, Montana (7.5,13)

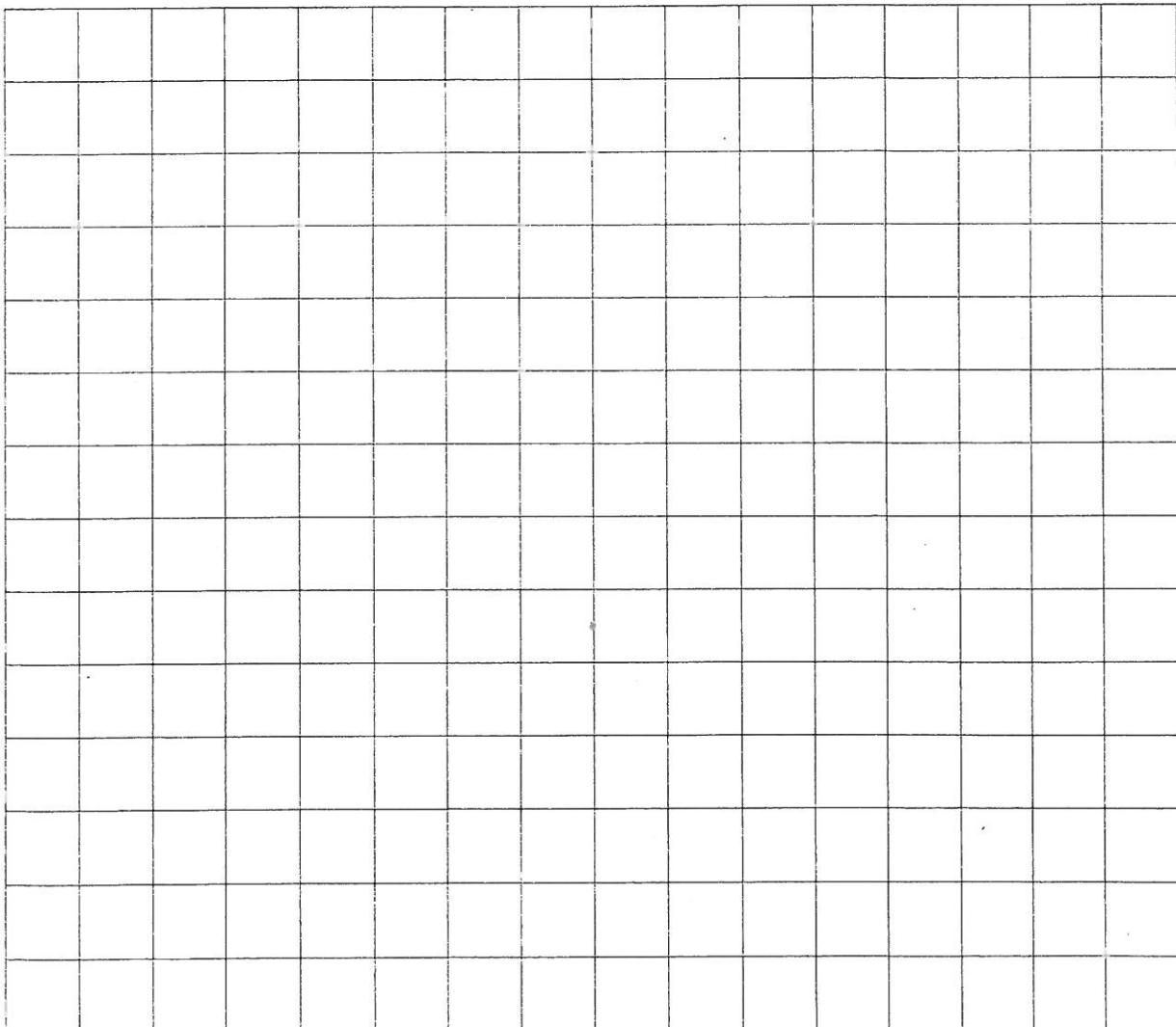
b. Salt Lake City, Utah (5.5,10.5)

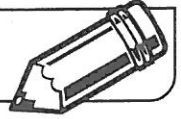
4. The U.S.–Mexican border is shown by line segments from (3,6) to (7.5,5.5) and from (7.5,5.5) to (11,2.5). Write the border name on the grid.

LESSON
9•4**Comparing Perimeter and Area**

- ◆ Roll 2 six-sided dice. The numbers on top are the lengths of 2 sides of a rectangle.
- ◆ Draw the rectangle in the grid below.
- ◆ Record the perimeter and the area of the rectangle in the table.
- ◆ Use centimeter cubes to find other rectangles that have the same area, but different perimeters. Draw the rectangles and record their perimeters and areas in the table.
- ◆ Repeat until you have filled the table. You might need to roll the dice several times.

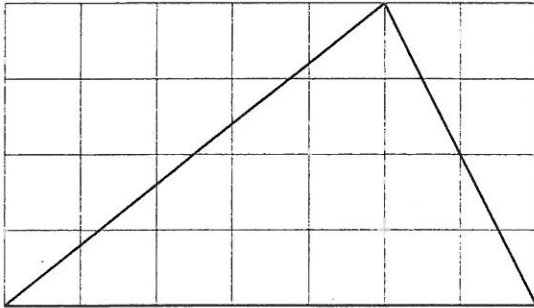
Rectangle	Perimeter	Area
A		
B		
C		
D		
E		
F		



LESSON
9·6
Areas of Triangles and Parallelograms


1. Cut out Triangles C and D from *Math Masters*, page 272 and form a parallelogram. Do *not* cut out the shapes below. Tape the two triangles together to form a parallelogram.

Triangle C



Tape your parallelogram in this space.

Base = _____ cm

Length = _____ cm

Height = _____ cm

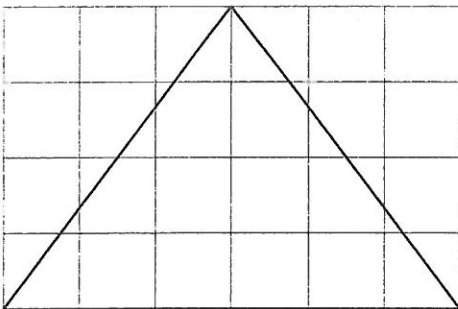
Height = _____ cm

Area of triangle = _____ cm²

Area of parallelogram = _____ cm²

2. Do the same with Triangles E and F on *Math Masters*, page 272.

Triangle E



Tape your parallelogram in this space.

Base = _____ cm

Base = _____ cm

Height = _____ cm

Height = _____ cm

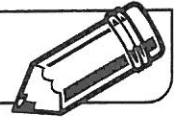
Area of triangle = _____ cm²

Area of parallelogram = _____ cm²

3. Write a formula for finding the area of a triangle.
-

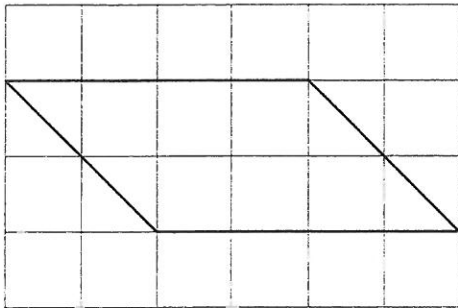
LESSON
9•6

Areas of Parallelograms



1. Cut out Parallelogram A on *Math Masters*, page 272 and form a rectangle. Do *not* cut out the shapes on this page. Tape the parallelogram to form a rectangle.

Parallelogram A



Tape your rectangle in the space below.

Base = _____ cm

Length = _____ cm

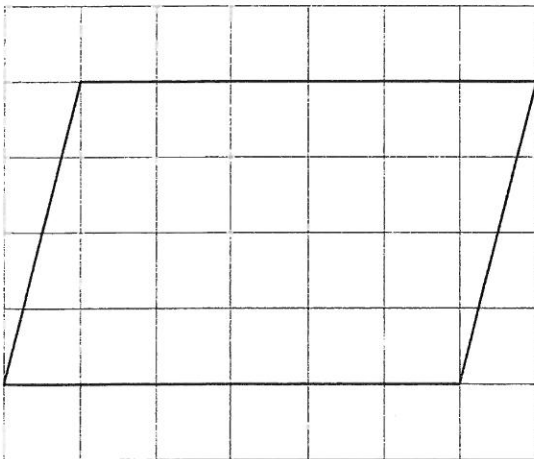
Height = _____ cm

Width = _____ cm

Area of parallelogram = _____ cm²Area of rectangle = _____ cm²

2. Do the same with Parallelogram B on *Math Masters*, page 272.

Parallelogram B



Tape your rectangle in the space below.

Base = _____ cm

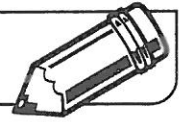
Length = _____ cm

Height = _____ cm

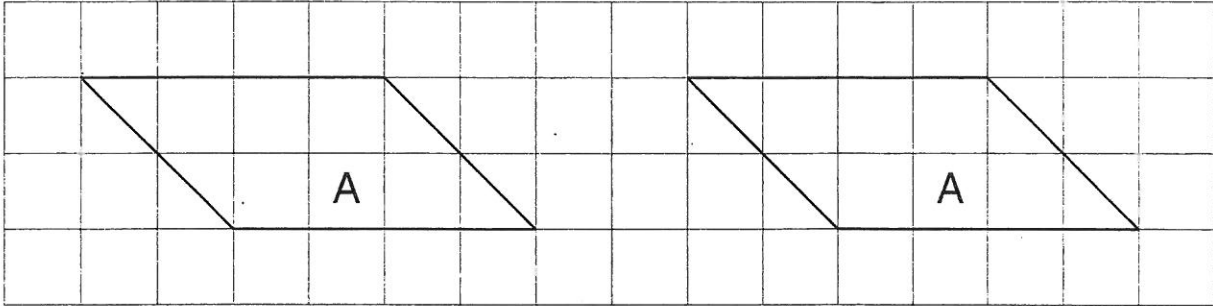
Width = _____ cm

Area of parallelogram = _____ cm²Area of rectangle = _____ cm²

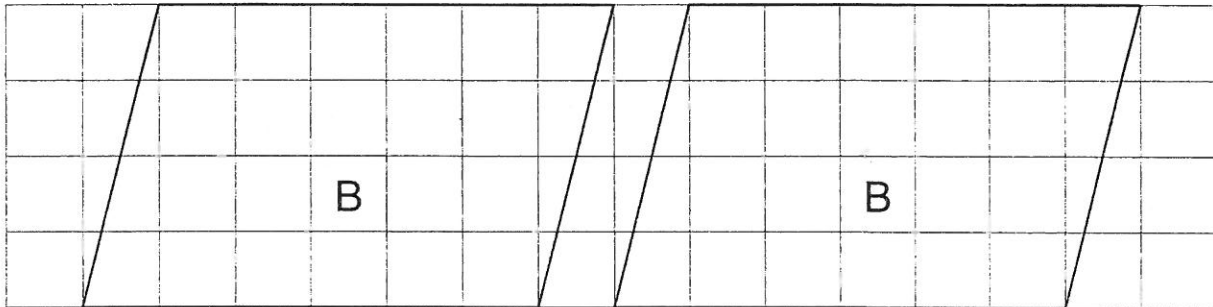
3. Write a formula for finding the area of a parallelogram.
- _____

LESSON
9•6
Areas of Parallelograms and Triangles


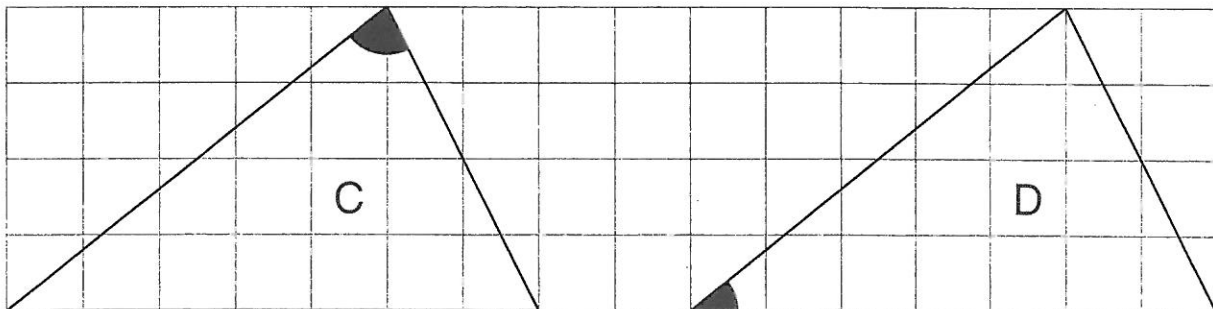
Cut out Parallelogram A. (Use the second Parallelogram A if you make a mistake.)
 Cut it into 2 pieces so that it can be made into a rectangle. Tape the rectangle on
Math Masters, page 270.



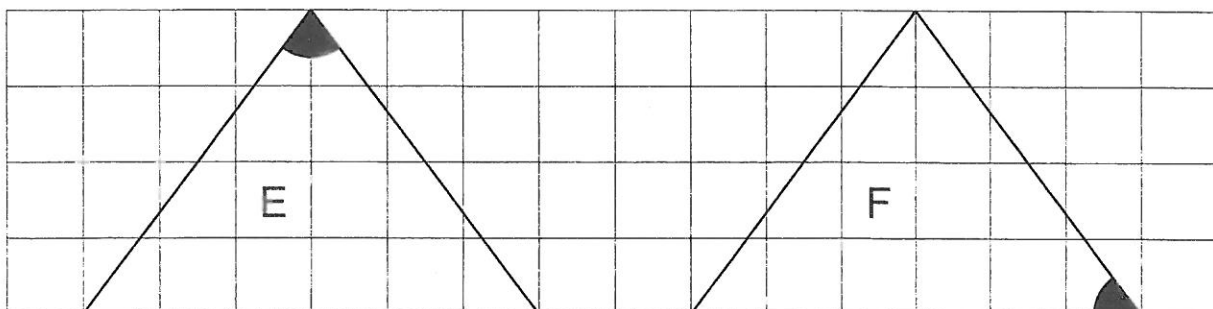
Do the same with Parallelogram B.

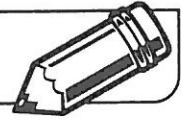


Cut out Triangles C and D. Tape them together at the shaded corners to form
 a parallelogram. Tape the parallelogram in the space next to Triangle C on
Math Masters, page 271.



Do the same with Triangles E and F.



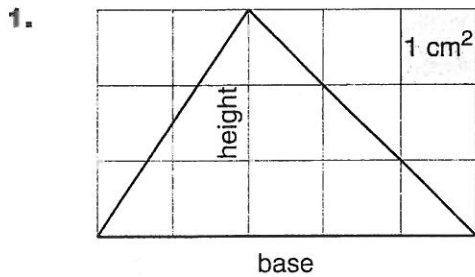
LESSON
9·7
Practice with Area Formulas


Write the following formulas.

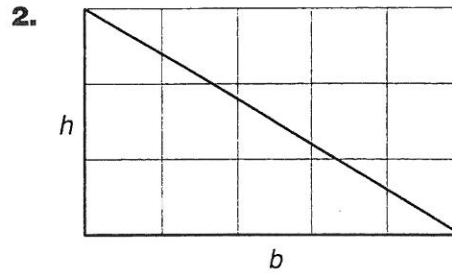
Area of a triangle: _____

Area of a parallelogram: _____

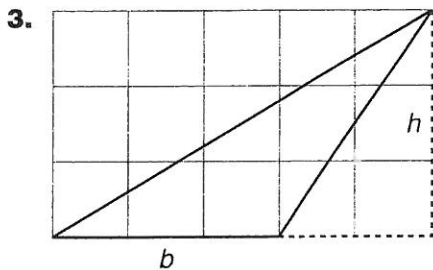
Use a formula to find the area of each figure.



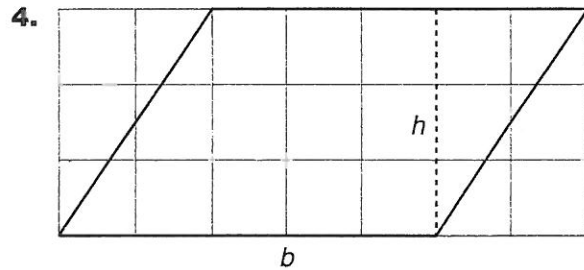
Area: _____



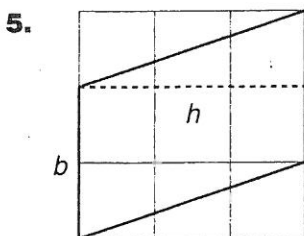
Area: _____



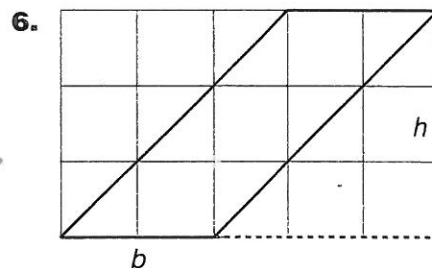
Area: _____



Area: _____



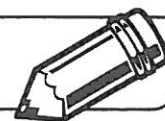
Area: _____



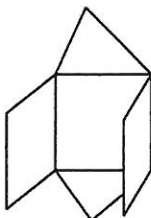
Area: _____

LESSON
9•9

Unfolding Geometric Solids

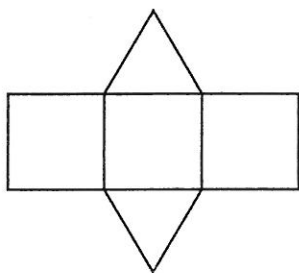


If you could unfold a prism so that its faces are laid out as a set attached at their edges, you would have a flat diagram for the shape. Imagine unfolding a triangular prism. There are different ways that you could make diagrams, depending on how you unfold the triangular prism.

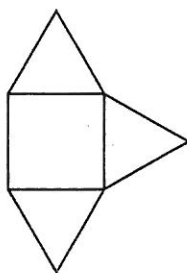


Which of the following are diagrams that could be folded to make a triangular prism?
Write *yes* or *no* in the blank under each diagram.

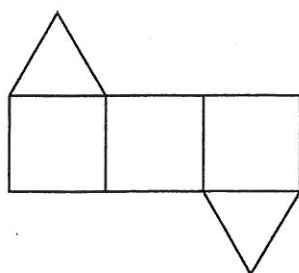
1.



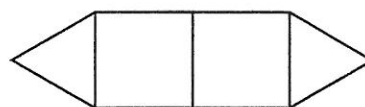
2.



3.

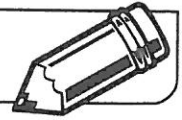


4.



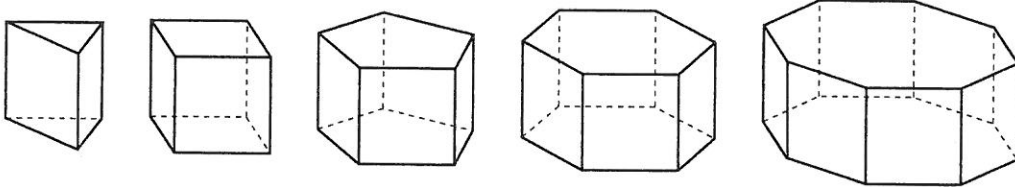
LESSON
9•9

Using Faces and Bases



The flat diagram formed from unfolding a prism so that its faces are laid out flat and attached at their edges is called a **geometric net**. For a given prism, there are different nets, depending on how you think about unfolding the prism.

1. Cut out the figures on *Math Masters*, page 287. You and your partner will use the figures to build nets for the prisms below.

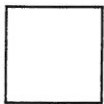


2. Take turns to select, draw, and place figures to form a net for a prism.
3. The partner who places the figure that completes the net states the number of faces and the number of bases. For example, if the net for a cube were completed, the partner would say, "4 faces, 2 bases." This ends the round.
4. A partner can also block the completion of a net. In this case, the partner would put down a figure that would prevent completing the net in the following placement and say "block." The blocked partner then has the opportunity to complete the net by placing two figures and stating the number of faces and bases. Again, this would end the round.

Example:

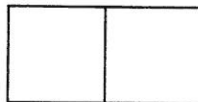
Student 1

Draw 1:



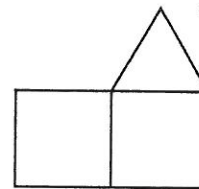
Student 2

Draw 2:



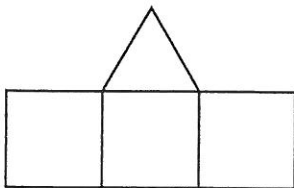
Student 1

Draw 3:



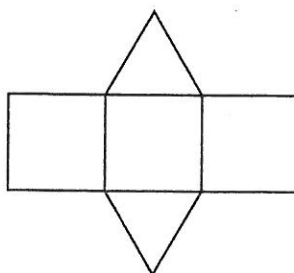
Student 2

Draw 4:



Student 1

Draw 5:



Student 1 states,
"3 faces, 2 bases."

This ends the round.

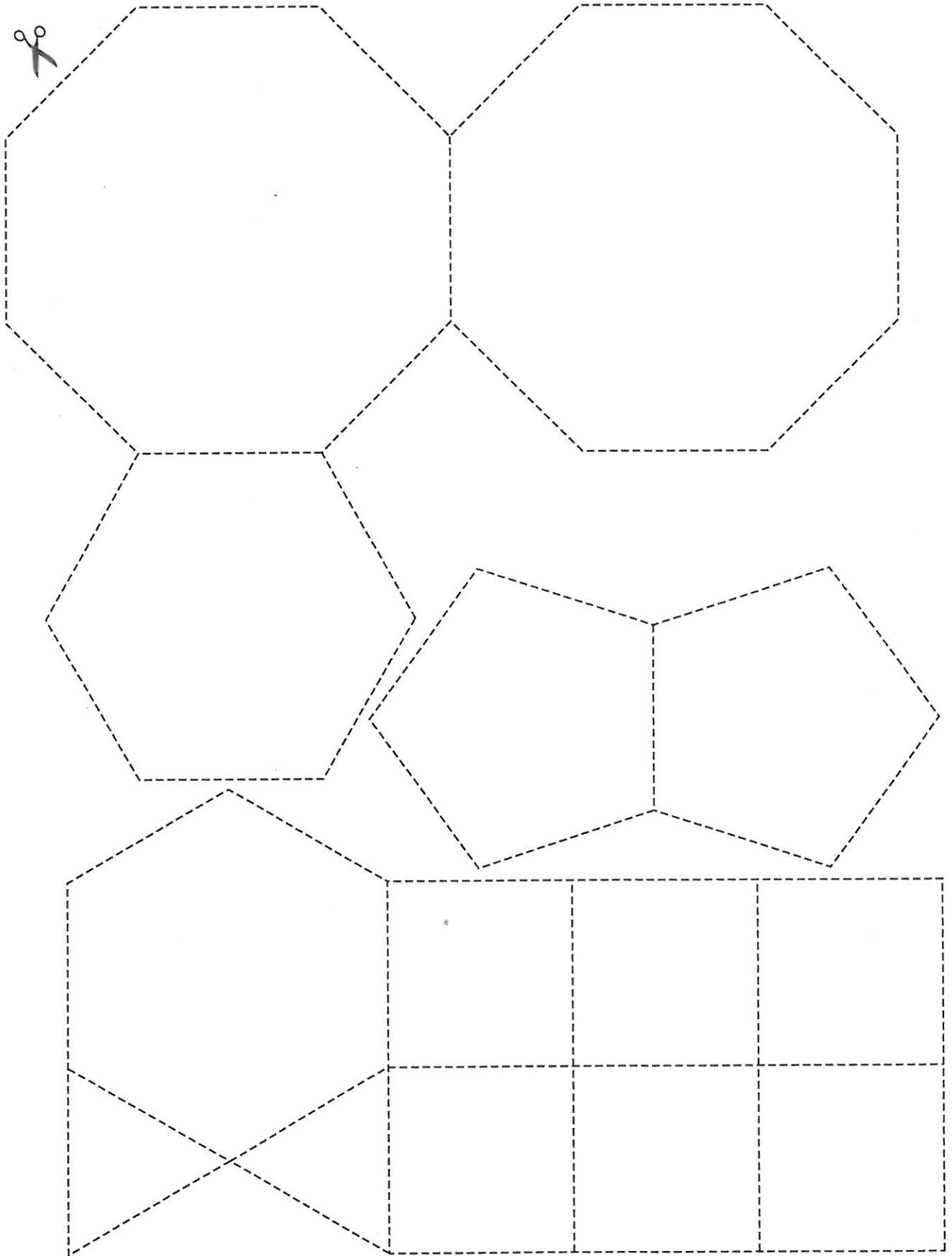
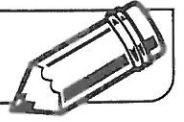
Name _____

Date _____

Time _____

LESSON
9•9

Faces and Bases



Name _____

Date _____

Time _____

LESSON
9•9

Triangular Prism Template

