

LESSON

21

Triangles, Rectangles, Squares, and Circles

WARM-UP

Facts Practice: 100 Subtraction Facts (Test B)

Mental Math:

a. $44 + 32$

b. $57 + 20$

c. $57 + 19$

d. $32 + 43 + 100$

e. $58 + 31 + 200$

f. $56 + 29 + 100$

g. What number should be added to each of these numbers for the total to be 10: 7, 2, 9, 5, 6?

Patterns:

The multiples of seven are 7, 14, 21, and so on. On a hundred number chart, shade the squares that contain a multiple of seven. Which of the shaded squares contain an even number that is a multiple of five?[†]

NEW CONCEPT

In this lesson we will practice drawing triangles, rectangles, squares, and circles.

Example 1 Draw a triangle whose sides all have the same length.

Solution You may need to practice on scratch paper to understand how to draw this triangle. A triangle has three sides, but those sides can be positioned many different ways. If you start with a “square corner,” the third side will be too long.



A triangle whose sides are the same length looks like this:



[†]A hundred number chart is available on Activity Sheet 12 in the *Saxon Math 5/4—Homeschool Tests and Worksheets*.

Example 2 Draw a rectangle whose sides all have the same length.

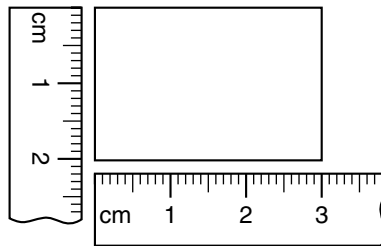
Solution A rectangle has four sides and square corners. It does not have to be longer than it is wide. A rectangle whose sides are the same length looks like this:



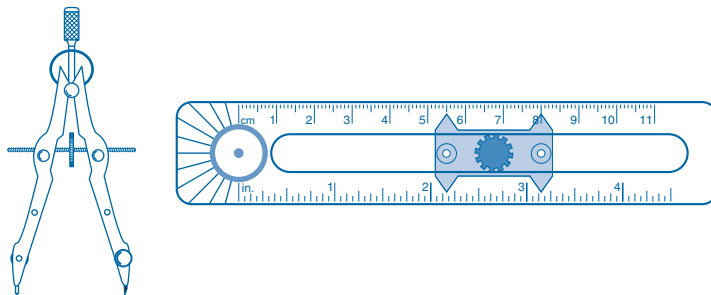
This figure looks like a square because it *is* a square. It is also a rectangle. **A square is a special kind of rectangle.**

Example 3 Draw a rectangle that is 3 cm long and 2 cm wide.

Solution We use a centimeter ruler to help us make the drawing.



To draw circles, we can use a tool called a **compass**. Below we show two types of compasses:

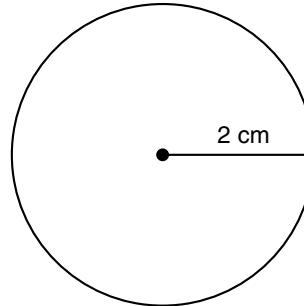


There are two points on a compass: a pivot point and a pencil point. We swing the pencil point around the pivot point to draw a circle. The distance between the two points is the **radius** of the circle.

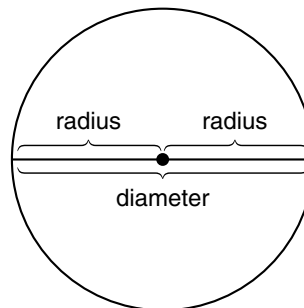
The radius of a circle is the distance from the **center** of the circle to the circle. The plural of *radius* is **radii**.

Example 4 Draw a circle with a radius of 2 cm.

Solution Set the compass so that the radius is 2 cm. Place the pivot point; then swing the pencil point of the compass around it to draw the circle.



The **diameter** of a circle is the distance across the circle through the center. As the diagram below illustrates, the diameter of a circle equals two radii.



Example 5 If the radius of a circle is 2 cm, then what is the diameter of the circle?

Solution Since the diameter of a circle equals two radii, the diameter of a circle with a 2-cm radius is **4 cm**.

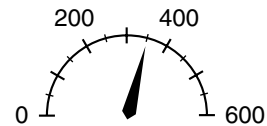
LESSON PRACTICE

- Practice set**
- Draw a triangle with two sides that are the same length.
 - Draw a rectangle that is about twice as long as it is wide.
 - Use a compass to draw a circle with a radius of 1 inch.
 - What is the diameter of a circle that has a 3-cm radius?
 - What is another name for a rectangle whose length is equal to its width?

MIXED PRACTICE

- Problem set**
- ^(1, 13) Hiroshi had four hundred seventeen marbles. Harry had two hundred twenty-two marbles. How many marbles did Hiroshi and Harry have in all?
 - ^(11, 14) Tisha put forty jacks into a pile. After Jane added all of her jacks there were seventy-two jacks in the pile. How many jacks did Jane put in?
 - ⁽⁴⁾ The ones digit is 5. The number is greater than 640 and less than 650. What is the number?
 - ⁽¹⁶⁾ Write seven hundred fifty-three in expanded form.
 - ⁽⁶⁾ If $x + y = 10$, then what is the other addition fact for x , y , and 10? What are the two subtraction facts for x , y , and 10?

- ⁽¹⁸⁾ The needle is pointing to what number on this scale?



- ^(Inv. 2) Use a centimeter ruler to measure this rectangle.
 - What is the length?
 - What is the width?
 - What is the perimeter?



$$\begin{array}{r} 8. \quad 493 \\ \supset(13) \quad + 278 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad \$486 \\ \supset(13) \quad + \$378 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad \$524 \\ \supset(13) \quad + \$109 \\ \hline \end{array}$$

- ^(Inv. 2, 21) Draw a triangle. Make each side 2 cm long. What is the perimeter of the triangle?
- ^(Inv. 2, 21) Draw a square with sides 2 inches long. What is the perimeter of the square?

$$\begin{array}{r} \mathbf{13.} \quad 17 \\ \text{\small (12)} \quad - \quad A \\ \hline 9 \end{array}$$

$$\begin{array}{r} \mathbf{14.} \quad 45 \\ \text{\small (15)} \quad - \quad 29 \\ \hline \end{array}$$

$$\begin{array}{r} \mathbf{15.} \quad 15 \\ \text{\small (12)} \quad - \quad B \\ \hline 6 \end{array}$$

$$\begin{array}{r} \mathbf{16.} \quad 62 \\ \text{\small (15)} \quad - \quad 45 \\ \hline \end{array}$$

$$\begin{array}{r} \mathbf{17.} \quad 24 \\ \text{\small (14)} \quad + \quad D \\ \hline 45 \end{array}$$

$$\begin{array}{r} \mathbf{18.} \quad 14 \\ \text{\small (16)} \quad - \quad B \\ \hline 2 \end{array}$$

$$\begin{array}{r} \mathbf{19.} \quad Y \\ \text{\small (16)} \quad - \quad 36 \\ \hline 53 \end{array}$$

$$\begin{array}{r} \mathbf{20.} \quad 75 \\ \text{\small (16)} \quad - \quad P \\ \hline 45 \end{array}$$

$$\begin{array}{r} \mathbf{21.} \quad 46 \\ \text{\small (17)} \quad 35 \\ \quad \quad 27 \\ \quad \quad + \quad 39 \\ \hline \end{array}$$

$$\begin{array}{r} \mathbf{22.} \quad 14 \\ \text{\small (17)} \quad 28 \\ \quad \quad 77 \\ \quad \quad + \quad 23 \\ \hline \end{array}$$

$$\begin{array}{r} \mathbf{23.} \quad 14 \\ \text{\small (17)} \quad 23 \\ \quad \quad 38 \\ \quad \quad + \quad 64 \\ \hline \end{array}$$

$$\begin{array}{r} \mathbf{24.} \quad 15 \\ \text{\small (17)} \quad 24 \\ \quad \quad 36 \\ \quad \quad + \quad 99 \\ \hline \end{array}$$

25. Write the next three numbers in each counting sequence:
(3, Inv. 1)

(a) ..., 28, 35, 42, _____, _____, _____, ...

(b) ..., 40, 30, 20, _____, _____, _____, ...

26. Alba drew a circle with a radius of 4 cm. What was the diameter of the circle?
(21)

A. 8 in.

B. 2 in.

C. 8 cm

D. 2 cm