Section 2.5 Practice Exercises

Study Skills Exercises

1. A good way to determine what will be on a test is to look at both your notes and the exercises assigned by your instructor. List five kinds of problems that you think will be on the test for this chapter.

2. Define the key terms.

   a. **Relation in *x* and *y***   b. **Domain of a relation**   c. **Range of a relation**

Review Exercises

For Exercises 3–6,

   a. Determine if the equation represents a horizontal line, a vertical line, or a slanted line.

   b. Determine the slope of the line (if it exists).

   c. Determine the *x*-intercept (if it exists).

   d. Determine the *y*-intercept (if it exists).

3. $2x - 3 = 4$

4. $2x - 3y = 4$

5. $3x - 2y = 4$

6. $2 - 3y = 4$

### Concept 2: Domain and Range of a Relation

For Exercises 7–14,

   a. Write the relation as a set of ordered pairs.

   b. Determine the domain and range. (See Examples 1–3.)

7.

State	% of Population Uninsured
Alabama	15.3
Florida	20.2
Massachusetts	13.4
California	18.8
Minnesota	7.9

8.

x	y
0	3
−2	$\frac{1}{2}$
−7	1
−2	8
5	1

9.

Country	Year of First Man or Woman in Space
USSR	1961
USA	1962
Poland	1978
Vietnam	1980
Cuba	1980

10.

| State, x	Year of Statehood, y
Maine	1820
Nebraska	1823
Utah	1847
Hawaii	1959
Alaska	1959

11.

12.

13.

14.
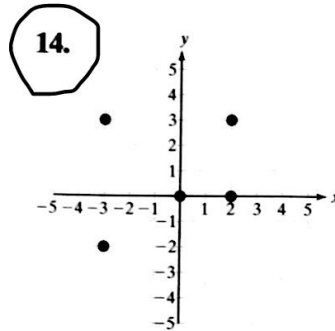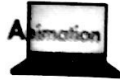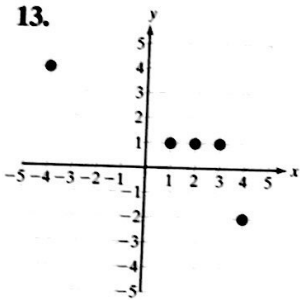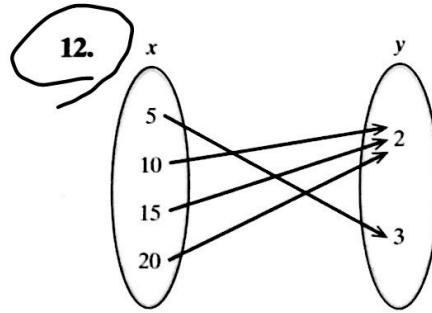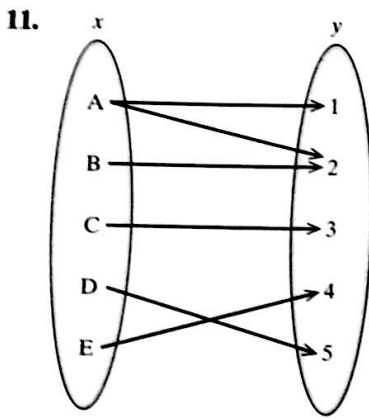
For Exercises 15–30, find the domain and range of the relations. Use interval notation where appropriate.
(See Example 4.)

15.

16.


17.

(−3, 2.8)

(1.3, −2.1)

18.

(0, 3)

(3.2, 2)

(−3.1, −1.8)

(0, −3)

19.

20.

21.

22.

23.

24.

25.

26.

27.

28.

29.

30.
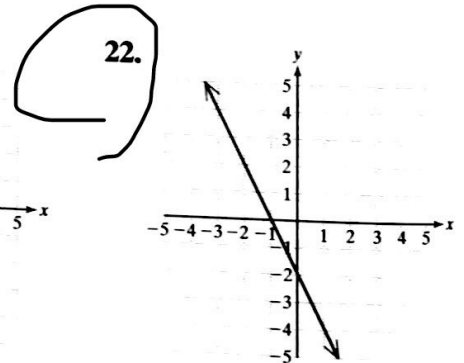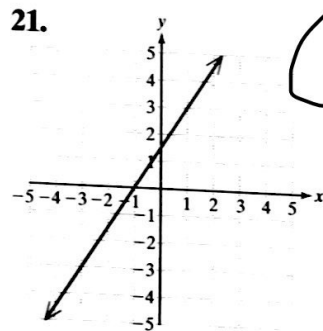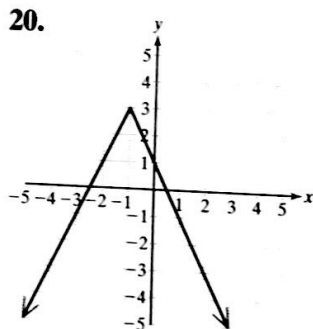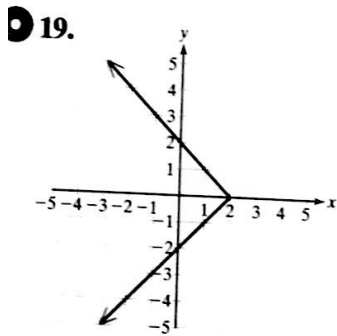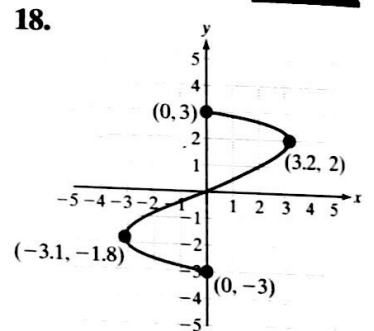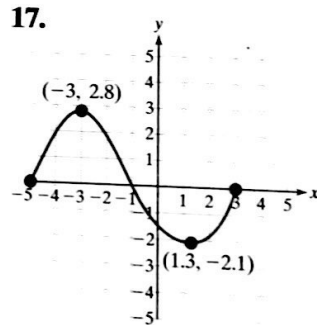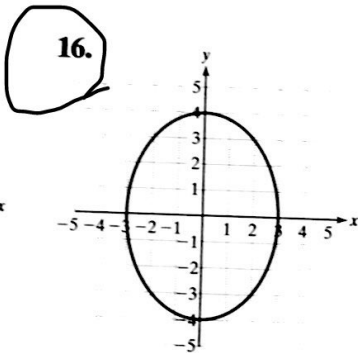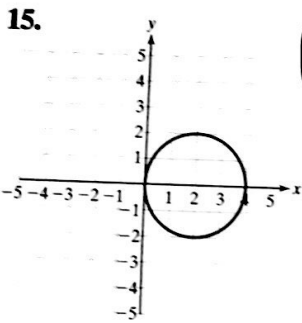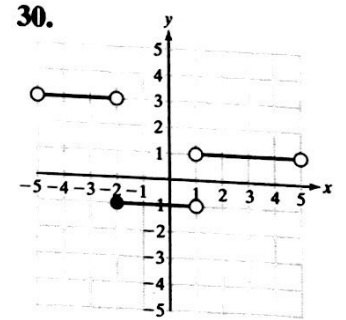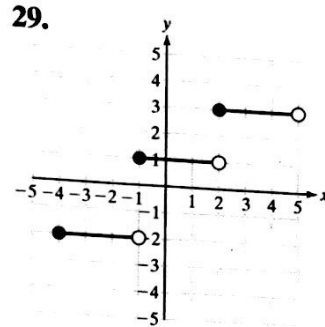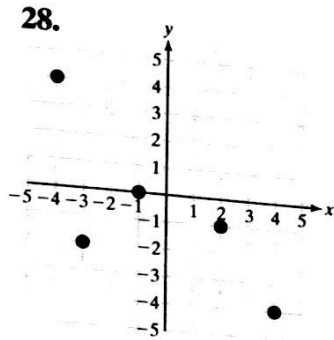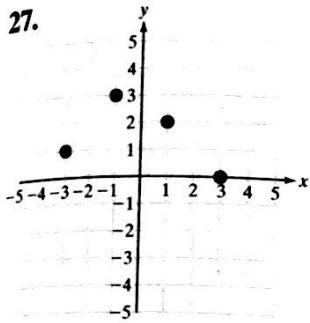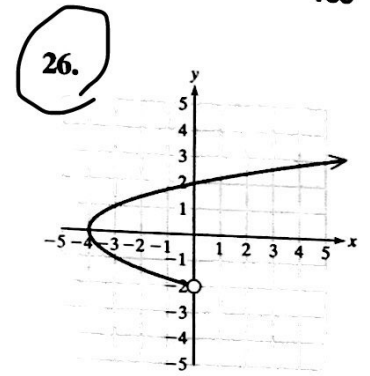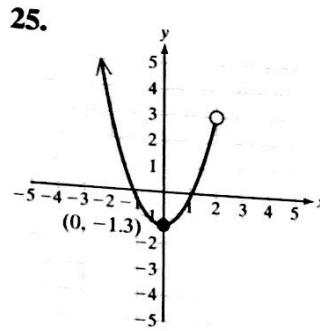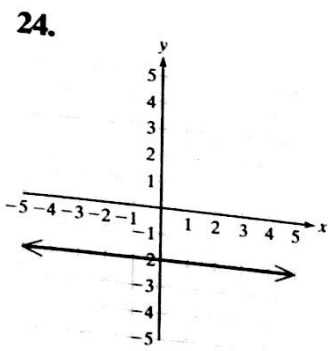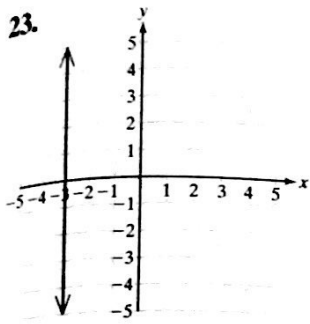
Concept 3: Applications Involving Relations

31. The table gives a relation between the month of the year and the average precipitation for that month for Miami, Florida. **(See Example 5.)**

a. What is the range element corresponding to April?

b. What is the range element corresponding to June?

c. Which element in the domain corresponds to the least value in the range?

d. Complete the ordered pair: (, 2.66)

e. Complete the ordered pair: (Sept.,)

f. What is the domain of this relation?

Month x	Precipitation (in.) y	Month x	Precipitation (in.) y
Jan.	2.01	July	5.70
Feb.	2.08	Aug.	7.58
Mar.	2.39	Sept.	7.63
Apr.	2.85	Oct.	5.64
May	6.21	Nov.	2.66
June	9.33	Dec.	1.83

Source: U.S. National Oceanic and Atmospheric Administration

32. The table gives a relation between a person's age and the person's maximum recommended heart rate.

a. What is the domain?

b. What is the range?

c. The range element 200 corresponds to what element in the domain?

d. Complete the ordered pair: (50,)

e. Complete the ordered pair: (, 190)

Age (years) x	Maximum Recommended Heart Rate (Beats per Minute) y
20	200
30	190
40	180
50	170
60	160

33. The population of Canada, y (in millions), can be approximated by the relation $y = 0.146x + 31$, where x represents the number of years since 2000.

a. Approximate the population of Canada in the year 2006.

b. In what year will the population of Canada reach approximately 32,752,000?