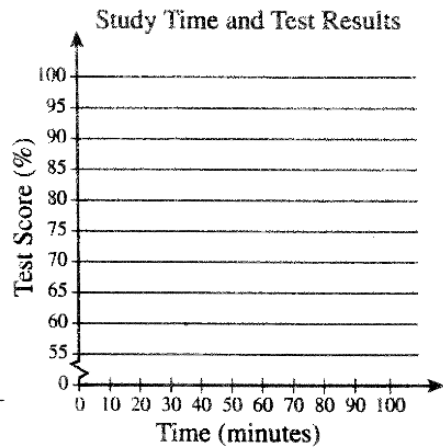| **SOL Tip** Statistics. Plot each point on the scatterplot using its coordinates, (x, y).	**Study Time (minutes)**	20	35	60	80	40	95	50	60	80	100	45	90
	Grade (%)	64	60	75	95	73	97	75	80	90	95	65	90

Display the data in a scatterplot. Use the line of best fit to predict the answer.

Step 1   Plot the twelve data points starting with the point (20, 64).

Step 2   Draw a line of best fit through the points (50, 75) and (80, 90) to fit the pattern of the data points. There is more than one correct way to draw this line.

**Step 3**   Locate the point on the line of best fit where time equals 70 minutes.

When the horizontal coordinate is 70, the vertical coordinate is about _____.

Study Time and Test Results

Test Score (%)

100
95
90
85
80
75
70
65
60
55
0

0 10 20 30 40 50 60 70 80 90 100

Time (minutes)

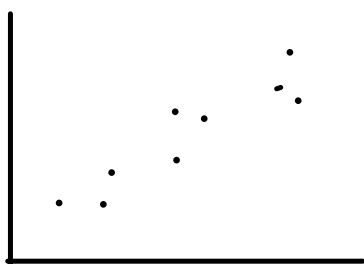**Solution**   A student who studied for 70 minutes could expect a grade of about _____%.

Scatterplot   p.36

Scatterplot - a graph made by plotting ordered pairs to show the relationship between two sets of data
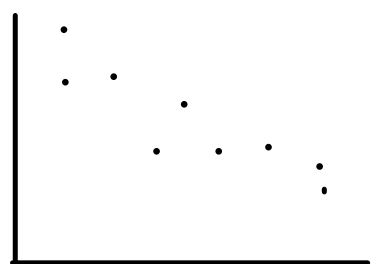
money earned |

hours worked
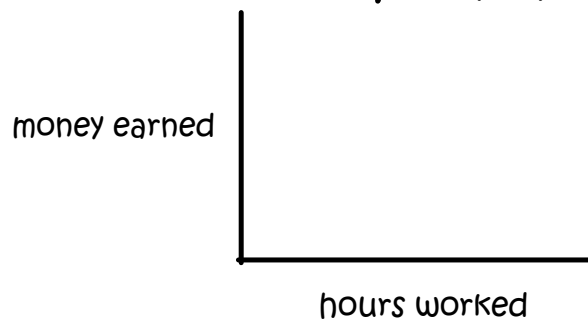
line of best fit - a line that approximates
the pattern of the data points
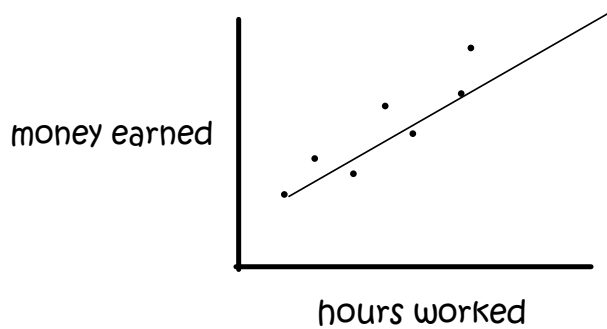
positive correlation

slanting upward - both
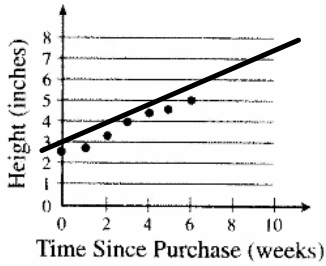sets of data increase
together.

negative correlation

- slanting downward - as
  one set of data
  increases, the other
  decreases

SOL Practice

**Directions**
Read each question and choose the best answer.

1 The scatterplot below shows a plant's height over time.

Height (inches) vs Time Since Purchase (weeks)

Based on the graph, what is the best prediction for the plant's height after ten weeks?

A   5.0 inches   **C**   6.6 inches
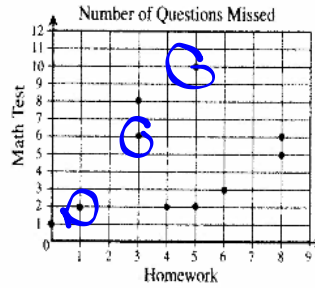
B   5.8 inches   D   7.3 inches

2 The scatterplot below shows the temperature over time.

Temperature (°F) vs Time (hours)
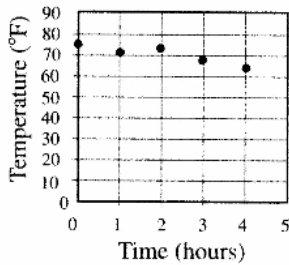
Which ordered pair describes a data point on the scatterplot?

A   (1, 62)   C   (3, 72)

B   (2, 80)   **D**   (4, 65)

3 Look at the scatterplot below.

Number of Questions Missed — Math Test vs Homework

How many students missed twice as many problems on the test as they did on the homework?

A   1 student   **C**   3 students

B   2 students   D   4 students

4 The scatterplot shows the relationship between the price of a knife and its quality rating.

Quality of Chef's Knives — Quality Rating vs Price of Knife (dollars)
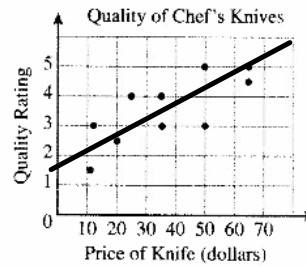
What rating would you expect for a $50 knife?

A   2   C   5

B   1   **D**   4

SOL Practice

Directions
Read each question and choose the best answer.

1 Which of the following statements best describes a scatterplot?
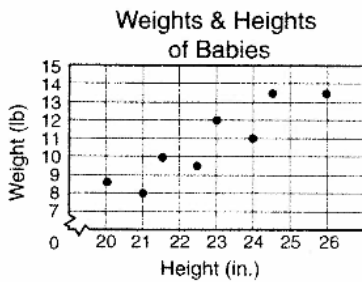
A A scatterplot shows how one part of the data compares to the whole.

B A scatterplot shows how a quantity changes over time.

C A scatterplot shows the number of times each item in a data set occurs.

D A scatterplot shows the relationship between two sets of data.

2 Which of the following statements can be interpreted from the scatterplot below?
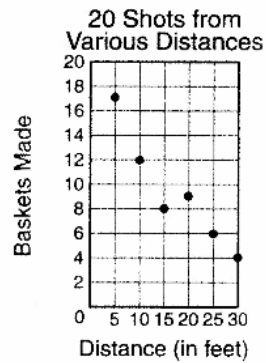
Weights & Heights of Babies

(scatterplot: Weight (lb) on vertical axis ranging 7–15, Height (in.) on horizontal axis ranging 20–26)

A The weight of a baby is influenced by its height.

B Shorter babies weigh more than taller babies.

C There is no relationship between the height and weight of a baby.

D There is a negative trend between height and weight.

3 What does a line drawn to fit the points in a scatterplot show if it starts near (0, 20) and slopes diagonally downward?

A A positive trend

B A negative trend

C No trend

D The two sets of data are not related.

4 The scatterplot below can be used to argue which of the following?

20 Shots from Various Distances

(scatterplot: Baskets Made on vertical axis ranging 0–20, Distance (in feet) on horizontal axis ranging 0–30)

A The distance you shoot from has no effect on shooting accuracy.

B You will make more baskets the farther from the basket you shoot.

C You will make fewer baskets the closer to the basket you shoot.

D You will make more baskets the closer to the basket you shoot.

p. 38

360°
circle

100%

?
54°

180°

50%

90° angle

25%
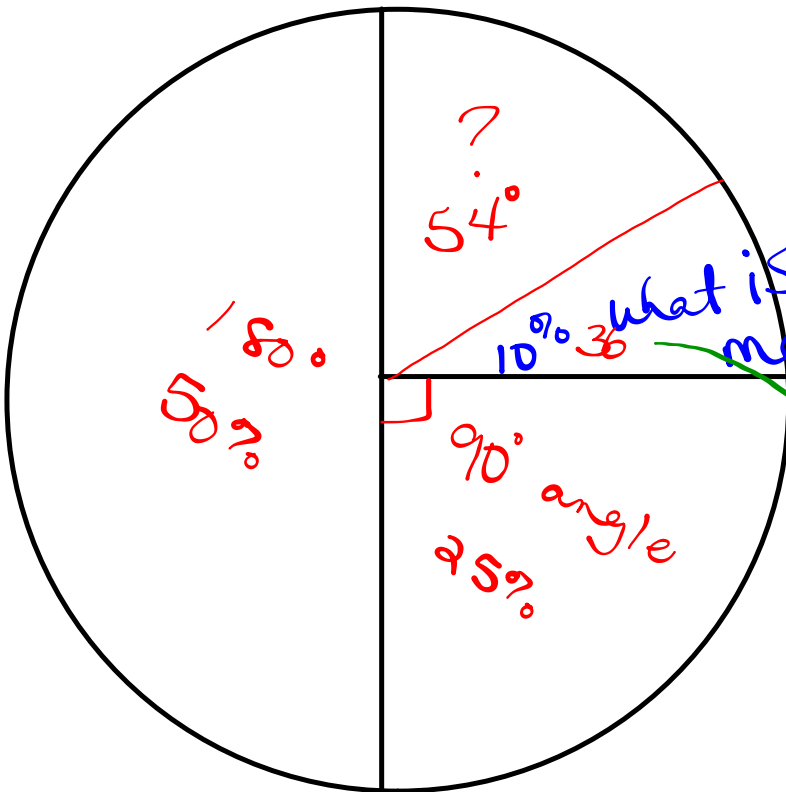
10% 36   what is angle measure?

10% of 360°
.10 × 360°

(36)

What Is the Store Policy at Plastic Mart?

⊙●⊙●⊙   *Write the letter of each exercise in the box for that answer.*   ⊙●⊙●⊙

Survey Results: What is your favorite kind of pie?
The "pie chart" shows how 175 people responded to this question.

E. What percent of those surveyed chose apple?

A. How many people chose apple?

L. How many people chose cherry?

S. What is the measure of the central angle for the "Lemon meringue" sector?

I. What is the measure of the central angle for the "Banana cream" sector?

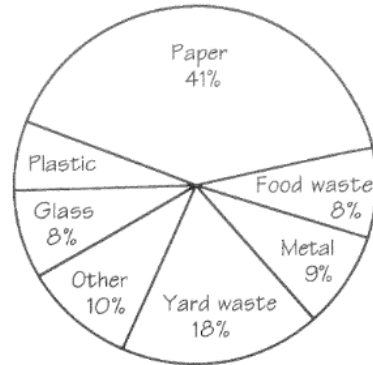**A.** What is the sum of the central angle measures in any circle graph?

Favorite Kind of Pie

Cherry 20%
Apple ___%
Banana cream 9%
Other 15%
Lemon meringue 32%

·24 x 175
24%
·32 X 360
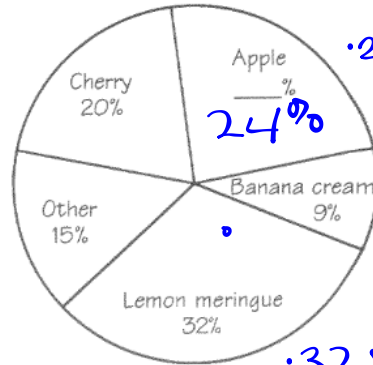
What's in the average American's trash can? The average American throws away about 1800 lb of trash per year. The graph shows the makeup of that trash.

L. What percent of the trash is plastic?

N. How many pounds of glass are thrown away by the average American each year?

A. How many pounds of paper are thrown away by the average American each year?

E. What is the measure of the central angle for the "Yard waste" sector?

L. What is the measure of the central angle for the "Glass" sector?

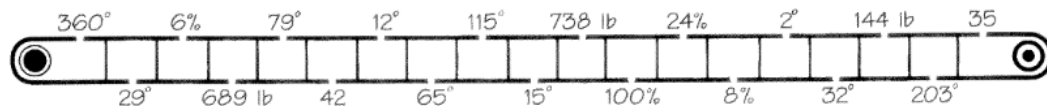**R.** What is the sum of the percents in any circle graph?

Trash in America

Paper 41%
Plastic
Glass 8%
Other 10%
Yard waste 18%
Food waste 8%
Metal 9%

What is the source of our power? The chart shows the sources of U.S. electricity in a recent year. In a circle graph of this data, what is the central angle measure for each of the following:

S. The "Nuclear power" sector?

Y. The "Coal" sector?

L. The "Oil" sector?

V. The "Other" sector?

Source	Percent
Nuclear power	21.9
Coal	56.3
Oil	3.3
Hydroelectric power	8.5
Natural gas	9.4
Other	0.6

360°	6%	79°	12°	115°	738 lb	24%	2°	144 lb	35
29°	689 lb	42	65°	15°	100%	8%	32°	203°	

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• **104** •

Statistics and Probability:
Circle Graphs

What Do You Get When You Cross the Atlantic with the Titanic?

Find each answer at the bottom of the page and cross out the letter above it (some are rounded).

1. Practice times for five swimmers in the 50-meter freestyle are given in the table. Find the following:

a. The mean of Mike's times.

b. The mean of Jason's times.

c. The mean of the times on Trial 1.

d. The median of Ryan's times.

e. The median of the times on Trial 4.

f. The mode of all 20 times in the table.

Name	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Trial 4 (s)
Mike	34.1	33.8	30.5	31.6
Alan	32.5	33.3	34.0	33.8
Jason	41.7	40.0	39.2	38.4
Scott	29.4	29.4	31.0	31.6
Ryan	33.8	32.5	33.8	33.4

2. The weekly salary for 10 people is given in the table. Find:

a. The mean salary.

b. The median salary.

c. The mode of the salaries.

Weekly Salary	No. of People
$2400	1
$900	1
$600	3
$500	5

3. The mean weight of 32 math students is 98.3 lb. If the students could all stand on the scale together, what would their total weight be?

4. The Pie Arsquare Bakery sold 869 pies during the month of January. What was the mean number of pies sold per day?

5. Julie has taken 5 tests in science this semester. On the first three tests, her mean score was 70%. On the last two tests, her mean score was 90%. What is the mean of all five scores?

6. On his trip to the mountains, Klink drove for 3 hours at an average speed of 50 mph, then for 2 hours at an average speed of 30 mph. What was his average speed for the entire trip?

7. As an experiment, Rex tossed 3 coins together and counted the number of heads. He repeated the experiment 25 times. The outcomes are given in the table. What is the mode?

Tossing 3 Coins: Number of Heads

2	0	2	3	2
1	3	2	0	1
2	2	1	1	2
0	3	1	2	1
2	1	1	2	3

8. Marissa has taken four 100-point tests in math this semester. Her mean score is 89%.

a. How many points has she scored altogether on the four tests?

b. What score does she need on test #5 so that the mean of all five scores will be 90%?

S T H E U P T A L L O I F E W E T A S O Y E S

| $500 | 2 | 92 | 33.4 s | 32.5 s | $550 | 78 | 3215.8 lb | 32.9 s | 94 | 34.3 s | 28 | 1 | 356 | 44 mph | 33.8 s | 3145.6 lb | 76 | 33.6 s | 42 mph | $580 | 39.8 s | $760 |