



- 21 Samatha owns a local ice cream stand. She recorded the high temperatures, in degrees Fahrenheit, and her ice cream sales, in dollars, for eight consecutive days. Her results are shown in the following table.

High Temperature (°F)	Ice Cream Sales (\$)
84	212
72	158
85	160
68	114
76	112
75	136
69	98
93	230

Determine the line of best fit for this data. Write an equation to represent the line of best fit.

Enter your equation in the space provided (numbers may be rounded to the nearest tenth).



- 22** The town of Krannert takes a census of its population every 4 years. The data are displayed in the table.

Year	Population
1996	25,480
2000	26,520
2004	27,560
2008	28,600
2012	29,640

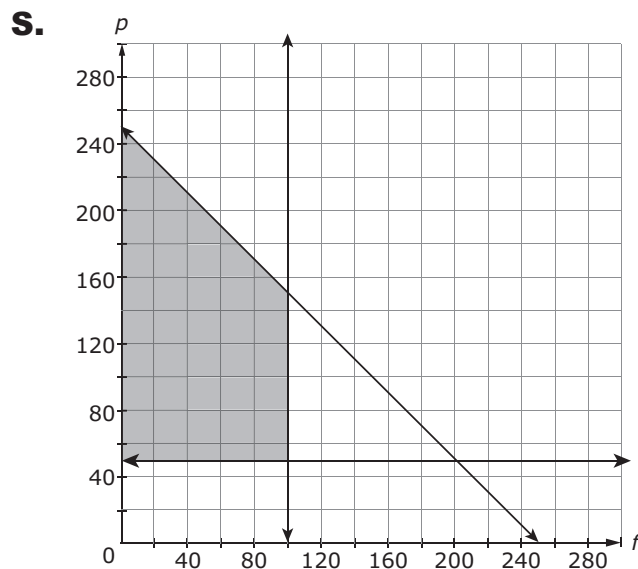
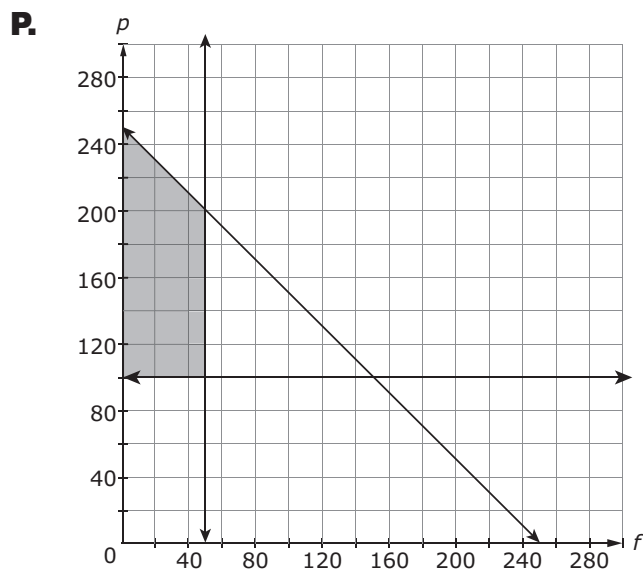
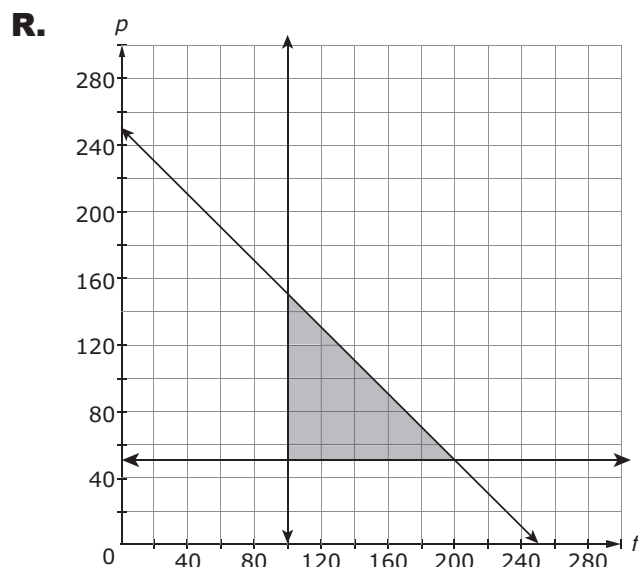
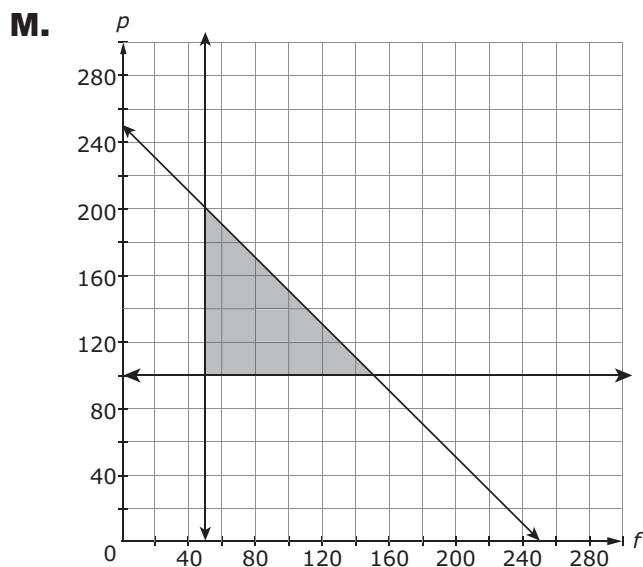
What is the average yearly change in population in Krannert from 1996 to 2012?

- A.** 16
- B.** 260
- C.** 1040
- D.** 4160



- 23** Karen is buying supplies for a party. She plans to spend at least \$100 on food and at least \$50 on party favors. She can spend no more than \$250 total on food and party favors.

Which graph shows the solution set to the amount of money Karen can spend on food,  $f$ , and party favors,  $p$ , and spend no more than \$250?

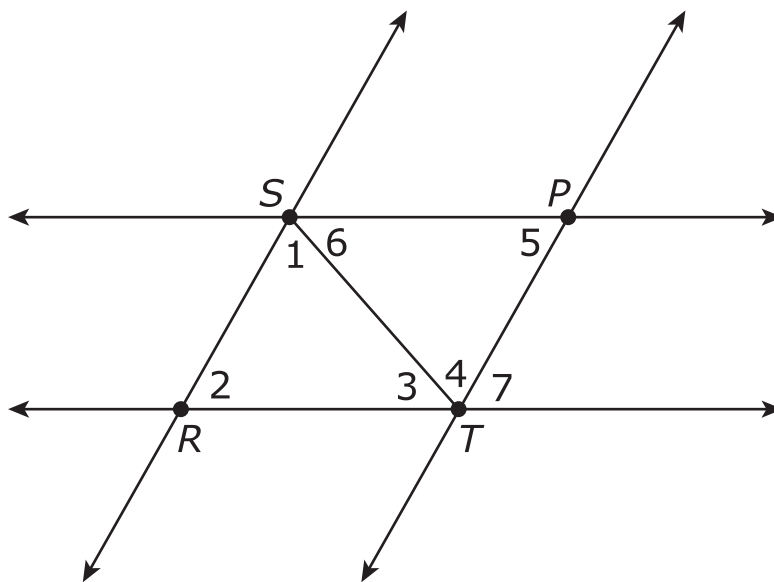




24 Part of a proof is shown.

Given:  $\triangle RST \cong \triangle PTS$ ,  $\overleftrightarrow{SP} \parallel \overleftrightarrow{RT}$ , and  $\overleftrightarrow{SR} \parallel \overleftrightarrow{PT}$

Prove: The sum of the measures of the interior angles of  $\triangle RST$  is  $180^\circ$ .



Statement	Reason
1. $\triangle RST \cong \triangle PTS$	1. Given
2. $\angle 1 \cong \angle 4$	2.
3. $\angle 7 \cong \angle 2$	3.
4. $m\angle 4 + m\angle 7 + m\angle 3 = 180^\circ$	4. Angles 3, 4, and 7 form a line.
5. $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$	5.

Item continued on next page.

**24** continued

Review each statement of the proof. Then select a reason that correctly supports each statement in lines 2, 3, and 5 to complete the proof.

The reason for statement 2 is

- Substitution
- Vertical angles are congruent.
- Alternate interior angles are congruent.

The reason for statement 3 is

- Substitution
- Corresponding angles are congruent.
- Alternate interior angles are congruent.

The reason for statement 5 is

- Substitution
- Corresponding angles are congruent.
- Alternate interior angles are congruent.

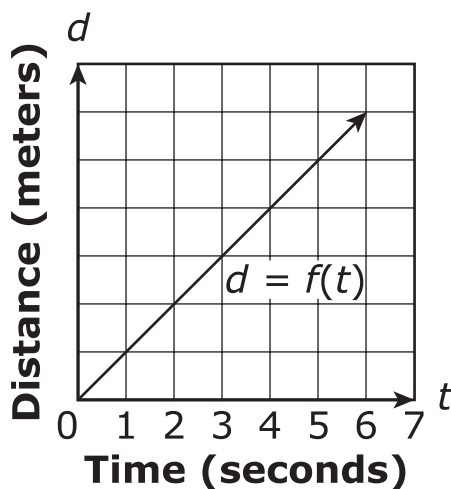
**25** Harold's car has a fuel tank with 12 gallons of fuel in it. The fuel efficiency of Harold's car is 25 miles per gallon.

Write an equation to represent the amount of fuel remaining,  $f$ , in Harold's car after driving  $m$  miles.

Write your answer in the space provided.



- 26** The speed of sound at sea level, in dry air (70°F), is approximately 340 meters per second. Assume the graph correctly shows the distance,  $d$ , a sound wave created by a loud noise at sea level has traveled after  $t$  seconds.



Which set of numbers is **most** appropriate to label the seven tick marks along the vertical axis (distance)?

- A.** 1, 2, 3, 4, 5, 6, 7
- B.** 70, 140, 210, 280, 350, 420, 490
- C.** 100, 200, 300, 400, 500, 600, 700
- D.** 340, 680, 1020, 1360, 1700, 2040, 2380

- 27** A rock is thrown from a cliff into a ravine.

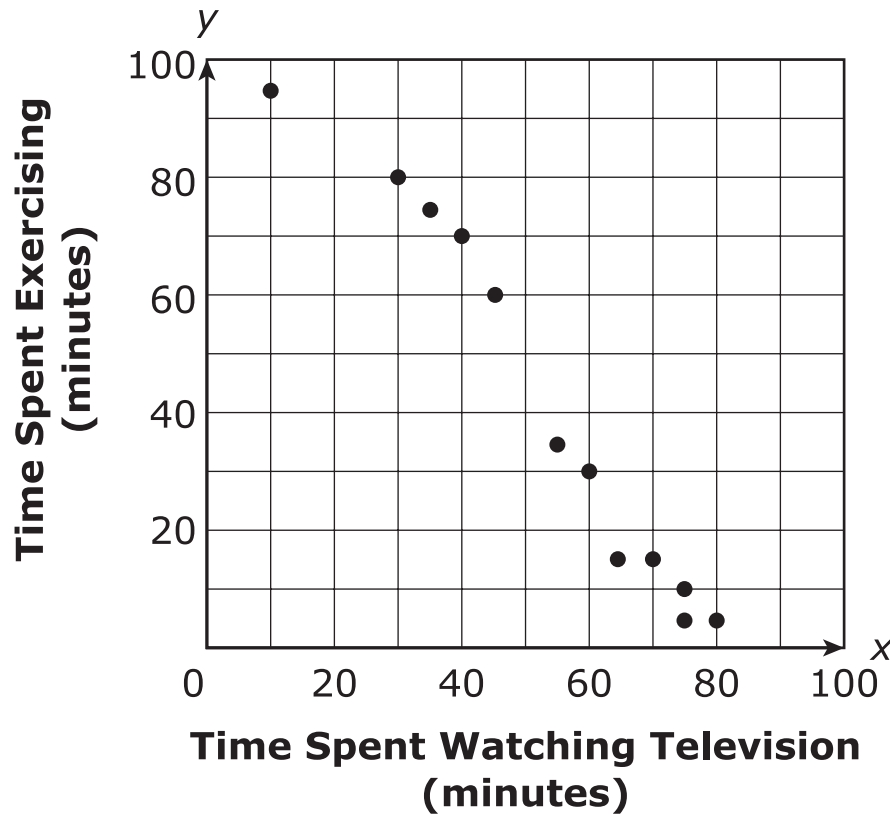
The function  $h(t) = -16t^2 + 192t + 2560$  describes the height, in feet, of the rock  $t$  seconds after it is thrown.

What is the height of the rock, in feet, 8 seconds after it is thrown? Enter your answer in the space provided.



- 28** As part of a class project, Marshall surveyed 12 students at his school to estimate their exercise and television viewing habits. He created the scatter plot shown to compare the estimated number of minutes spent each day watching television and the estimated number of minutes spent each day exercising.

**Exercise vs. Television**



Marshall models the data with the equation  $y = -1.5x + 121$ , where  $x$  represents the number of minutes spent watching television and  $y$  represents the number of minutes spent exercising.

Item continued on next page.

**28** continued**Part A**

Marshall computed a correlation coefficient of  $-0.98$  for the data. What does the coefficient mean in terms of the data he collected?

- M.** Because  $-0.98$  is negative, there is no correlation between the variables.
- P.** Because  $-0.98$  is negative, the correlation between the variables is weak.
- R.** Because  $|-0.98|$  is close to 1, there is a strong correlation between the variables.
- S.** Because  $|-0.98|$  is close to 1, there is a positive correlation between the variables.

**Part B**

A certain student watches television for an average of 38 minutes per night. Based on Marshall's model equation, how many minutes will that student spend exercising?

Enter your answer in the space provided.

Item continued on next page.



**28** continued**Part C**

What are the meanings of the slope and the  $y$ -intercept for Marshall's model equation?

Select the **two** that apply.

- A.** For every additional minute spent watching television, the number of minutes spent exercising decreases by 1.5.
- B.** For every additional minute spent exercising, the number of minutes spent watching television decreases by 1.5.
- C.** For every additional minute spent exercising, the number of minutes spent watching television increases by 1.5.
- D.** If a student watches no television, the model predicts that the student will exercise for 121 minutes.
- E.** If a student exercises for more than 80 minutes, the model predicts that the student will not watch television.

*Item continued on next page.*

**28** continued**Part D**

Using the information from the survey and Marshall's model, which statement is **most** accurate?

- M.** A student who does not watch television must exercise more than 100 minutes each day.
- P.** A student who does not exercise must watch television more than 100 minutes each day.
- R.** A student who watches more television is more likely to exercise.
- S.** A student who watches more television is less likely to exercise.

**Part E**

What is  $y = -1.5x + 121$  rewritten as a recursive formula, where  $n$  represents the number of minutes spent watching television and  $a_n$  represents the number of minutes spent exercising?

- A.**  $a_0 = 1.5; a_n = a_{n-1} - 121$
- B.**  $a_0 = 1.5; a_n = a_{n-1} + 121$
- C.**  $a_0 = 121; a_n = a_{n-1} - 1.5$
- D.**  $a_0 = 121; a_n = a_{n-1} + 1.5$

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**28** continued**Part F**

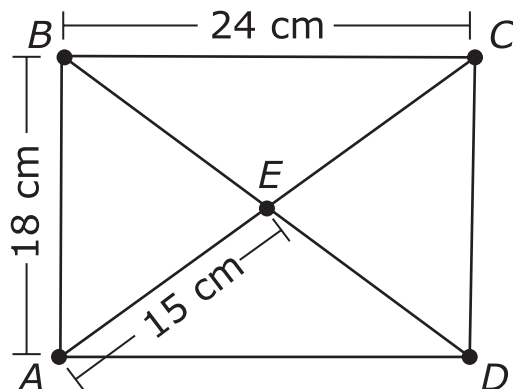
Marshall surveyed another set of 12 students and recorded the results in the table shown.

Time Spent Watching Television (minutes)	Time Spent Exercising (minutes)
0	92
15	74
20	69
25	64
30	58
30	63
40	50
45	43
50	41
60	33
60	29
75	14

Based on these results, what is the average rate at which exercise time is reduced for students who watch between 25 and 60 minutes of television?



29 Rectangle  $ABCD$  is shown.



1. The measure of diagonal  $BD$  is

- 15
- 18
- 24
- 30

cm.

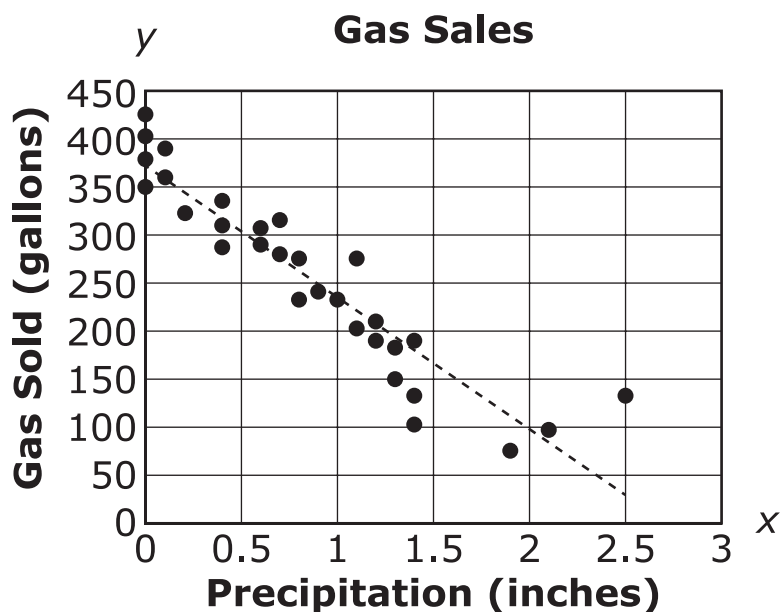
2. The perimeter of triangle  $CDE$  is

- 33
- 48
- 54
- 57

cm.



- 30** The owner of a gas station recorded the gallons of gas sold and the amount of precipitation each day for 1 month. The data and the line of best fit are graphed on this scatter plot.



Which value is **closest** to the correlation coefficient for the data?

- M.** -0.93
- P.** -0.07
- R.** 0.07
- S.** 0.93



- 31 The expression  $89,000(0.995)^t$  represents the population of a town  $t$  years after 1990.

Select the **best** choices to complete the sentence below.

The population of the town  increases  
 decreases by  0.5%  
 0.995%  
 5%  
 99.5%  
 995% each year.



**This is the end of the test.**