Name: _____ **Period:** _____

Math 8 *(Swanick)*

8th Grade PSSA Math Review

	Day 1 *Domain 1* pgs. 16-18	Day 2 *Domain 1* **Graded Assignment**	Day 3 *Domain 2* pgs. 72-74	Day 4 *Domain 2* **Graded Assignment**	Day 5 ***PSSA Review Quiz #1(1-2)***	
	Day 6 *Domain 3* pgs. 98 – 100 *Domain 4* pgs. 152-154	Day 7 *Domain 4* **Graded Assignment**	Day 8 *Domain 5* pgs. 174-176	Day 9 *Domain 5* **Graded Assignment**	Day 10 ***PSSA Review Quiz #2 (3-5)***	

Honors Algebra 1 *(Swanick)*

8th Grade PSSA Math Review

	Day 1 *Domain 1* pgs. 16-18	Day 2 *Domain 1* **Graded Assignment**	Day 3 *Domain 2* pgs. 72-74	Day 4 *Domain 2* **Graded Assignment**	Day 5 ***PSSA Review Quiz #1(1-2)***	
	Day 6 *Domain 3* pgs. 98 – 100 *Domain 4* pgs. 152-154	Day 7 *Domain 4* **Graded Assignment**	Day 8 *Domain 5* pgs. 174-176	Day 9 *Domain 5* **Graded Assignment**	Day 10 ***PSSA Review Quiz #2 (3-5)***	

DOMAIN

1 Review

Choose the best answer.

1. Which number is irrational?

   A. $-\frac{213}{2}$

   B. $3.1\overline{2}$

   C. $\sqrt{64}$

   D. 9.31307...

2. Which is the best approximation for $\sqrt{55}$?

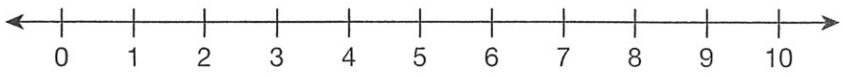
   A. 7

   B. 7.41

   C. 7.42

   D. 8

3. Plot $\sqrt{51}$ on the following number line.



Complete each sentence.

4. $\sqrt{144}$ is rational because _____.

5. 10π is irrational because _____.

Approximate each number to the nearest tenth.

6. $\sqrt{90}$ _____

7. $\sqrt{71}$ _____

8. $\sqrt{72}$ _____

Write each decimal as a fraction.

9. $0.\overline{8}$ _____

10. $0.\overline{89}$ _____

11. $0.8\overline{6}$ _____

Choose the best answer.

12. Which number is rational?

A. $-\sqrt{9}$

B. 0.010010001...

C. $\sqrt{65}$

D. $\sqrt{-100}$

13. Which is the best approximation for $\sqrt{44}$?

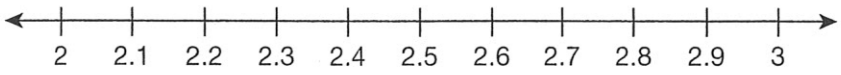
A. 6.6

B. 6.63

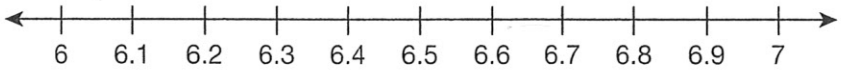
C. 6.64

D. 7

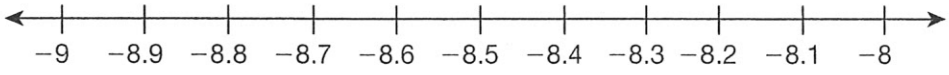
14. Plot $\sqrt{6}$ on the following number line.



15. Plot $\sqrt{47}$ on the following number line.



16. Plot $-\sqrt{77}$ on the following number line.



Write three equivalent decimals for each number.

17. −132 _____ _____ _____

18. 93.3 _____ _____ _____

19. 0.09 _____ _____ _____

20. −4.2323 _____ _____ _____

Duplicating any part of this book is prohibited by law.

Write each decimal as a fraction.

21. $0.\overline{3}$

_____

22. $2.\overline{2}$

_____

23. $0.\overline{18}$

_____

24. $3.\overline{63}$

_____

25. $2.\overline{90}$

_____

26. $9.\overline{7}$

_____

Determine the two closest integers for each irrational number.

27. $\sqrt{88}$

_____

28. $\sqrt{5}$

_____

29. $\sqrt{27}$

_____

Complete each sentence. Write decimals to the hundredths place.

30. $\sqrt{33}$ is between 5.74 and _____, and it is closer to _____.

31. $\sqrt{11}$ is between _____ and _____, and it is closer to _____.

32. $\sqrt{105}$ is between _____ and _____, and it is closer to _____.

Use the situation and table to answer questions 33 and 34.

Carissa calculated the lengths of 4 hiking trails. Because some trails form a triangle or a circle, some lengths have square roots or the π symbol.

Lengths of Hiking Trails

Trail	Length (in km)
Valley View	$2.5\sqrt{4}$
Butterfly Gulch	2π
Waterfall Perch	4.275
Forest Walk	$2\sqrt{5}$

33. Identify the trails that have irrational lengths. Explain your reasoning.

_____

_____

_____

34. List the lengths from shortest to longest. Explain your work.

_____

_____

_____

DOMAIN

2 Review

Express each number in scientific notation.

1. 9,000 _____

2. 42,500 _____

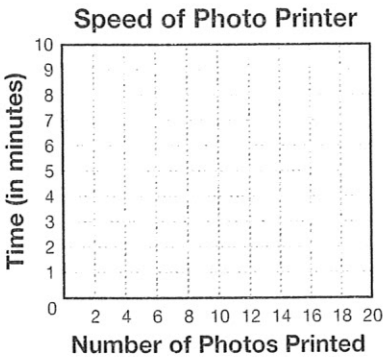
3. 808,100 _____

Graph the proportional relationship. Then use the slope of the line to find the unit rate.

4. A printer manufacturer uses the following table to show how long it takes to print different numbers of photographs.

Speed of Photo Printer

Number of Photos Printed	Time (in minutes)
4	2
8	4
12	6
16	8



Unit rate = _____ per photograph

Choose the best answer.

5. What is the solution to the following?

$x + 5 + x + 1 + x = 3(x + 2) + 1$

A. $x = 1$

B. $x = 3$

C. no solution

D. infinitely many solutions

6. What is the solution to the following system of linear equations?

$-4x + 2y = 10$
$2x - 2y = -10$

A. (5, 0)

B. (0, 5)

C. no solution

D. infinitely many solutions

Express each product or quotient in scientific notation.

7. $(4.6 \times 10^3)(5.3 \times 10^2)$ _____

8. $\frac{1.6 \times 10^5}{8 \times 10^3}$ _____

Complete each sentence.

9. To evaluate $7^{-4} \times 7^{4}$, ____________ the exponents. The answer in exponential form is ____________. The answer in standard form is ____________.

10. To evaluate $(3^{5})^{-1}$, ____________ the exponents. The answer in exponential form is ____________. The answer in standard form is ____________.

11. To evaluate $\frac{m^{-3}}{m^{4}}$, ____________ the exponents. The answer in exponential form is ____________.

Graph each system of equations to find its solution. Use *Math Tool: Coordinate Plane.*

12. $y = 2x - 2$
$y = \frac{1}{2}x + 4$
Solution = __________

13. $y = 2x - 1$
$y = -3x - 11$
Solution = __________

Choose the best answer.

14. What is the solution to the following?
$$2\left(\frac{1}{5}x - 3\right) + x = 4\left(\frac{1}{4}x - \frac{1}{2}\right)$$
A. $x = 4$
B. $x = 10$
C. no solution
D. infinitely many solutions

15. Which is the principal square root of 121?
A. -11
B. 11
C. ± 11
D. $\pm\sqrt{121}$

Evaluate each expression. Leave your answer in exponential form.

16. $7^{9} \times 7^{5}$ ____________

17. $4^{-2} \times 4^{8}$ ____________

18. $\frac{10^{7}}{10^{4}}$ ____________

Evaluate each expression. Write your answer in standard form.

19. $3^{3} \times 3^{2}$ ____________

20. $\frac{5^{6}}{5^{4}}$ ____________

21. $\left(\frac{3}{11}\right)^{2}$ ____________

Find the cube root of each number.

22. $\sqrt[3]{64}$

23. $\sqrt[3]{1}$

24. $\sqrt[3]{216}$

Solve for *x*.

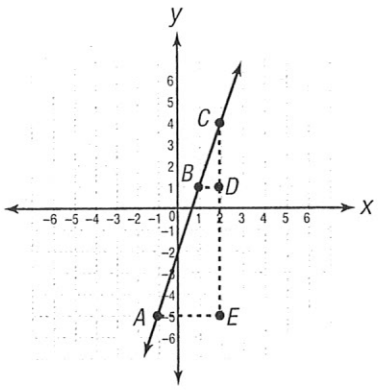
25. $x^2 = 625$

26. $x^3 = -216$

27. $x^2 = \frac{25}{36}$

Solve.

28. All pairs of corresponding sides of two similar triangles have the same ratio. Use that information and the diagram at the right to show why any two segments on line *AC* have the same slope.



Use the situation below to answer questions 29 and 30.

A theater sells regularly priced tickets for $12 and discounted tickets for $8. On one afternoon, the total number of regularly priced tickets and discounted tickets sold was 60, and the total ticket sales came to $620.

29. WRITE Let r = the number of regularly priced tickets and d = the number of discounted tickets. Write a system of equations to represent this scenario.

30. SHOW Solve the system to determine how many of each type of ticket was sold. Show your work.

DOMAIN

3 Review

Compare the properties of each function. Justify each answer.

1.

x	−10	−6	−2	2	6	10
y	2	3	4	5	6	7

$y = \frac{1}{2}x + 2$

The function represented by the [table / equation] has a greater rate of change because
Circle one

_____.

The function represented by the [table / equation] has a greater y-intercept because
Circle one

_____.

2. The output of a function is equal to five less than the product of the input and three.

$y = 2.5x - 3$

The function represented by the [verbal description / equation] has a greater rate
Circle one

of change because _____.

The function represented by the [verbal description / equation] has a greater y-intercept
Circle one

because _____.

Complete the sentence.

3. The relation {(−5, −8), (8, 5), (5, 3), (−5, 8)} [does / does not] represent a function
Circle one

because _____.

Choose the best answer.

4. Which equation represents a linear function?

   A. $y = 8x^4$

   B. $y = -0.05x - 0.001$

   C. $y = 2x^2 + 5$

   D. $y = \sqrt[3]{x}$

5. Which set of ordered pairs does **not** represent a function?

   A. {(−6, 9), (−3, 3), (0, 3), (3, 9)}

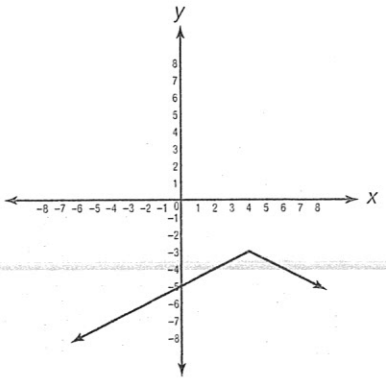
   B. {(−2, 2), (−4, 2), (−6, 2), (−8, 2)}

   C. {(5, −1), (−1, 5), (5, 1), (1, −5)}

   D. {(10, −10), (5, −5), (−5, 5), (−10, 10)}

Use the following words to describe the graph of each function: *linear, nonlinear, piecewise, increasing, decreasing, constant.*

6.

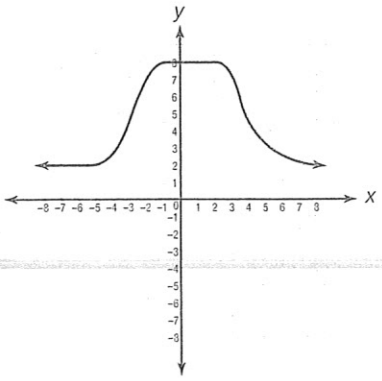


_____

_____

_____

7.



_____

_____

_____

Write an equation to represent each real-world situation, using *x* and *y* for the unknown variables. Then identify the rate of change and initial value of each function.

8. A credit card company charges vendors a $0.35 fee for any purchase, plus 2.5% of the purchase.

_____

Rate of change = _____

Initial value = _____

9. Tina earns $25.95 per hour, plus a consulting fee of $50.

_____

Rate of change = _____

Initial value = _____

Choose the best answer.

10. Which set of ordered pairs represents a linear function?

A. {(−6, −2), (−3, −1), (0, 1), (1, 3)}

B. {(−8, 0), (−8, −3), (−8, −6), (−8, −9)}

C. {(−1, 1), (0, 2), (1, 4), (2, 7)}

D. {(−4, −1), (−1, 1), (2, 3), (8, 7)}

11. What is the initial value of the function represented by the following table?

x	2	3	4	5	6
y	2	0	−2	−4	−6

A. −6

B. −2

C. 3

D. 6

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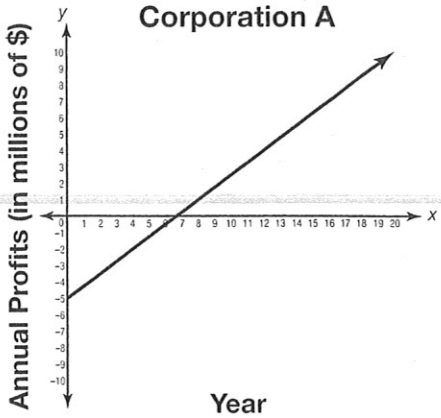
Use the situation, graph, and table below to answer questions 12–14.

The predicted profits of two corporations are modeled by the following representations. The *y*-intercept of each representation shows the data for the current year.

Corporation A



Corporation B

Year, *x*	0	2	4	6	8	10	12	14	16	18	20
Annual Profits (in $millions), *y*	−5	−1	−3	−1	3	5	3	7	9	7	10

12. Determine whether each corporation's predicted model represents a function. Explain your answers.

_____

_____

13. Determine whether each corporation's predicted model represents a linear or nonlinear function. Explain your answers.

_____

_____

14. For a model above that represents a linear function, determine the initial value and rate of change. Then describe the rate of change and initial value in terms of the context of the problem.

_____

_____

_____

_____

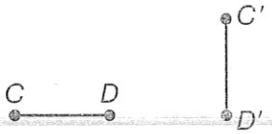
_____

DOMAIN

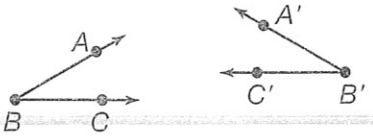
4 Review

Describe in detail how one or more rigid motions could be used to make the leftmost figure coincide with the rightmost figure. Use the least number of rigid motions possible.

1.

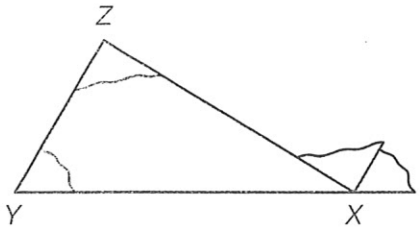


2.



Choose the best answer.

3. Carly drew triangle *XYZ* and tore off $\angle Y$ and $\angle Z$. She then fit the angles on the exterior of the third angle, as shown. Which of the following facts about triangles does this demonstrate?



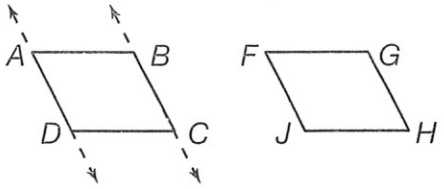
A. When parallel lines are cut by a transversal, alternate interior angles are congruent.

B. Similar triangles have corresponding angles that are congruent.

C. The sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse.

D. The sum of the measures of the interior angles of a triangle is 180°.

4. Parallelogram *ABCD* will be translated to the right so that it coincides with parallelogram *FGHJ*. Which statement will be true of lines *AD* and *BC* which contain $\overline{AD}$ and $\overline{BC}$ on this parallelogram?



A. Parallel lines *AD* and *BC* will move onto parallel lines *FG* and *HJ*, which contain $\overline{FG}$ and $\overline{HJ}$.

B. Parallel lines *AD* and *BC* will move onto parallel lines *FJ* and *GH*, which contain $\overline{FJ}$ and $\overline{GH}$.

C. Parallel lines *AB* and *CD* will be turned differently after the translation.

D. Parallel lines *AB* and *CD* will be mirror images of one another after the translation.

Use the converse of the Pythagorean theorem to determine whether or not a triangle with the given side lengths is a right triangle. Show your work.

5. 30 in., 40 in., 50 in.

_____

6. 3 yd, 4 yd, 6 yd

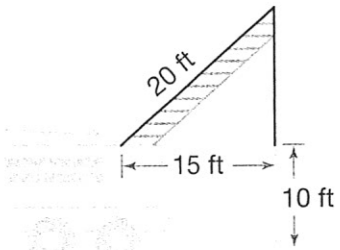
_____

7. 11 cm, 60 cm, 61 cm

_____

Choose the best answer.

8. A fire truck is parked so the base of its ladder is 15 feet from a building and 10 feet above the ground. The ladder extends to a length of 20 feet. Based on the diagram, approximately how high on the building does the ladder reach?



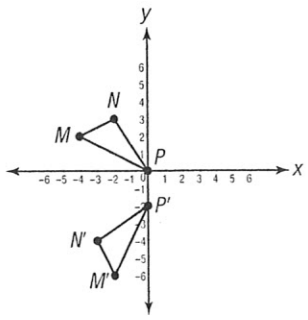
A. 13.2 feet

B. 23.2 feet

C. 25 feet

D. 35 feet

9. Which sequence could be used to show that the triangles are congruent?



A. 90°-clockwise rotation of $\triangle MNP$ around the origin, followed by a translation to the left

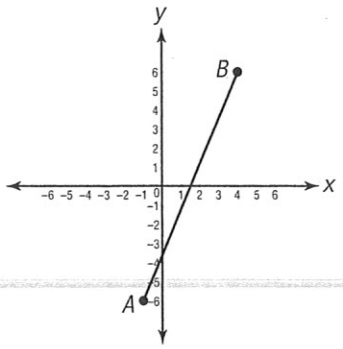
B. 90°-counterclockwise rotation of $\triangle MNP$ around the origin, followed by a translation to the left

C. 90°-clockwise rotation of $\triangle MNP$ around the origin, followed by a translation down

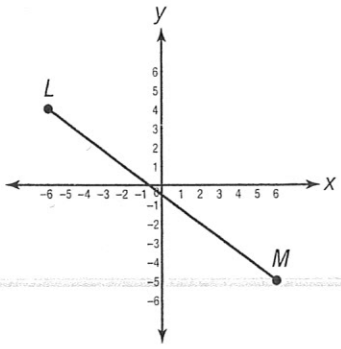
D. 90°-counterclockwise rotation of $\triangle MNP$ around the origin, followed by a translation down

Find the length of each line segment.

10.

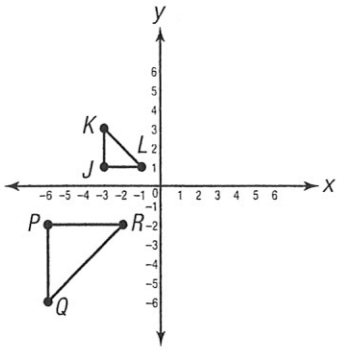


11.

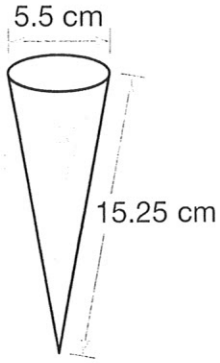


Solve.

12. Is $\triangle JKL \sim \triangle PQR$? Use words and drawings to describe a sequence of rigid and nonrigid motions that justifies your answer.



13. The ice cream cone shown has a slant height of 15.25 centimeters and a diameter of 5.5 centimeters.



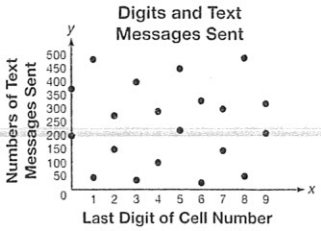
What is its height? What is its approximate volume? Show and explain your work.

DOMAIN

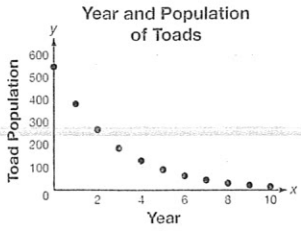
5 Review

For each scatter plot, describe the association shown as linear or nonlinear. If no association is shown, state that.

1.

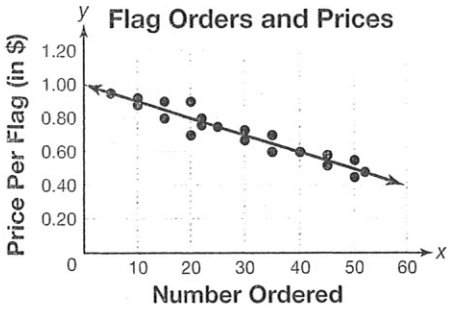


2.



Choose the best answer.

3. The pep club is ordering small, custom flags for students to wave during the playoff game. The price per flag changes depending on the number ordered, as shown in the scatter plot, and is modeled by the function $y = 1 - 0.01x$.



Which is the best interpretation of the y-intercept of this model?

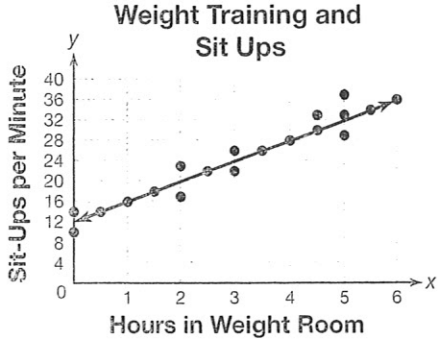
A. The cost for 1 flag will be $0.

B. The cost per flag will generally be less than $1.00.

C. The cost per flag will generally be less than $0.01.

D. The cost per flag will generally be more than $1.00.

4. A coach recorded the times athletes spent weight training and the numbers of sit-ups they could perform in one minute, in the scatter plot to the right. The linear model is $y = 4x + 12$.



Which is the best interpretation of the slope of this model?

A. Each additional hour in the weight room improves one's performance by 4 sit-ups per minute.

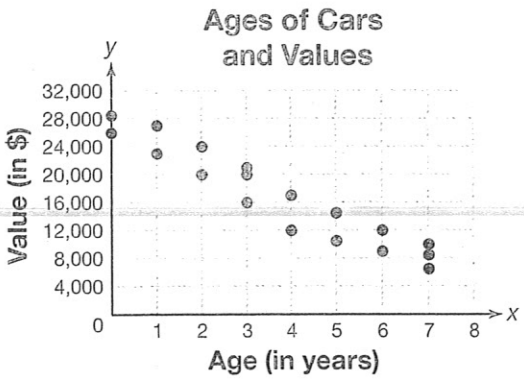
B. Every 4 hours in the weight room improves one's performance by 1 sit-up per minute.

C. An athlete who does not lift weights can perform only 4 sit-ups per minute.

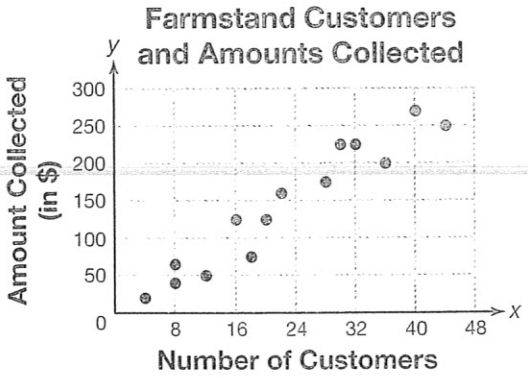
D. The number of hours spent in the weight room does not affect sit-up performance.

For each scatter plot, draw a trend line that fits the data well.

5. This scatter plot shows the ages of cars and their values in dollars.



6. This scatter plot shows the number of customers at a farm stand each hour and the total amount collected that hour.



Choose the best answer.

7. A survey of randomly selected eighth-grade students explored the relationship between gender and video game play.

	Boys	Girls	Total
Play Daily	45	12	57
Do Not Play Daily	5	38	43
Total	50	50	100

Which is **not** a reasonable interpretation of the data?

A. More boys surveyed play video games daily than girls.

B. Ignoring gender, a little more than half of the eighth-grade students surveyed play video games daily.

C. Of the boys surveyed, 5% do not play video games daily.

D. Of the girls surveyed, exactly 24% play video games daily.

8. A survey of students in a homeroom class explored the relationship between gender and participation in the school band.

	Boys	Girls	Total
In Band	4	8	12
Not in Band	9	5	14
Total	13	13	26

Which is a reasonable conclusion to draw from these data?

A. There are more band members in the class than non-band members.

B. There are more boys in the class than girls.

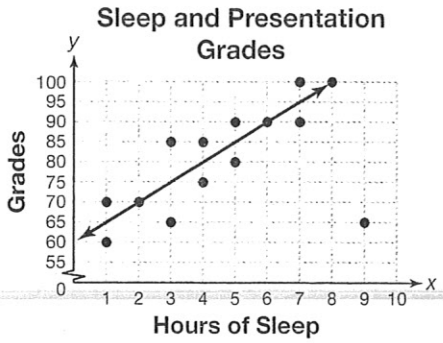
C. Among the boys, there are more boys in the band than not in the band.

D. More than one-half of the band members in the class are girls.

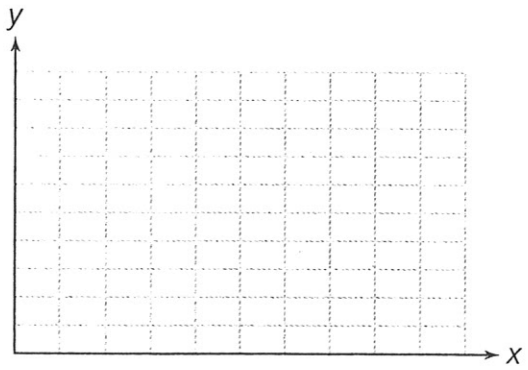
Solve.

9. MODEL This scatter plot shows the numbers of hours of sleep 14 students got the night before a class presentation and their grades for the assignment.

Write an equation for the linear model represented by the graph, and show your work. If any data points are not well represented by the model, identify them and explain why not.



10. EXAMINE The table shows the costs of hats and the numbers of hats sold at a clothing store. Plot the data in the table on the grid. Then draw a trend line for the data and explain how you know your line is a good fit.



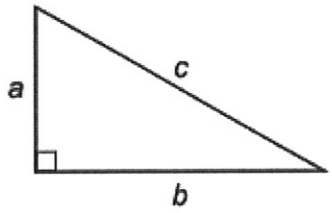
Number Sold

Price of Hat (in $)	5	10	15	20	20	25	25	30	35	40	40	45	45
Number Sold	36	28	32	24	32	20	28	24	12	12	20	8	36

Formulas that you may need to work questions on this test are found below.
You may refer back to this page at any time during the mathematics test.
You may use calculator π or the number 3.14.

2015
Grade 8

Pythagorean Theorem



$$a^2 + b^2 = c^2$$

Exponential Properties

$$a^m \cdot a^n = a^{m+n}$$

$$(a^m)^n = a^{m \cdot n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

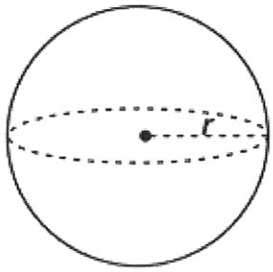
$$a^{-1} = \frac{1}{a}$$

Algebraic Equations

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

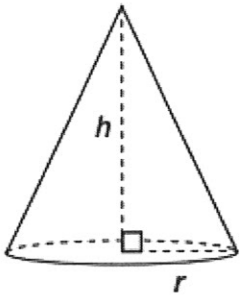
Slope-Intercept Form: $y = mx + b$

Sphere



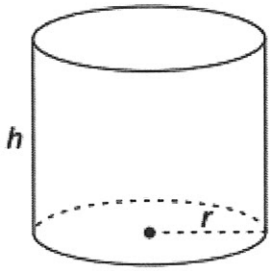
$$V = \frac{4}{3}\pi r^3$$

Cone



$$V = \frac{1}{3}\pi r^2 h$$

Cylinder



$$V = \pi r^2 h$$