Pennsylvania PSSA 2019 Grade 8 Math

Reference Materials
Page 2

Exam & Answer Key Materials
Pages 3 - 40

Grade 8 Formula Sheet

Formulas that you may need 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 as an approximation of π.

2019
Grade 8

Exponential Properties

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

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

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

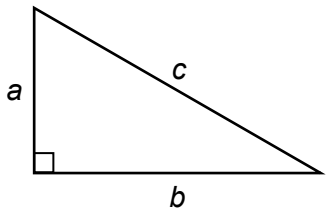
$$a^{-1} = \frac{1}{a}$$

Algebraic Equations

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

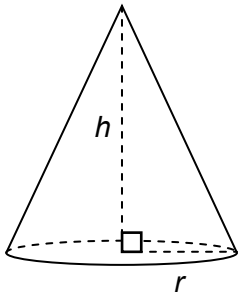
Slope-Intercept Form: $y = mx + b$

Pythagorean Theorem



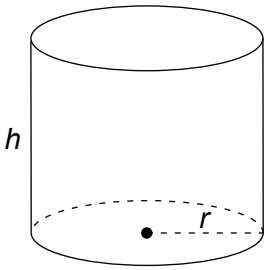
$$a^2 + b^2 = c^2$$

Cone



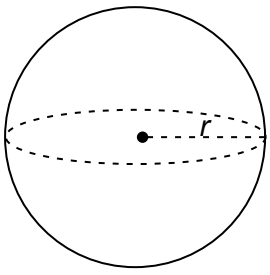
$$V = \frac{1}{3}\pi r^2 h$$

Cylinder



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

Sphere

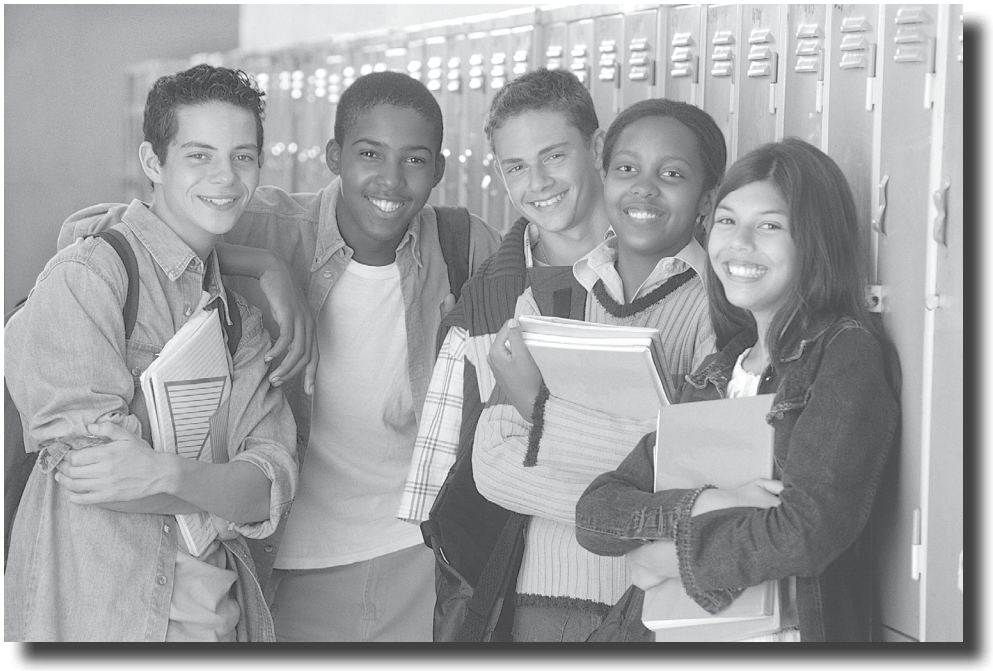


$$V = \frac{4}{3}\pi r^3$$

pennsylvania
DEPARTMENT OF EDUCATION

The Pennsylvania System of School Assessment

Mathematics Item and Scoring Sampler



2019–2020
Grade 8

Pennsylvania Department of Education Bureau of Curriculum, Assessment and Instruction—September 2019

MATHEMATICS TEST DIRECTIONS

On the following pages are the mathematics questions.

- You may not use a calculator for question 1. You may use a calculator for all other questions on this test.

Directions for Multiple-Choice Questions:

Some questions will ask you to select an answer from among four choices.

For the multiple-choice questions:

- First solve the problem on scratch paper.
- Choose the correct answer and record your choice in the answer booklet.
- If none of the choices matches your answer, go back and check your work for possible errors.
- Only one of the answers provided is the correct response.

Directions for Open-Ended Questions:

Some questions will require you to write your response.

For the open-ended questions:

- These questions have more than one part. Be sure to read the directions carefully.
- You cannot receive the highest score for an open-ended question without completing all tasks in the question. For example, if the question asks you to show your work or explain your reasoning, be sure to show your work or explain your reasoning in the space provided.
- If the question does **not** ask you to show your work or explain your reasoning, you may use the space provided, but only those parts of your response that the question specifically asks for will be scored.
- Write your response in the appropriate location within the response box in the answer booklet. Some answers may require graphing, plotting, labeling, drawing, or shading. If you use scratch paper, be sure to transfer your final response and any needed work or reasoning to the answer booklet.

General Description of Scoring Guidelines for Mathematics Open-Ended Questions

4— The response demonstrates a *thorough* understanding of the mathematical concepts and procedures required by the task.

The response provides correct answer(s) with clear and complete mathematical procedures shown and a correct explanation, as required by the task. Response may contain a minor "blemish" or omission in work or explanation that does not detract from demonstrating a *thorough* understanding.

3— The response demonstrates a *general* understanding of the mathematical concepts and procedures required by the task.

The response and explanation (as required by the task) are mostly complete and correct. The response may have minor errors or omissions that do not detract from demonstrating a *general* understanding.

2— The response demonstrates a *partial* understanding of the mathematical concepts and procedures required by the task.

The response is somewhat correct with *partial* understanding of the required mathematical concepts and/or procedures demonstrated and/or explained. The response may contain some work that is incomplete or unclear.

1— The response demonstrates a *minimal* understanding of the mathematical concepts and procedures required by the task.

0— The response has no correct answer and *insufficient* evidence to demonstrate any understanding of the mathematical concepts and procedures required by the task for that grade level.

Response may show only information copied from the question.

Special Categories within zero reported separately:

Blank.....Blank, entirely erased, entirely crossed out, or consists entirely of whitespace

Refusal.....Refusal to respond to the task

Off Task.....Makes no reference to the item but is not an intentional refusal

Foreign Language.....Written entirely in a language other than English

Illegible .....Illegible or incoherent

Question 1 in this sampler is to be solved without the use of a calculator.

MULTIPLE-CHOICE ITEMS

1. Which expression is equivalent to $(4^4)^2 \bullet (4^7)^{-2}$?

A. $\frac{1}{4^6}$

B. $\frac{1}{4^3}$

C. 4^{11}

D. 4^{30}

Item Information	
Alignment	B-E.1.1.1
Answer Key	A
Depth of Knowledge	1
p-value A	42% (correct answer)
p-value B	13%
p-value C	32%
p-value D	13%
Option Annotations	A. correct B. uses negative exponent on second factor to move $(4^7)^2$ to denominator, but then "cancels" exponents of 2; evaluates as $\frac{(4^4)^2}{(4^7)^2} = \frac{(4^4)}{(4^7)}$ C. adds exponents throughout; evaluates as $(4^6)(4^5)$ and then $4^{(6+5)}$ D. adds exponents then multiplies exponents; evaluates as $(4^6)(4^5)$ then $4^{(6 \times 5)}$

A calculator is permitted for use in solving questions 2–17 in this sampler.

2. Which statement describes values of x and y such that $\frac{x}{y}$ could be an irrational number?

A. The value of x is zero, and the value of y is an integer less than zero.

B. The value of x is the square root of an integer, and the value of y is an integer greater than zero.

C. The value of x is an integer less than zero, and the value of y is an integer greater than zero.

D. The value of x is a square root that can be simplified to an integer, and the value of y is an integer less than zero.

Item Information	
Alignment	A-N.1.1
Answer Key	B
Depth of Knowledge	1
p-value A	22%
p-value B	37% (correct answer)
p-value C	20%
p-value D	21%
Option Annotations	A. thinks zero in numerator makes number irrational B. correct C. describes a rational number D. thinks square root in numerator makes number irrational

3. Which number is positive, rational, and has a value between 0 and 1?

A. $-0.\overline{2}$

B. $\pi - 3$

C. $\sqrt{\frac{1}{4}}$

D. $\frac{3}{2}$

Item Information	
Alignment	A-N.1.1.1 A-N.1.1.4
Answer Key	C
Depth of Knowledge	1
p-value A	8%
p-value B	14%
p-value C	65% (correct answer)
p-value D	13%
Option Annotations	A. thinks repeating would mean irrational; disregards negative sign B. finds a number between 0 and 1; disregards the fact that it is irrational C. correct D. finds a rational number; disregards the fact that it is not between 0 and 1

4. A number is shown below.

$$0.\overline{56}$$

Which statement about the number is true?

A. The number is rational and equivalent to $\frac{56}{99}$.

B. The number is rational and equivalent to $\frac{56}{100}$.

C. The number is irrational and equivalent to $\frac{1}{56}$.

D. The number is irrational and cannot be represented as a fraction written with integers.

Item Information	
Alignment	A-N.1.1.2 A-N.1.1.1
Answer Key	A
Depth of Knowledge	1
p-value A	50% (correct answer)
p-value B	19%
p-value C	9%
p-value D	22%
Option Annotations	A. correct B. ignores the repeating portion of the decimal C. assumes a repeating decimal is irrational and selects an incorrect rational representation D. assumes a repeating decimal cannot be written as a rational number

5. In the expression below, c is an integer.

$$9^{c} \bullet 9^{-c}$$

Which value is equivalent to the expression?

A. 0

B. 1

C. $\frac{1}{9^{2c}}$

D. 9

Item Information	
Alignment	B-E.1
Answer Key	B
Depth of Knowledge	1
p-value A	14%
p-value B	37% (correct answer)
p-value C	28%
p-value D	21%
Option Annotations	A. notes $c + (^{-}c) = 0$, so assumes expression value is 0 B. correct C. combines c and ^{-}c into $^{-}2c$; writes as a fraction with a positive exponent D. notes $c + (^{-}c) = 0$, so leaves 9

6. Fran buys used DVDs. She pays $2.75 for each DVD she buys. She graphs a line to show the total amount (y), in dollars, she pays to buy x used DVDs. Which equation correctly describes Fran's line?

A. $y = 2.75$

B. $y = 2.75x$

C. $y = x + 2.75$

D. $y = 2.75x + 2.75$

Item Information	
Alignment	B-E.2.1.3
Answer Key	B
Depth of Knowledge	2
p-value A	5%
p-value B	77% (correct answer)
p-value C	14%
p-value D	4%
Option Annotations	A. interprets 2.75 as a constant instead of as a rate B. correct C. uses the rate as the *y*-intercept D. uses 2.75 as the slope and *y*-intercept

7. Hank's Bicycle Rentals charges an initial fee of $15 and an hourly rate of $5 to rent a bicycle. Maria's Bicycle Rentals has the same hourly rate but charges an initial fee of $12. To find the number of hours for which the two rental companies would charge the same amount to rent a bicycle, Cindy writes and solves the equation shown below.

$$15 + 5x = 12 + 5x$$

Which statement describes the number of hours for which the two rental companies charge the same amount to rent a bicycle?

A. The two companies charge the same amount to rent a bicycle for $\frac{3}{5}$ hour.

B. The two companies charge the same amount to rent a bicycle for 3 hours.

C. The two companies never charge the same amount to rent a bicycle for the same number of hours.

D. The two companies always charge the same amount to rent a bicycle for the same number of hours.

Item Information	
Alignment	B-E.3.1.1
Answer Key	C
Depth of Knowledge	2
p-value A	10%
p-value B	18%
p-value C	62% (correct answer)
p-value D	10%
Option Annotations	A. eliminates one of the 5*x* terms and gets 15 = 12 + 5*x* B. gets 0 = 3 and thinks the solution is 3 C. correct D. gets 0 = 3 and thinks that means there are infinite solutions

8. Which statement describing a function of x is true?

A. The graph of $y = 3x + 9$ is linear and has a y-intercept of 9.

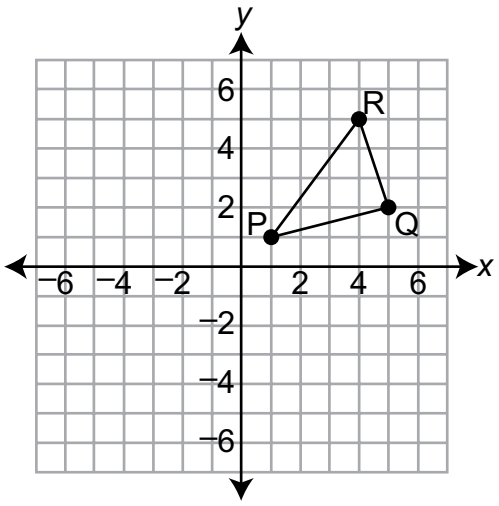
B. The graph of $y = 3x$ is nonlinear and passes through the origin.

C. The graph of $y = 3x^2$ is linear and passes through the point (0, 0).

D. The graph of $y = 3^2x + 9$ is nonlinear and passes through the point (0, 9).

Item Information	
Alignment	B-F.1.1.3 B-F.1.1.2
Answer Key	A
Depth of Knowledge	2
p-value A	61% (correct answer)
p-value B	14%
p-value C	13%
p-value D	12%
Option Annotations	A. correct B. notes correctly that $y = 3x$ passes through the origin, but misses that it is linear C. notes correctly that $y = 3x^2$ passes through the origin, but misses that it is nonlinear D. sees that $y = 3^2x + 9$ has a squared term, so assumes that it is nonlinear

9. Triangle PQR is graphed on the coordinate grid shown below.



To form triangle P'Q'R', triangle PQR will be rotated 90° clockwise about the origin. What will be the slope of side Q'R'?

A. $^{-}3$

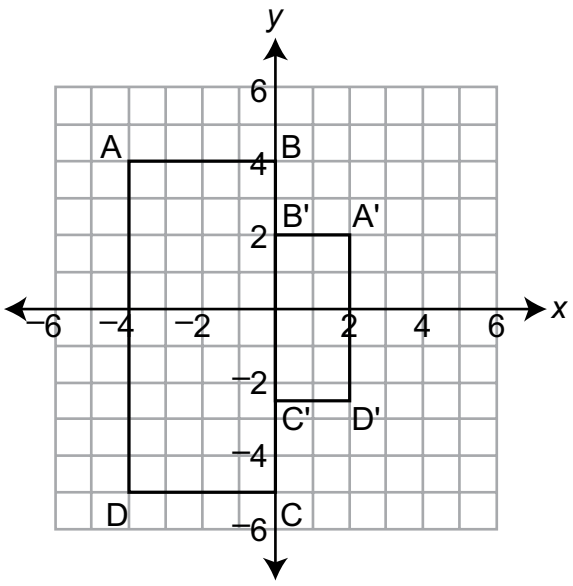
B. $\frac{^{-}1}{3}$

C. $\frac{1}{3}$

D. 3

Item Information	
Alignment	C-G.1.1.1
Answer Key	C
Depth of Knowledge	2
p-value A	25%
p-value B	19%
p-value C	34% (correct answer)
p-value D	22%
Option Annotations	A. thinks the slope will not change B. thinks the slope will be inverted C. correct D. thinks the slope will be the opposite

10. Quadrilateral ABCD and quadrilateral A'B'C'D' are shown on the coordinate grid below.



Which sequence of transformations could be used to map quadrilateral ABCD onto quadrilateral A'B'C'D'?

A. a reflection across the *x*-axis, followed by a dilation centered at the origin with a scale factor of 0.5

B. a dilation centered at the origin with a scale factor of 0.5, followed by a reflection across the *y*-axis

C. a translation 4 units to the right, followed by a dilation centered at the origin with a scale factor of 0.5

D. a rotation of 180° about the point (0, ⁻0.5), followed by a dilation centered at the origin with a scale factor of 0.5

Item Information	
Alignment	C-G.1.1.4
Answer Key	B
Depth of Knowledge	2
p-value A	20%
p-value B	52% (correct answer)
p-value C	15%
p-value D	13%
Option Annotations	A. selects the wrong axis for the reflection B. correct C. does not notice the misalignment of A to B', B to A', C to D', and D to C' D. does not notice that the rotation causes the misalignment of A to D', B to C', C to B', and D to A'

11. The side lengths of triangle ABC are listed below.

- AB = 7 mm
- AC = 12 mm
- BC = 6 mm

Which statement about triangle ABC is true?

A. Angle A is a right angle.

B. Angle B is a right angle.

C. Angle C is a right angle.

D. Triangle ABC is not a right triangle.

Item Information	
Alignment	C-G.2.1.1
Answer Key	D
Depth of Knowledge	2
p-value A	10%
p-value B	19%
p-value C	10%
p-value D	61% (correct answer)
Option Annotations	A. incorrectly assumes that triangle ABC is a right triangle and that the right angle is always opposite the shortest side B. incorrectly assumes that triangle ABC is a right triangle but knows that the right angle is always opposite the longest side C. incorrectly assumes that triangle ABC is a right triangle and that angle C is always the right angle ($a^2 + b^2 = c^2$) D. correct

12. Point R is located at (1, 2) on a coordinate grid. Point S is located at (4, $^{-}$5) on the same coordinate grid. What is the distance from point R to point S, rounded to the nearest tenth?

A. 3.2 units

B. 4.6 units

C. 7.6 units

D. 10.0 units

Item Information	
Alignment	C-G.2.1.3
Answer Key	C
Depth of Knowledge	2
p-value A	21%
p-value B	17%
p-value C	45% (correct answer)
p-value D	17%
Option Annotations	A. adds 7 + 3 = 10 and then determines the square root of 10 B. multiplies 7 × 3 = 21 and then determines the square root of 21 C. correct D. adds 7 + 3 = 10

13. Michael stacks 14 identical disks to form a cylinder.

- Each disk is $\frac{1}{4}$ inch thick.
- The diameter of each disk is 3 inches.

Which measurement is **closest** to the volume, in cubic inches, of the stack of disks?

A. 7

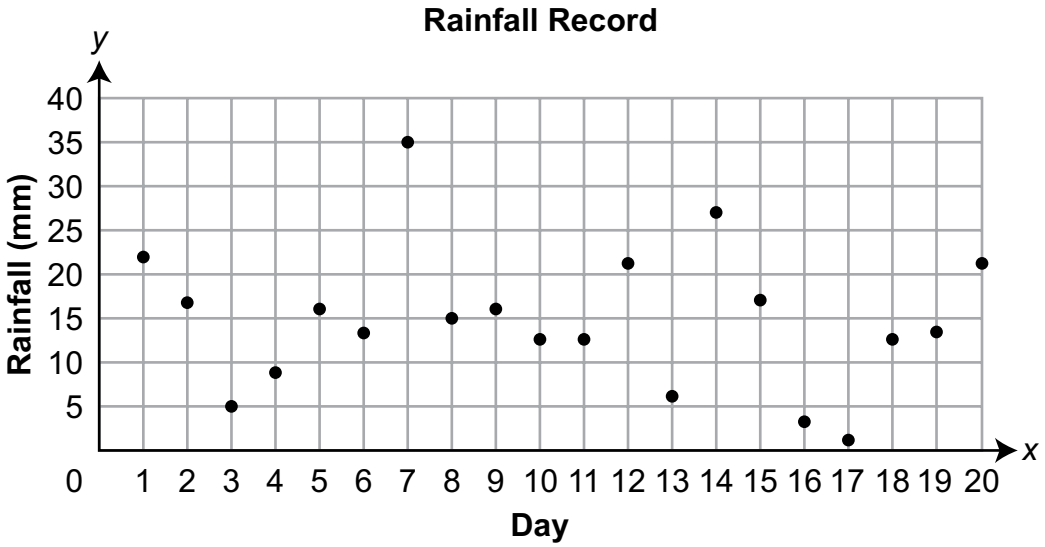
B. 25

C. 99

D. 396

Item Information	
Alignment	C-G.3.1.1
Answer Key	B
Depth of Knowledge	2
p-value A	24%
p-value B	57% (correct answer)
p-value C	14%
p-value D	5%
Option Annotations	A. calculates the volume of only 1 disk using the diameter instead of the radius B. correct C. calculates the volume using the diameter instead of the radius OR does not multiply by $\frac{1}{4}$ D. calculates the volume using the diameter instead of the radius and does not multiply by $\frac{1}{4}$

14. The scatter plot below shows the rainfall, in millimeters, recorded each day during a 20-day period.



On which day was the rainfall recorded an outlier?

A. 1

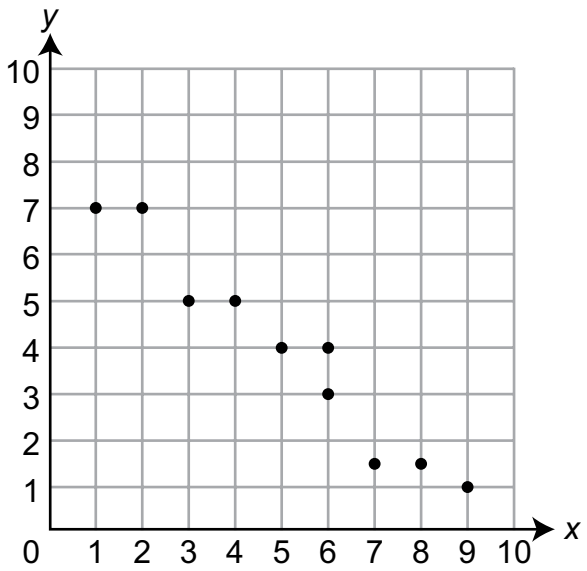
B. 7

C. 17

D. 20

Item Information	
Alignment	D-S.1.1.1
Answer Key	B
Depth of Knowledge	2
p-value A	3%
p-value B	84% (correct answer)
p-value C	7%
p-value D	6%
Option Annotations	A. selects the first day B. correct C. selects the day on which the amount of rainfall was the lowest D. selects the last day

15. A scatter plot is graphed on the coordinate grid shown below.



Which equation **best** describes a line of best fit for the data?

A. $y = 0.8x + 8$

B. $y = 8x + 0.8$

C. $y = {}^{-}0.8x + 8$

D. $y = {}^{-}8x + 0.8$

Item Information	
Alignment	D-S.1.1.2
Answer Key	C
Depth of Knowledge	2
p-value A	17%
p-value B	18%
p-value C	52% (correct answer)
p-value D	13%
Option Annotations	A. uses the opposite of the slope B. uses the opposite of the slope and switches the slope and *y*-intercept C. correct D. switches the slope and *y*-intercept and switches their signs

16. Amy surveyed some families about whether they have cats and whether they have dogs. The results of her survey are shown in the two-way table below.

Families with Cats and Dogs

		Have Cats	
		yes	no
Have Dogs	yes	8	5
	no	3	9

Based on the information shown in the two-way table, which statement about the families surveyed is true?

A. Of all the families surveyed, more than $\frac{1}{2}$ have neither a cat nor a dog.

B. Of all the families surveyed who do not have a dog, $\frac{3}{4}$ do have a cat.

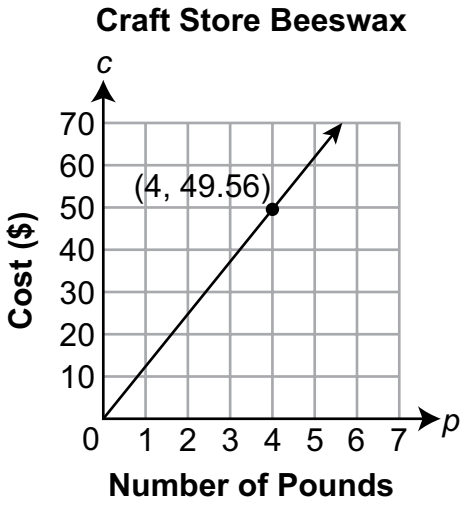
C. Of all the families surveyed who do have a cat, 12% do not have a dog.

D. Of all the families surveyed, 32% have either a cat or a dog, but not both a cat and a dog.

Item Information	
Alignment	D-S.1.2
Answer Key	D
Depth of Knowledge	2
p-value A	19%
p-value B	19%
p-value C	24%
p-value D	38% (correct answer)
Option Annotations	A. incorrectly uses $\frac{9}{14}$ as the fraction of families who do not have a cat and $\frac{9}{12}$ as the fraction of families who do not have a dog, and both are more than $\frac{1}{2}$ B. misreads as "do not have a cat" C. correctly identifies 3 as number of families who have a cat and not a dog, but uses $\frac{3}{25}$ instead of $\frac{3}{11}$ to determine percent D. correct

OPEN-ENDED QUESTION

17. The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



A. What is the cost, in dollars, of purchasing 15 pounds of beeswax at the craft store? Show or explain all your work.

Go to the next page to finish question 17.

GO ON

17. ***Continued.*** Please refer to the previous page for task explanation.

An online marketplace sells the same brand of beeswax that is sold at the craft store. At the online marketplace, 7 pounds of beeswax costs $78.75.

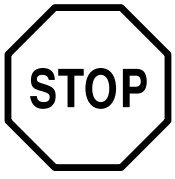
- For the craft store, an equation in the form $c = rp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.
- For the online marketplace, an equation in the form $c = sp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.

B. Explain why the value of the expression $r - s$ must be 1.14.

The online marketplace pays $175.00 for every 50 pounds of beeswax it buys from a manufacturer.

C. Write an equation that can be used to determine the profit (t), in dollars, that the online marketplace makes when it sells p pounds of beeswax. Show or explain all your work.

After you have checked your work, close your answer booklet and test booklet so your teacher will know you are finished.



Item-Specific Scoring Guideline

#17 Item Information

Alignment	B-E.2	**Depth of Knowledge**	3	**Mean Score**	1.42

Assessment Anchor this item will be reported under:

M08.B-E.2—Understand the connections between proportional relationships, lines, and linear equations.

Specific Anchor Descriptor addressed by this item:

M08.B-E.2.1 – Analyze and describe linear relationships between two variables, using slope.

Scoring Guide

Score	In this item, the student . . .
4	Demonstrates a thorough understanding of the connections between proportional relationships, lines, and linear equations by correctly solving problems and clearly explaining procedures.
3	Demonstrates a general understanding of the connections between proportional relationships, lines, and linear equations by correctly solving problems and clearly explaining procedures with only minor errors or omissions.
2	Demonstrates a partial understanding of the connections between proportional relationships, lines, and linear equations by correctly performing a significant portion of the required task.
1	Demonstrates minimal understanding of the connections between proportional relationships, lines, and linear equations.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.

Top-Scoring Student Response and Training Notes

Score	Description
4	Student earns 4 points.
3	Student earns 3.0–3.5 points.
2	Student earns 2.0–2.5 points.
1	Student earns 0.5–1.5 points. OR Student demonstrates minimal understanding of the connections between proportional relationships, lines, and linear equations.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Top-Scoring Response

Part A (1 $\frac{1}{2}$ points):

$\frac{1}{2}$ point for correct answer

1 point for correct and complete support

OR $\frac{1}{2}$ point for correct but incomplete support

What?	Why?
($)185.85	**Sample Work:** 49.56 ÷ 4 = 12.39 → 15(12.39) = 185.85 **OR** **Sample Explanation:** Since the graph passes through the origin and (4, 49.56), dividing 49.56 by 4 gets a unit rate, or unit cost, of $12.39 per pound. Buying 15 pounds means multiplying 15 by $12.39, which is $185.85. **OR equivalent**

Part B (1 point):

1 point for correct and complete explanation

OR $\frac{1}{2}$ point for correct but incomplete explanation

What?	Why?
	Sample Explanation: In $c = rp$, the equation for the craft store, r is the slope of the graph, which is equal to the unit rate of $12.39 per pound. So, $c = 12.39p$, and $r = 12.39$. At the online marketplace, the beeswax costs $11.25 per pound because 78.75 ÷ 7 = 11.25. So, in $c = sp$, the equation for the online marketplace, s is the cost per pound, or $11.25. Therefore, $r - s = 12.39 - 11.25 = 1.14$. **OR** because the cost per pound differs by $1.14. **OR equivalent**

Part C (1 $\frac{1}{2}$ points):

$\frac{1}{2}$ point for correct answer

1 point for correct and complete support

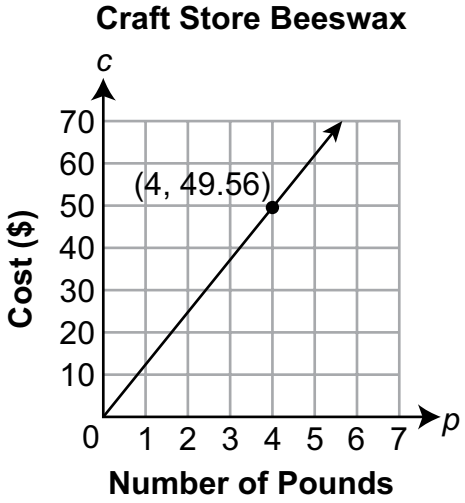
OR $\frac{1}{2}$ point for correct and incomplete support

What?	Why?
$t = 7.75p$ **OR** $t = 11.25p - 3.50p$ **OR equivalent**	**Sample Explanation:** The online marketplace sells the beeswax for \$11.25 per pound and buys beeswax for \$3.50 per pound because 175 ÷ 50 = 3.50. The online marketplace makes a profit of \$7.75 per pound since 11.25 – 3.50 = 7.75. This is the unit rate for the profit. So the equation that describes the profit the online marketplace makes when it sells p pounds of beeswax is $t = 7.75p$. **OR equivalent**

STUDENT RESPONSE

Response Score: 4 points

17. The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



A. What is the cost, in dollars, of purchasing 15 pounds of beeswax at the craft store? Show or explain all your work.

$49.56 \div 4 = 12.39$

$y = 12.39x$

$y = 12.39(15)$

$y = 185.85$

$185.85 for 15 lbs of beeswax

The response provides a correct answer and correct and complete support.

Go to the next page to finish question 17.

GO ON

17. ***Continued.*** Please refer to the previous page for task explanation.

An online marketplace sells the same brand of beeswax that is sold at the craft store. At the online marketplace, 7 pounds of beeswax costs $78.75.

- For the craft store, an equation in the form $c = rp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.
- For the online marketplace, an equation in the form $c = sp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.

B. Explain why the value of the expression $r - s$ must be 1.14.

r represents the cost per pound of beeswax at the craftstore
s represents the cost per pound of beeswax from the online market
r=12.39 and s=11.25 If you subtract the two (12.39-11.25) you will get 1.14

The response provides a correct and complete explanation.

The online marketplace pays $175.00 for every 50 pounds of beeswax it buys from a manufacturer.

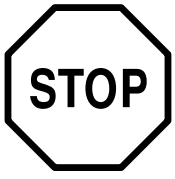
C. Write an equation that can be used to determine the profit (t), in dollars, that the online marketplace makes when it sells p pounds of beeswax. Show or explain all your work.

175 ÷ 50 = 3.5
78.75 ÷ 7 = 11.25
11.25 -> 3.5 = 7.75
t = 11.25p -> 3.5p

The online market place makes a profit of $7.75 when it sells p pounds of beeswax.

The response provides a correct answer and correct and complete support.

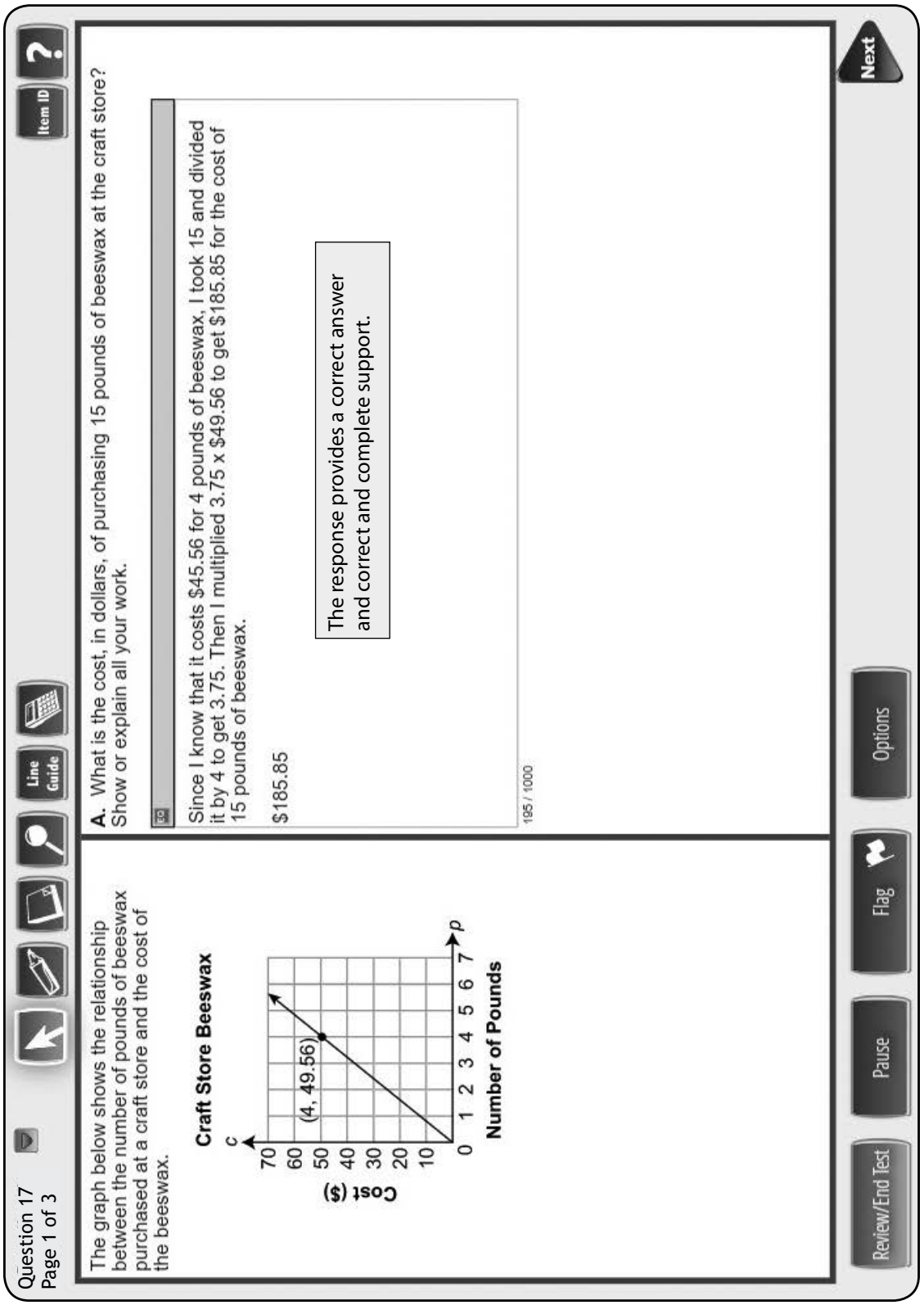
After you have checked your work, close your answer booklet and test booklet so your teacher will know you are finished.



STUDENT RESPONSE

Response Score: 3 points

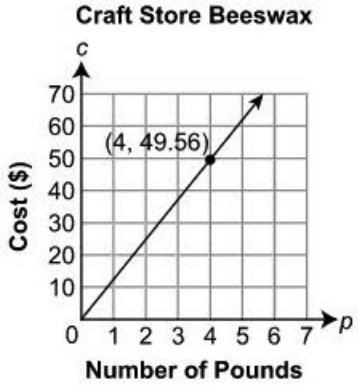
PART A



Question 17
Page 2 of 3

Line Guide | Item ID | ?

The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



An online marketplace sells the same brand of beeswax that is sold at the craft store. At the online marketplace, 7 pounds of beeswax costs $78.75.

- For the craft store, an equation in the form $c = rp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.
- For the online marketplace, an equation in the form $c = sp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.

B. Explain why the value of the expression $r - s$ must be 1.14.

EQ

Because that has to be the difference between the two marketplaces in cost per pound or it wouldn't be the correct cost per pound.

The response provides a complete explanation.

130 / 1000

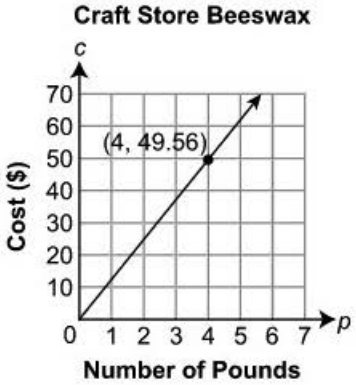
Review/End Test | Pause | Flag | Options | Back | Next

Question 17
Page 3 of 3

Line Guide

Item ID

The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



The online marketplace pays $175.00 for every 50 pounds of beeswax it buys from a manufacturer.

C. Write an equation that can be used to determine the profit (t), in dollars, that the online marketplace makes when it sells p pounds of beeswax. Show or explain all your work.

EQ

$t = 3.5p$

$\frac{\$175.00}{50\ lbs} = \$3.50$ per pound of beeswax.

The response provides an incorrect answer and correct but incomplete support (The online marketplace's cost per pound of beeswax was correctly calculated. No other steps were shown.).

41 / 1000

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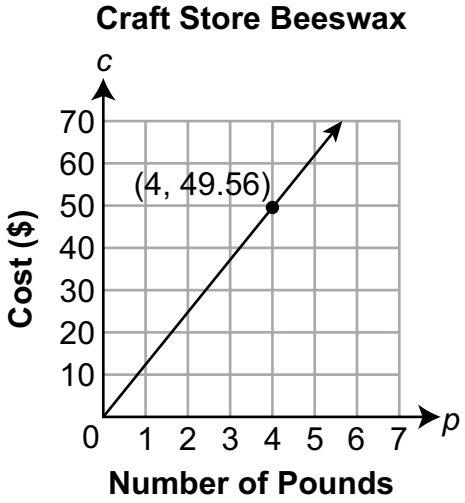
STUDENT RESPONSE

Response Score: 2 points

17. The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



A. What is the cost, in dollars, of purchasing 15 pounds of beeswax at the craft store? Show or explain all your work.

one pound = 12.39 49.56 ÷ 4 = 12.39

12.39 x 15 = # 185.85

15 pound will cost #185.85

The response provides a correct answer and correct and complete support.

Go to the next page to finish question 17.

GO ON

17. ***Continued.*** Please refer to the previous page for task explanation.

An online marketplace sells the same brand of beeswax that is sold at the craft store. At the online marketplace, 7 pounds of beeswax costs $78.75. $11.25

- For the craft store, an equation in the form $c = rp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.
- For the online marketplace, an equation in the form $c = sp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.

B. Explain why the value of the expression $r - s$ must be 1.14.

The value must be that because that is what you get when you subtract the two values of cost and pounds.

The response provides an incorrect explanation.

The online marketplace pays $175.00 for every 50 pounds of beeswax it buys from a manufacturer.

C. Write an equation that can be used to determine the profit (t), in dollars, that the online marketplace makes when it sells p pounds of beeswax. Show or explain all your work.

$T = 11.25p - 17.5$

$387.50 = 11.25 \times 50 - 175$

profits = $387.50

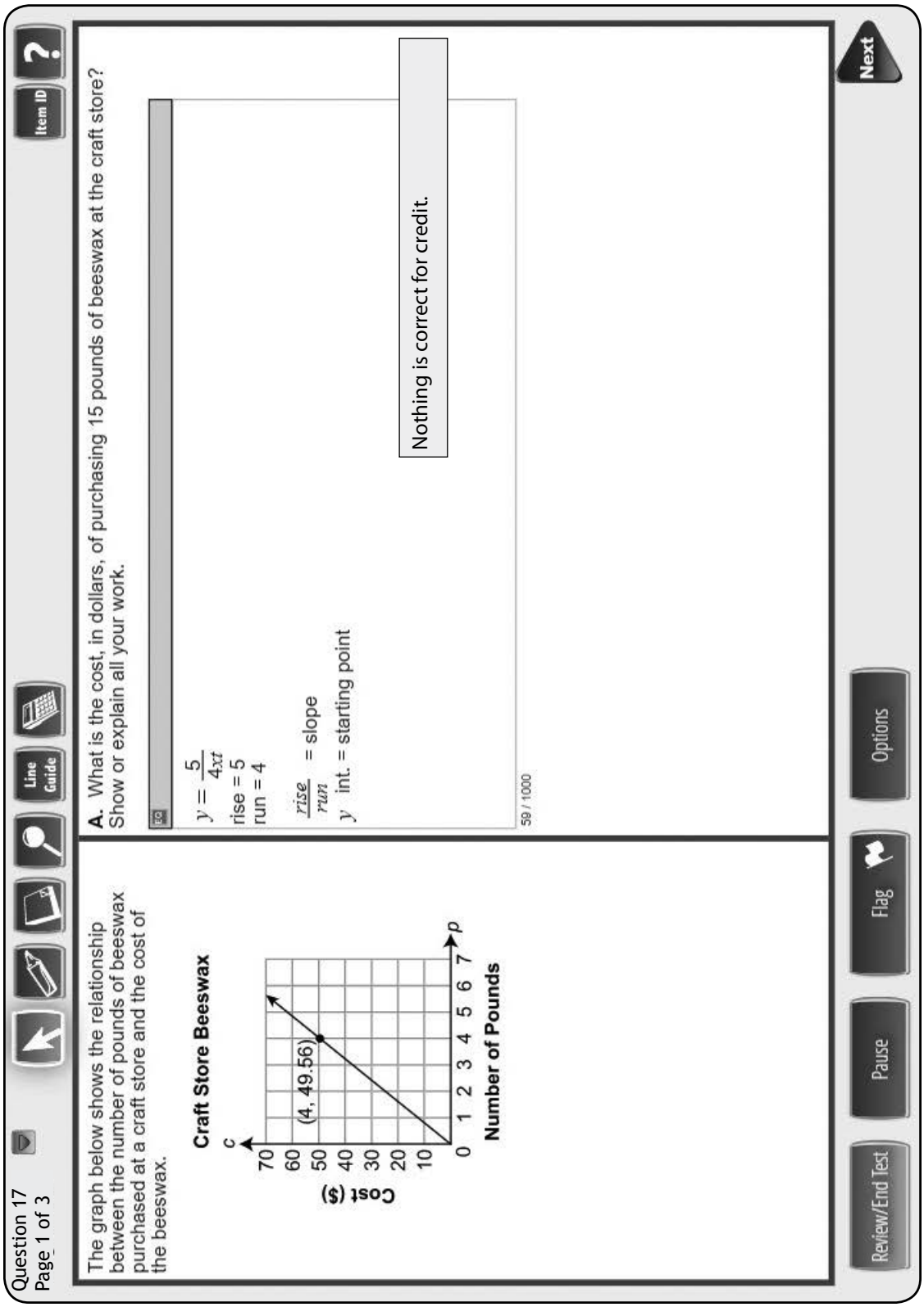
The response provides an incorrect answer and correct but incomplete support (The profit for 50 lbs. was correctly calculated.).

After you have checked your work, close your answer booklet and test booklet so your teacher will know you are finished.

STUDENT RESPONSE

Response Score: 1 point

PART A



Question 17
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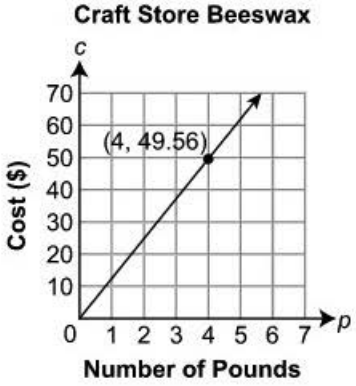
Line Guide

Item ID

The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



An online marketplace sells the same brand of beeswax that is sold at the craft store. At the online marketplace, 7 pounds of beeswax costs $78.75.

- For the craft store, an equation in the form $c = rp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.
- For the online marketplace, an equation in the form $c = sp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.

B. Explain why the value of the expression $r - s$ must be 1.14.

EQ

No response was provided.

0 / 1000

Review/End Test | Pause | Flag | Options | Back | Next

PART C

Question 17
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Line Guide
Item ID
The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.
Craft Store Beeswax
c
Cost ($)
70
60
50
40
30
20
10
(4, 49.56)
0 1 2 3 4 5 6 7 p
Number of Pounds
The online marketplace pays $175.00 for every 50 pounds of beeswax it buys from a manufacturer.
C. Write an equation that can be used to determine the profit (t), in dollars, that the online marketplace makes when it sells p pounds of beeswax. Show or explain all your work.
EQ
t = 7.75p
m = 3.5p
11.25 − 3.5 = 7.75
income - expenses = profit
The response provides a correct answer and correct but incomplete support (Does not explain or show how the 3.5 is found).
58 / 1000
Review/End Test
Pause
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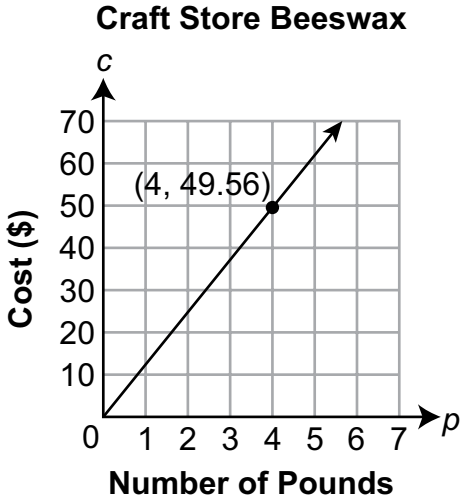
STUDENT RESPONSE

Response Score: 0 points

17. The graph below shows the relationship between the number of pounds of beeswax purchased at a craft store and the cost of the beeswax.



A. What is the cost, in dollars, of purchasing 15 pounds of beeswax at the craft store? Show or explain all your work.

7 pounds = 78.75

15 pounds = 233.52

78.75
-49.56
$29.19

15
-7
8

29.19
× 8
$233.52

Nothing is correct for credit.

Go to the next page to finish question 17.

GO ON

17. ***Continued.*** Please refer to the previous page for task explanation.

An online marketplace sells the same brand of beeswax that is sold at the craft store. At the online marketplace, 7 pounds of beeswax costs $78.75.

- For the craft store, an equation in the form $c = rp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.
- For the online marketplace, an equation in the form $c = sp$ can be used to describe the relationship between the number of pounds (p) of beeswax purchased and the cost (c), in dollars.

B. Explain why the value of the expression $r - s$ must be 1.14.

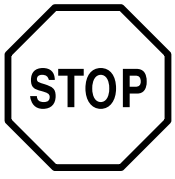
That's how much the tax would be.

The online marketplace pays $175.00 for every 50 pounds of beeswax it buys from a manufacturer.

C. Write an equation that can be used to determine the profit (t), in dollars, that the online marketplace makes when it sells p pounds of beeswax. Show or explain all your work.

$50p = t$

After you have checked your work, close your answer booklet and test booklet so your teacher will know you are finished.



MATHEMATICS—SUMMARY DATA

MULTIPLE-CHOICE

Sample Number	Alignment	Answer Key	Depth of Knowledge	*p*-values A	*p*-values B	*p*-values C	*p*-values D
1	B-E.1.1.1	A	1	42%	13%	32%	13%
2	A-N.1.1	B	1	22%	37%	20%	21%
3	A-N.1.1.1 A-N.1.1.4	C	1	8%	14%	65%	13%
4	A-N.1.1.2 A-N.1.1.1	A	1	50%	19%	9%	22%
5	B-E.1	B	1	14%	37%	28%	21%
6	B-E.2.1.3	B	2	5%	77%	14%	4%
7	B-E.3.1.1	C	2	10%	18%	62%	10%
8	B-F.1.1.3 B-F.1.1.2	A	2	61%	14%	13%	12%
9	C-G.1.1.1	C	2	25%	19%	34%	22%
10	C-G.1.1.4	B	2	20%	52%	15%	13%
11	C-G.2.1.1	D	2	10%	19%	10%	61%
12	C-G.2.1.3	C	2	21%	17%	45%	17%
13	C-G.3.1.1	B	2	24%	57%	14%	5%
14	D-S.1.1.1	B	2	3%	84%	7%	6%
15	D-S.1.1.2	C	2	17%	18%	52%	13%
16	D-S.1.2	D	2	19%	19%	24%	38%

OPEN-ENDED

Sample Number	Alignment	Points	Depth of Knowledge	Mean Score
17	B-E.2	4	3	1.42