New York State Testing Program

2024

Mathematics Test

Grade 8

Scoring Leader Materials

Training Set

Grade 8 Mathematics Reference Sheet

CONVERSIONS

1 yard = 3 feet
1 mile = 5,280 feet

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2,000 pounds

CONVERSIONS ACROSS MEASUREMENT SYSTEMS

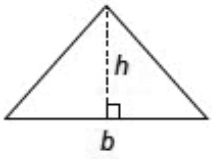
1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 1.609 kilometers
1 kilometer = 0.6214 mile

1 gallon = 3.785 liters
1 liter = 0.2642 gallon

1 pound = 0.454 kilogram
1 kilogram = 2.2 pounds

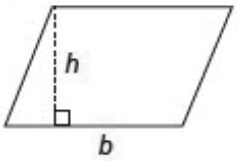
FORMULAS AND FIGURES

Triangle



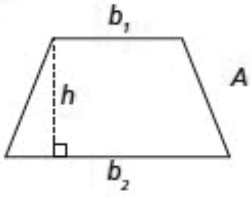
$A = \frac{1}{2}bh$

Parallelogram



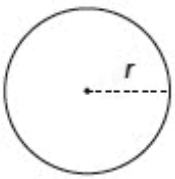
$A = bh$

Trapezoid



$A = \frac{1}{2}h(b_1 + b_2)$

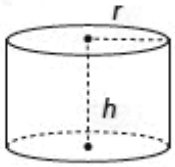
Circle



$C = 2\pi r$
$C = \pi d$
$A = \pi r^2$

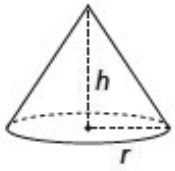
General Prism $V = Bh$

Right Cylinder



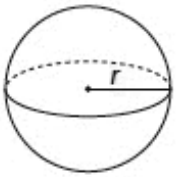
$V = \pi r^2 h$

Right Cone



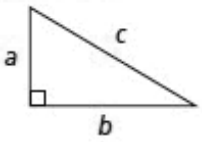
$V = \frac{1}{3}\pi r^2 h$

Sphere



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

Pythagorean Theorem



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

1-Credit Constructed-Response Rubric

1 Credit	A 1-credit response is a **correct answer** to the question which indicates a thorough understanding of mathematical concepts and/or procedures.
0 Credits*	A 0-credit response is incorrect, irrelevant, or incoherent.

* Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

2-Credit Constructed-Response Holistic Rubric

2 Credits	A 2-credit response includes the correct solution to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task. This response • indicates that the student has completed the task correctly, using mathematically sound procedures • contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures • may contain inconsequential errors that do not detract from the correct solution and the demonstration of a thorough understanding
1 Credit	A 1-credit response demonstrates only a partial understanding of the mathematical concepts and/or procedures in the task. This response • correctly addresses only some elements of the task • may contain an incorrect solution but applies a mathematically appropriate process • may contain the correct solution but required work is incomplete
0 Credits*	A 0-credit response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

* Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

3-Credit Constructed-Response Holistic Rubric

3 Credits	A 3-credit response includes the correct solution(s) to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task. This response • indicates that the student has completed the task correctly, using mathematically sound procedures • contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures • may contain inconsequential errors that do not detract from the correct solution(s) and the demonstration of a thorough understanding
2 Credits	A 2-credit response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task. This response • appropriately addresses most but not all aspects of the task using mathematically sound procedures • may contain an incorrect solution but provides sound procedures, reasoning, and/or explanations • may reflect some minor misunderstanding of the underlying mathematical concepts and/or procedures
1 Credit	A 1-credit response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task. This response • may address some elements of the task correctly but reaches an inadequate solution and/or provides reasoning that is faulty or incomplete • exhibits multiple flaws related to misunderstanding of important aspects of the task, misuse of mathematical procedures, or faulty mathematical reasoning • reflects a lack of essential understanding of the underlying mathematical concepts • may contain the correct solution(s) but required work is limited
0 Credits*	A 0-credit response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

* Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

1-Credit Constructed-Response Mathematics Scoring Policies (2024)

1. The student is **not** required to show work for a 1-credit constructed-response question, therefore, any work shown will **not** be scored. A clearly identified correct response should still receive full credit.
2. If the student clearly identifies a correct answer but fails to write that answer in the answer space, the student should still receive full credit.
3. If the student provides one legible response (and one response only), the rater should score the response, even if it has been crossed out.
4. If the student has written more than one response but has crossed some out, the rater should score only the response that has **not** been crossed out.
5. If the student provides more than one response but does not indicate which response is to be considered the correct response and none have been crossed out, the student shall not receive credit.
6. If the student does not provide the answer in the form as directed in the question, the student will not receive credit.
7. In questions requiring number sentences, the number sentences must be written horizontally.
8. When measuring angles with a protractor, there is a +/- 5 degrees deviation allowed of the true measure.
9. Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted). This is not to be confused with a score of zero wherein the student does respond to part or all of the question, but that work results in a score of zero.

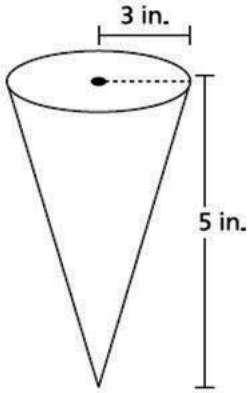
2- and 3-Credit Constructed-Response Mathematics Scoring Policies (2024)

1. If a student shows the work in other than a designated "Show your work" or "Explain" area, that work should still be scored.
2. If the question requires students to show their work, and the student shows appropriate work and clearly identifies a correct answer but fails to write that answer in the answer space, the student should still receive full credit.
3. If students are directed to show work or provide an explanation, a correct answer with **no** work shown or **no** explanation provided, receives **no** credit.
4. If students are **not** directed to show work, any work shown will **not** be scored. This applies to questions that do **not** ask for any work and questions that ask for work for one part and do **not** ask for work in another part.
5. If the student provides one legible response (and one response only), the rater should score the response, even if it has been crossed out.
6. If the student has written more than one response but has crossed some out, the rater should score only the response that has **not** been crossed out.
7. If the student provides more than one response, but does not indicate which response is to be considered the correct response and none have been crossed out, the student shall not receive full credit.
8. Trial-and-error responses are **not** subject to Scoring Policy #6 above, since crossing out is part of the trial-and-error process.
9. If a response shows repeated occurrences of the same conceptual error within a question, the conceptual error should **not** be considered more than once in gauging the demonstrated level of understanding.
10. In questions requiring number sentences, the number sentences must be written horizontally.
11. When measuring angles with a protractor, there is a +/- 5 degrees deviation allowed of the true measure.
12. Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted). This is not to be confused with a score of zero wherein the student does respond to part or all of the question but that work results in a score of zero.

39

A movie theater sells popcorn in cone-shaped containers as shown below.

POPCORN CONTAINER



What is the volume, in cubic inches, of the popcorn container? Round your answer to the nearest tenth.

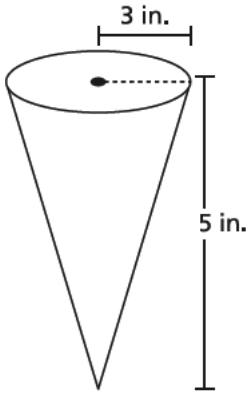
Answer _____ cubic inches

EXEMPLARY RESPONSE

39

A movie theater sells popcorn in cone-shaped containers as shown below.

POPCORN CONTAINER



What is the volume, in cubic inches, of the popcorn container? Round your answer to the nearest tenth.

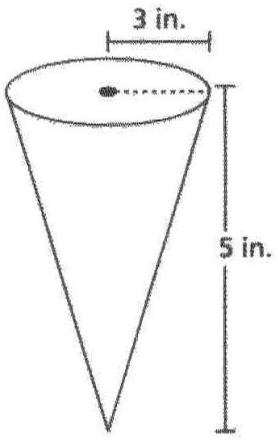
Answer 47.1 cubic inches

GUIDE PAPER 1

39

A movie theater sells popcorn in cone-shaped containers as shown below.

POPCORN CONTAINER



What is the volume, in cubic inches, of the popcorn container? Round your answer to the nearest tenth. [1]

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

$V = \frac{1}{3} \cdot \pi \cdot 3^2 \cdot 5$

$V = \frac{1}{3} \cdot \pi \cdot 45$

$V = 47.1238898$

Answer 47.1 cubic inches

Score Credit 1 (out of 1 credit)

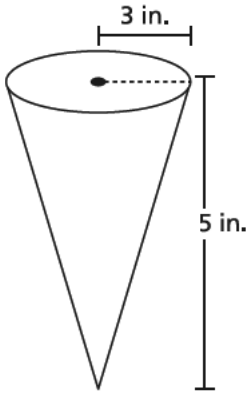
A correct answer is provided.

GUIDE PAPER 2

39

A movie theater sells popcorn in cone-shaped containers as shown below.

POPCORN CONTAINER



What is the volume, in cubic inches, of the popcorn container? Round your answer to the nearest tenth.

Answer 47.1 cubic inches

Score Credit 1 (out of 1 credit)

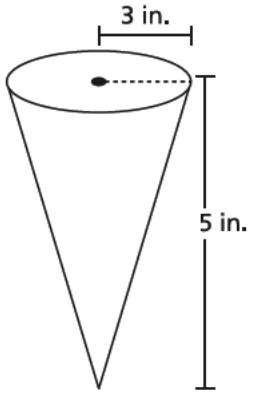
A correct answer is provided.

GUIDE PAPER 3

39

A movie theater sells popcorn in cone-shaped containers as shown below.

POPCORN CONTAINER



What is the volume, in cubic inches, of the popcorn container? Round your answer to the nearest tenth.

Answer v=pie × r^2 × h
v=141.4in cubic inches

Score Credit 0 (out of 1 credit)

An incorrect answer is provided.

40

The area of a square-shaped garden is 324 square feet. What is the length, in feet, of each side of the garden?

Answer _____ feet

EXEMPLARY RESPONSE

40

The area of a square-shaped garden is 324 square feet. What is the length, in feet, of each side of the garden?

Answer 18 feet

GUIDE PAPER 1

40

The area of a square-shaped garden is 324 square feet. What is the length, in feet, of each side of the garden? [1]

$\sqrt{324} = 18$ ft.

$\begin{array}{r} 18 \\ \times\ 18 \\ \hline 324 \end{array}$

Answer 18 feet

Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 2

40

The area of a square-shaped garden is 324 square feet. What is the length, in feet, of each side of the garden?

Answer 18 feet

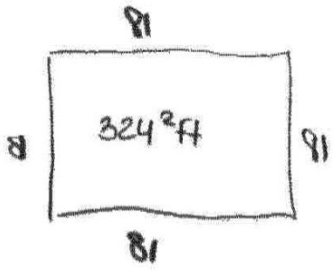
Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 3

40

The area of a square-shaped garden is 324 square feet. What is the length, in feet, of each side of the garden? [1]



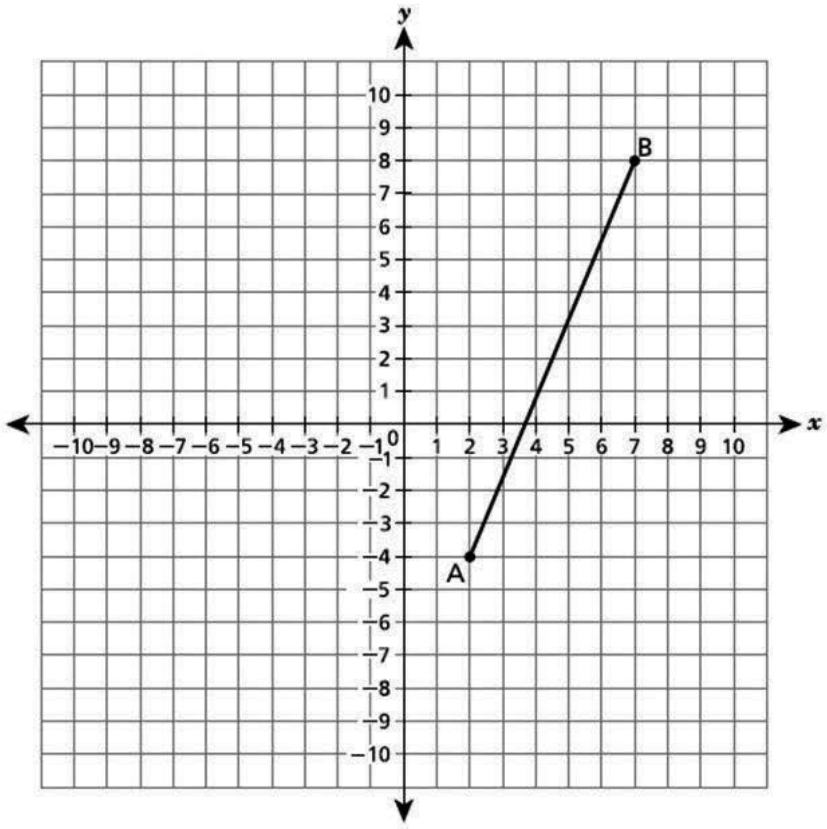
Answer 81 feet

Score Credit 0 (out of 1 credit)

An incorrect answer is provided.

41

Line segment AB is graphed on the coordinate plane shown below.



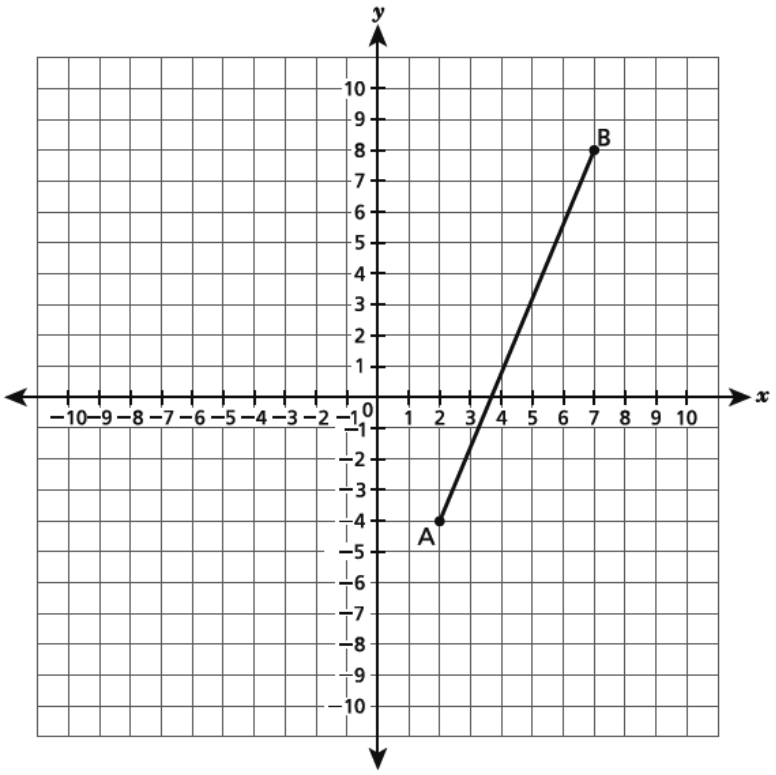
What is the length, in units, of line segment AB ?

Answer _____ units

EXEMPLARY RESPONSE

41

Line segment AB is graphed on the coordinate plane shown below.



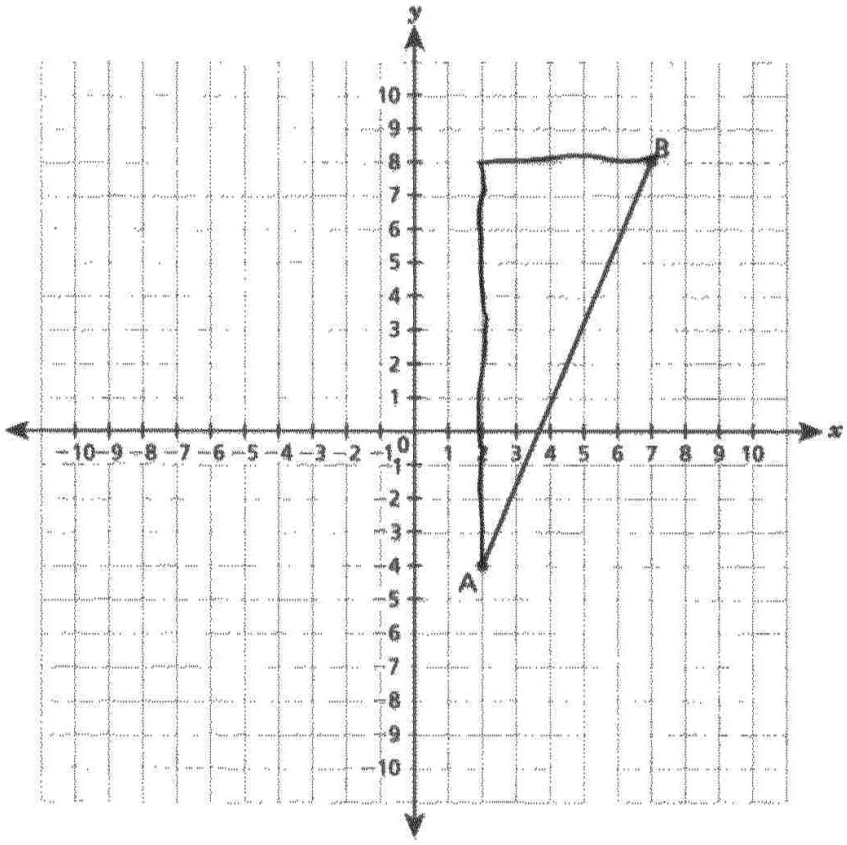
What is the length, in units, of line segment AB ?

Answer 13 units

GUIDE PAPER 1

41

Line segment AB is graphed on the coordinate plane shown below.



What is the length, in units, of line segment AB? [1]

$12^2 + 5^2 = c^2$

$144 + 25 = c^2$

$169 = c^2$

$c = 13$

Answer 13 units

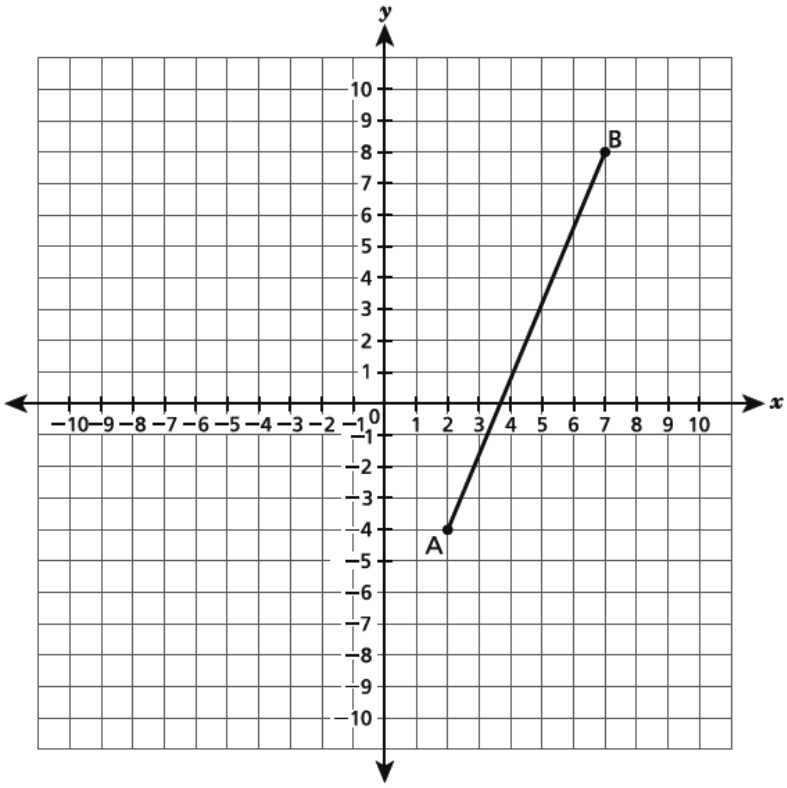
Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 2

41

Line segment AB is graphed on the coordinate plane shown below.



What is the length, in units, of line segment AB ?

Answer 13 units

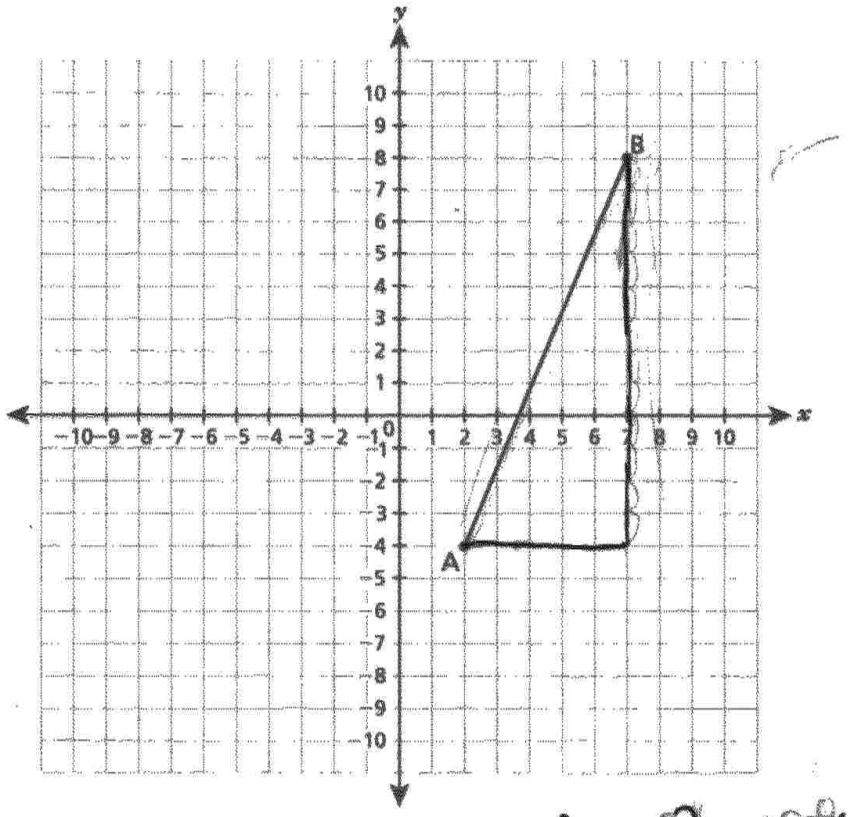
Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 3

41

Line segment AB is graphed on the coordinate plane shown below.



What is the length, in units, of line segment AB ? [1]

$5^2 + 12^2 = 196$

$\sqrt{196} = 14$

$= 14$ units

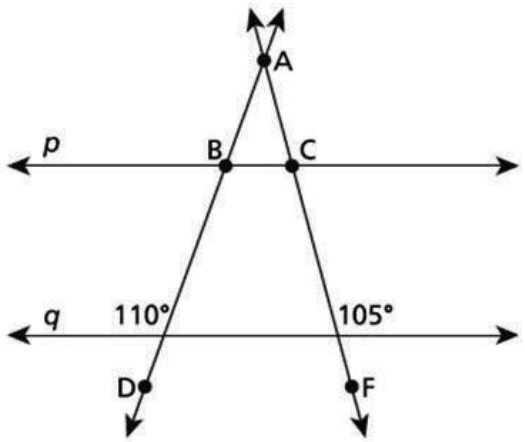
Answer 14 units

Score Credit 0 (out of 1 credit)

An incorrect answer is provided.

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of $\angle BAC$?

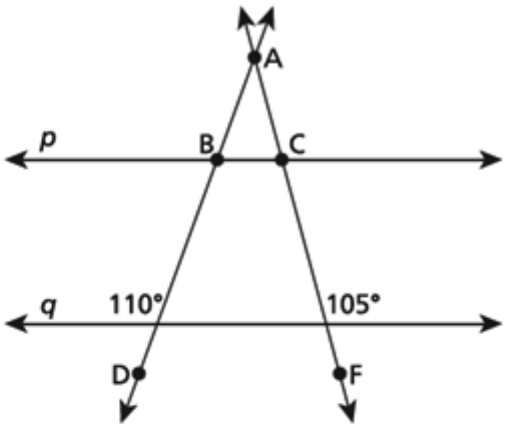
Show your work.

Answer _____ degrees

EXEMPLARY RESPONSE

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC?

Show your work.

The measure of <ABC = 70 degrees, because 180 - 110 =70.

The measure of <ACB = 75 degrees, because 180 - 105 = 75.

The sum of the 3 angles in triangle BAC is 180 degrees.

180 - 70 - 75 = 35

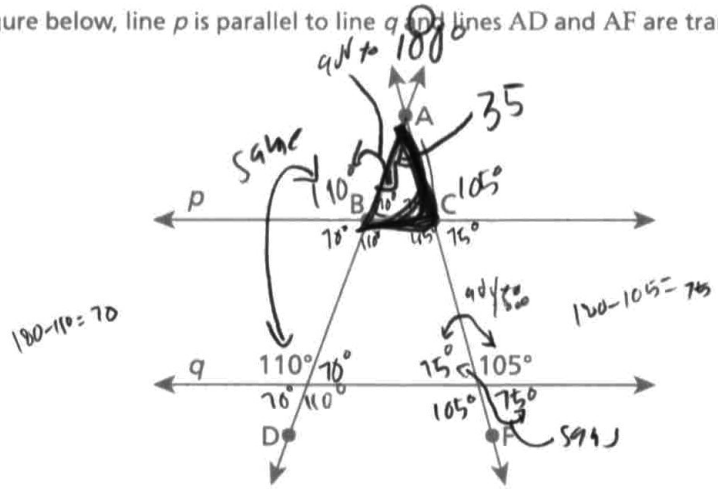
The measure of ∠ BAC = 35 degrees

OR other valid process.

Answer 35 degrees

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of $\angle BAC$?

Show your work.

$70+75=145$

triangles are $180°$

$180-145=35°$

Answer $35°$ degrees

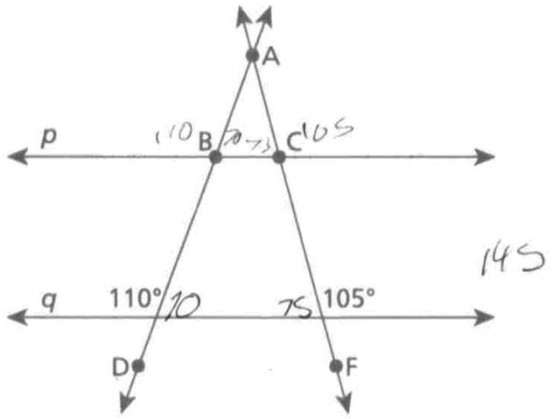
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The measure of $\angle BAC$ is correctly determined using mathematically sound procedures. This response is complete and correct.

GUIDE PAPER 2

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC?

Show your work.

180
−145
35

Answer 35 degrees

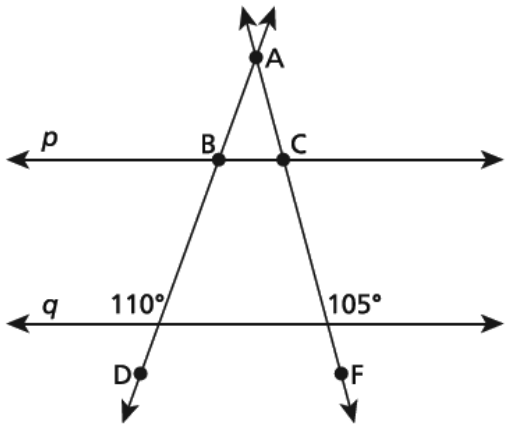
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The measure of ∠BAC is correctly determined using mathematically sound procedures. This response contains sufficient work to demonstrate a thorough understanding.

GUIDE PAPER 3

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC?

Show your work.

Since angles on a line are 180 degrees, or known as supplementry angles, I did 180-110 to get me 70. Since there are lines on the outside, they are vertical angles and therefore, equal in measure. 70 is also a corresponding angle moving it up to line p. It is also congruent with ∠ABC. I also did 180-105, giving me 75. 75 is also another corresponding angle and moving it up to line p, it is vertical angles with ∠ACB. Since the angles of a triangle make 180 degrees, 75+70 is equal to 145. 180-145 is 35.

Answer 35 degrees

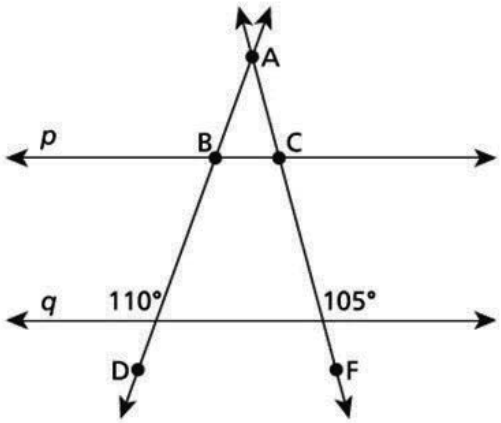
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The measure of ∠BAC is correctly determined using mathematically sound procedures. This response is complete and correct.

GUIDE PAPER 4

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC ?

Show your work.

∠ + ∠ + ∠ = 180 180-110=70 180-105-65
∠ +70+65=180
∠ +135=180
-135 -135
∠ = 45

Answer 45 degrees

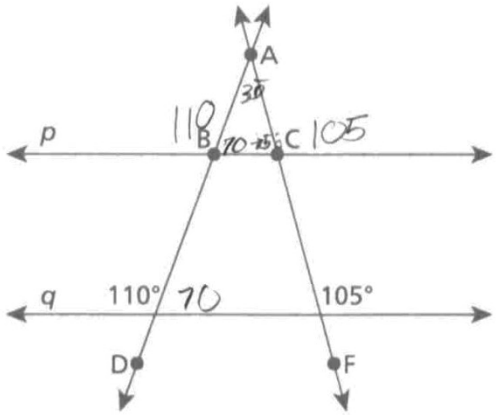
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. One correct supplementary angle measure is determined. Specific angles are not referenced in the work, and an incorrect solution is provided. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 5

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of $\angle BAC$?

Show your work.

Answer 180 degrees

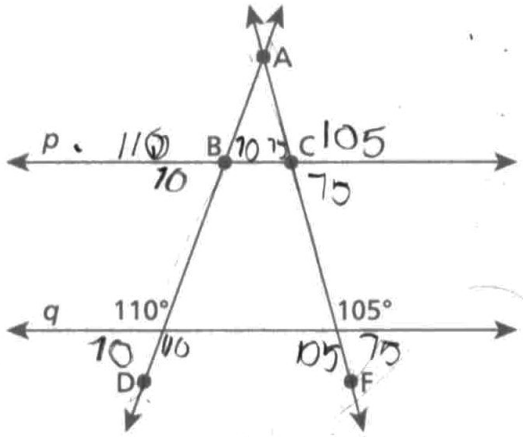
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The angle measures are correctly determined, and the work contains a correct solution for the measure of $\angle BAC$; however, an incorrect solution is provided. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

42

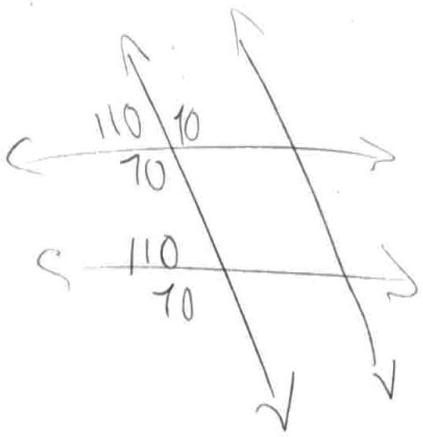
In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC?

Show your work.

70+75 =145



Answer 145 degrees

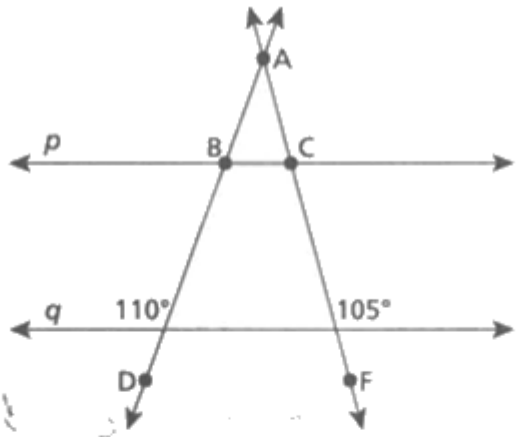
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Supplementary angle measures are correctly determined and correctly assigned to ∠ABC and ∠ACB. The sum of these angle measures is calculated, but the final step of determining the measure of ∠BAC is not addressed. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC?

Show your work.

$110^2 - 105^2 = 180$

$12100 - 11025 = 180$

$\frac{1075}{180} = \frac{180}{180}$

$= 5.97 \approx 6$

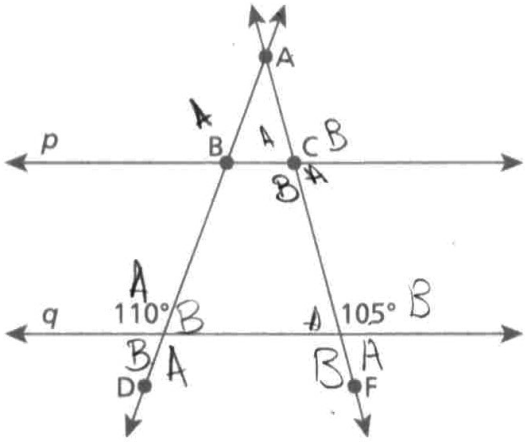
Answer 6 degrees

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect process is used to calculate an incorrect solution. Holistically, this response shows no overall understanding of the task.

42

In the figure below, line p is parallel to line q and lines AD and AF are transversals.



What is the measure, in degrees, of ∠BAC?

Show your work.

110
+105
215

215
+110
325°

Answer _____ degrees

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The work shown is incorrect for determining supplementary angle measures and the measure of ∠BAC. Holistically, this response shows no overall understanding of the task.

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation?

Explain your answer.

EXEMPLARY RESPONSE

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation?

Explain your answer.

For every year the employee worked for the company, the employee's salary increased by $1500.

OR other valid explanation

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation?

Explain your answer.

With every year working with that company, you get 1,500 more dollars in your yearly salary

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The explanation correctly identifies the slope as an increase in salary per year, and the amount of increase is correctly stated. The explanation is complete and correct.

GUIDE PAPER 2

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation? [2]

Explain your answer.

The slope of the line could be used to show a raise for how much money they make per year. This equation is showing a starting salary of 29 thousand and an increase of 1.5 thousand per year.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The explanation correctly identifies the slope as an increase in salary per year, and the amount of increase is correctly stated. The explanation is complete and correct.

GUIDE PAPER 3

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation?

Explain your answer.

The slope at the line shows that an employee starts their job with $29,000/year, and every year increases this salary by $1,500.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The explanation correctly identifies the slope as an increase in salary per year, and the amount of increase is correctly stated. The explanation is complete and correct.

GUIDE PAPER 4

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation? [2]

Explain your answer.

The slope of the Line represents the amount per year, which is 1.5. This means that if the employee worked 1 year, they would have 1.5 thousand dollars added to 29.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The explanation correctly identifies the value of the slope, but is unclear in demonstrating the understanding of what the slope of the line represents in terms of this situation. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation?

Explain your answer.

The slope of the libe represents the rate of change, and how much he gets a year. This is because he is paid 1500 yearly.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The explanation correctly identifies the slope as a rate of change, and that it applies yearly, but it is stated as the total salary instead of the amount of increase per year. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation?

Explain your answer.

The slope of the line is positive, therefore the yearly salary of each employee increases each year.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The explanation correctly identifies the slope as an increase in salary per year, but the amount of increase is not identified. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation? [2]

Explain your answer.

The slope of the line repersents the salary of someone who has worked at the company for 1 year, it is the base salary. I know because if x is 1, x · 1.5 would be 1.5, then for 1 year at the job you would get $1,529 which is the base salary or the lowest salary.

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect explanation is provided. Holistically, the explanation is insufficient to show any understanding.

43

The equation $y = 1.5x + 29$ is used to model the yearly salary, y, of an employee, in thousands of dollars, where x is the number of years the employee has worked for the company. What does the slope of the line represent in this situation? [2]

Explain your answer.

The slope of the line represents the guaranteed amount employers get each year.

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect explanation is provided. The slope as an increase in salary per year is not identified, and the amount of increase is not stated. Holistically, the explanation is insufficient to show any understanding.

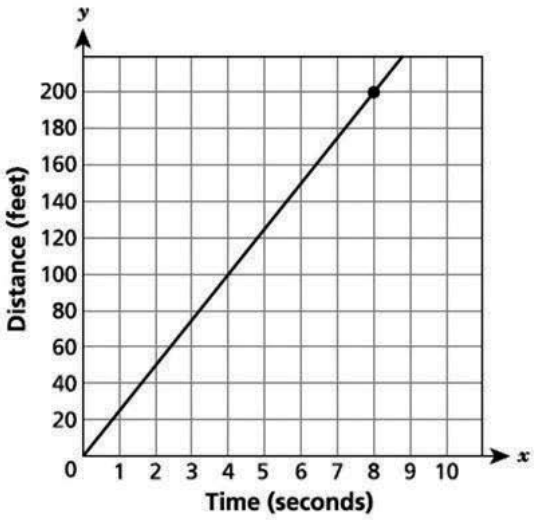
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, x (seconds)	Distance, y (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

Answer _____ feet per second

EXEMPLARY RESPONSE

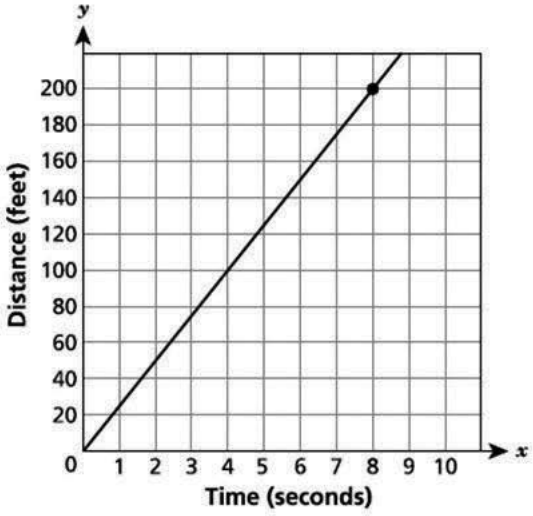
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, *x* (seconds)	Distance, *y* (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

Speed for Dog A

56 ÷ 2 = 28
112 ÷ 4 = 28
168 ÷ 6 = 28
224 ÷ 8 = 28 feet per second

Speed for Dog B

(200 - 0) / (8 - 0) = 25 feet per second.

28 - 25 = 3 feet per second

OR other valid process.

Answer **3** feet per second

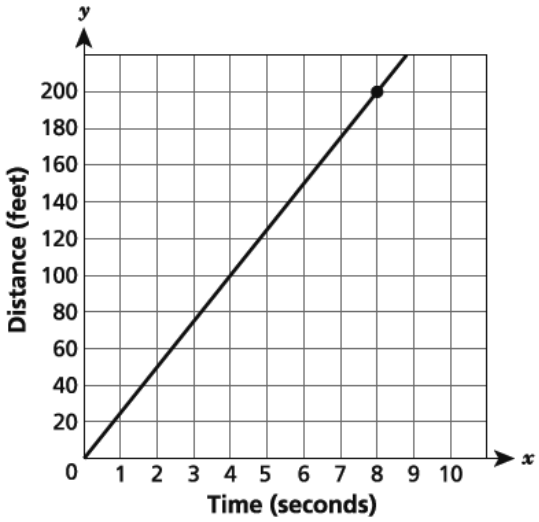
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, x (seconds)	Distance, y (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

$A = \frac{112-56}{4-2} = \frac{56}{2} = 28$

$B = \frac{200-100}{8-4} = \frac{100}{4} = 25$

$28 - 25 = 3$

Answer 3 feet per second

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The speed for each dog and the difference between the two speeds are correctly determined using mathematically sound procedures. This response is complete and correct.

GUIDE PAPER 2

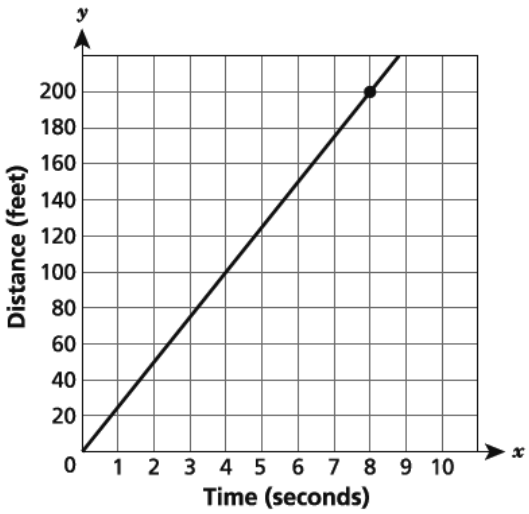
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, *x* (seconds)	Distance, *y* (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

Dog 1:
(2,56) which translates to in 2 seconds the dog runs 56 feet.
Dog 2:
The line hits perfectly at (8,200), (4,100), and crosses between 40-60 to hit (2,50).
Question:
The difference is Dog 1's pace is 6 feet in 2 seconds or 3 feet per second than Dog 2's pace.

Answer 3 feet per second

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The distance run by each dog in 2 seconds is correctly identified, and the difference between the two speeds is correctly determined using mathematically sound procedures. This response contains sufficient work to demonstrate a thorough understanding.

GUIDE PAPER 3

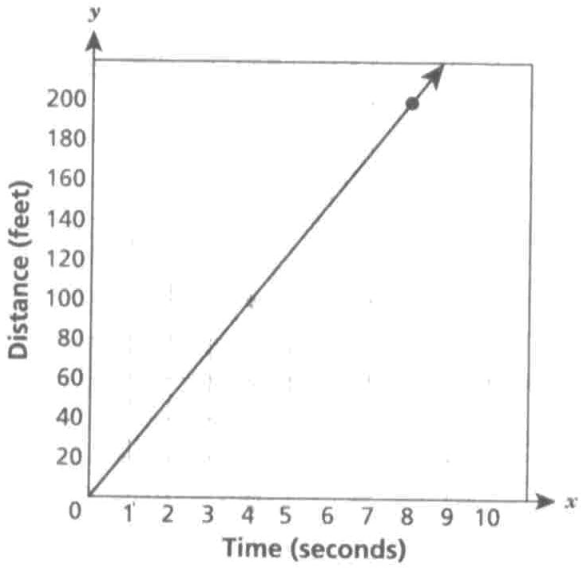
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the average distance, in feet, each dog ran.

DOG A

Time, x (seconds)	Distance, y (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

$\frac{56}{2} = 28$ $\frac{200}{8} = 25$

$$\begin{array}{r} 28 \\ -25 \\ \hline 3 \end{array}$$

Answer 3 feet per second

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The speed for each dog and the difference between the two speeds are correctly determined using mathematically sound procedures. This response is complete and correct.

GUIDE PAPER 4

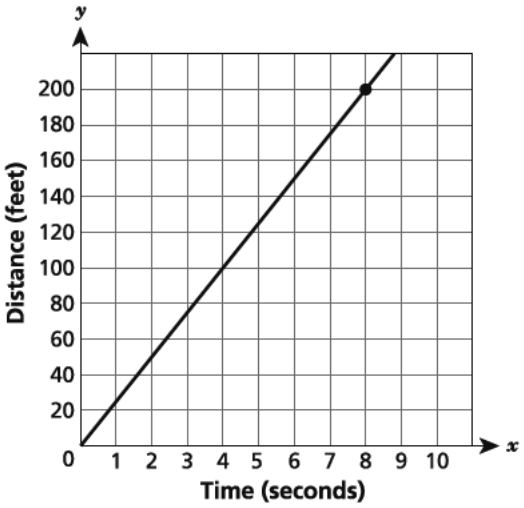
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, *x* (seconds)	Distance, *y* (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

2,56
4,112
+2,+56
56/2=28

1/20
4,100
+3,+80
80/3=26.66666667

28-26.66666667=1.33333

Answer 1.3 repeating feet per second

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The speed for dog A is correctly determined. For dog B, an incorrect coordinate of (1, 20) is used when calculating the speed. The calculated speeds are correctly subtracted to determine the difference. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 5

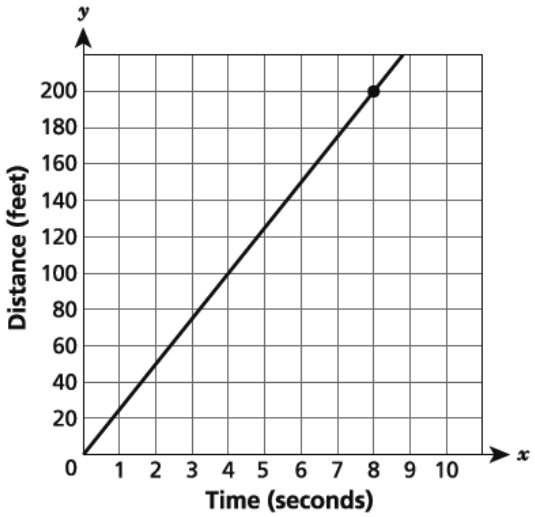
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, *x* (seconds)	Distance, *y* (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

56 ÷ 2 = 28
112 ÷ 4 = 28
168 ÷ 6 = 28
224 ÷ 8 = 28
100 ÷ 4 = 25
200 ÷ 8 = 25
Conclusion: they all equal 28 but except the two that equal 25,you have to divide the numbers in backwards because it would be wrong if yo do the small number first because it will come up with crazy number that you don't know.

Answer ÷ feet per second

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The speed for each dog is correctly determined. However, the difference between the two speeds is not addressed. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

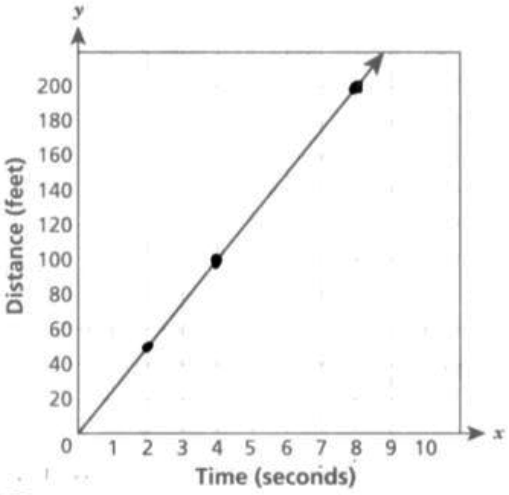
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the average distance, in feet, each dog ran.

DOG A

Time, x (seconds)	Distance, y (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

Dog A

(2, 56)
x_1 y_1
(4, 112)
x_2 y_2

$\frac{(y_2 - y_1)}{(x_2 - x_1)}$

$\frac{112 - 56}{4 - 2} = \frac{56}{2} = 28$

Dog B

$\frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{200 - 100}{8 - 4} = \frac{100}{4} =$

(4, 100)
x_1 y_1

25

(8, 200)
x_2 y_2

$\frac{28}{25} = 4$

Answer 4 feet per second

DO NOT WRITE BEYOND THIS AREA

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The speed for each dog is correctly determined. However, the difference between the two speeds is incorrectly determined. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

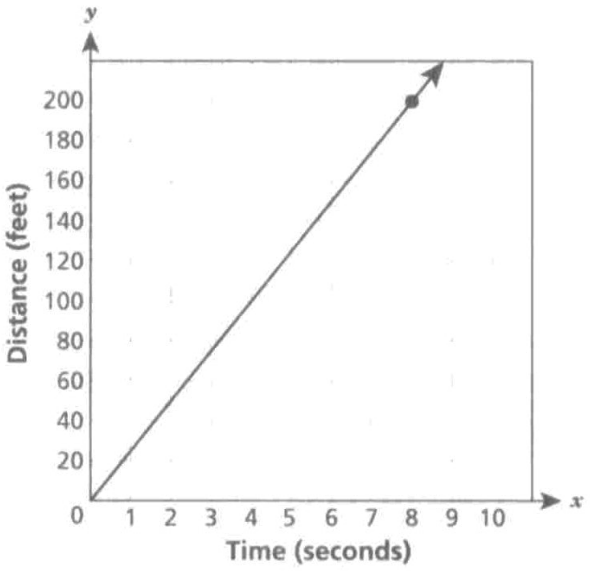
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the average distance, in feet, each dog ran.

DOG A

Time, x (seconds)	Distance, y (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

2 : 56 = 0.03

Answer 0.03 feet per second

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. This response is incorrect, and, holistically, is insufficient to show any understanding.

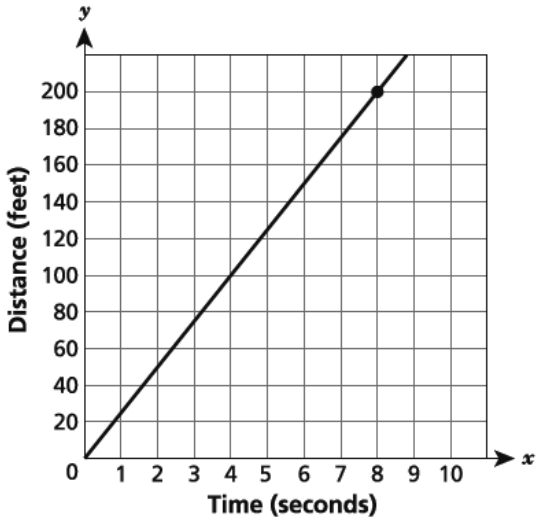
44

A dog owner collected data to see which of his two dogs runs at the greater speed. The graph and the table below show the relationship between the time, in seconds, and the distance, in feet, each dog ran.

DOG A

Time, *x* (seconds)	Distance, *y* (feet)
2	56
4	112
6	168
8	224

DOG B



What is the difference, in feet per second, between the speeds of the two dogs?

Show your work.

The difference between the two dogs speed for feet per secon dog a can run 3 more feet than dog b can in one second

Answer 3feet per second feet per second

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The correct solution is provided with no work. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

45

Two ordered pairs of a linear function are shown below.

$$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$$

What is the rate of change for the function?

Show your work.

Answer _____

EXEMPLARY RESPONSE

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function?

Show your work.

$(5^1/_4 - 4^1/_2)/(3 - 2) = (^3/_4)/1 = {}^3/_4 = 0.75$

OR other valid process

Answer **0.75 *OR equivalent***

45

Two ordered pairs of a linear function are shown below.

$\left(2,4\frac{1}{2}\right), \left(3,5\frac{1}{4}\right)$

What is the rate of change for the function?

Show your work.

$\left(2,4\frac{1}{2}\right)\ \left(3,5\frac{1}{4}\right) = \frac{5\frac{1}{4} - 4\frac{1}{2}}{3-2} =$

$\frac{\frac{3}{4}}{1} = \frac{3}{4}$

Answer $\frac{3}{4}$

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The rate of change is correctly determined using mathematically sound procedures. The response is complete and correct.

GUIDE PAPER 2

45

Two ordered pairs of a linear function are shown below.

$(\overset{x}{2}, \overset{y}{4\frac{1}{2}})$, $(\overset{x}{3}, \overset{y}{5\frac{1}{4}})$

What is the rate of change for the function? [2]

Show your work.

$4\frac{1}{2} = m(2)$

$5\frac{1}{4} = m(3)$

x	y
2	$4\frac{1}{2}$
3	$5\frac{1}{4}$

$5.25 - 4.5 = .75$

$\frac{\Delta y}{\Delta x} = \frac{.75}{1}$

Answer $\frac{3}{4}$ or .75

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The rate of change is correctly determined using mathematically sound procedures. The response is complete and correct.

GUIDE PAPER 3

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function? [2]

Show your work.

$m = \frac{y^2 - y^1}{x^2 - x^1}$

Rate of change = slope

$\frac{5\frac{1}{4} - 4\frac{1}{2}}{3-2} = \frac{\frac{3}{4}}{1} / \frac{3}{4}$

Answer $\frac{3}{4}$

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The rate of change is correctly determined using mathematically sound procedures. The division sign in place of a second equals sign is considered inconsequential and does not detract from a thorough understanding. The response is complete and correct.

GUIDE PAPER 4

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function?

Show your work.

$5\frac{1}{4} - 4\frac{1}{2}$ $\quad -\frac{3}{4}$

------- ----

3 - 2 1

Answer $-\frac{3}{4}$

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct expression is written to determine the rate of change, but a sign error in the numerator results in an incorrect solution. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 5

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function?

Show your work.

3-2=1

$5\frac{1}{4} - 4\frac{1}{2} = \frac{3}{4}$

Answer $1\frac{3}{4}$

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The change in x and y values are correctly determined, but are inappropriately added instead of divided. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function?

Show your work.

$$\frac{y1 - y2}{x1 - x2} \qquad \frac{\frac{9}{2} - \frac{21}{4}}{3 - 2} = \frac{3}{4}$$

Answer 3/4

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The rate of change equation with substituted values is written incorrectly using an inconsistent order of subtraction. Although a correct solution is provided, as written, the subtraction is performed incorrectly. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function?

Show your work.

$\frac{3}{4} = .75$

Answer .75

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The correct solution is provided with no work shown. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

45

Two ordered pairs of a linear function are shown below.

$\left(2, 4\frac{1}{2}\right), \left(3, 5\frac{1}{4}\right)$

What is the rate of change for the function? [2]

Show your work.

$4 \times 23/4$

Answer 141 3/4

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect process of multiplying *x* and *y* values of the two ordered pairs is used to determine an incorrect solution. This response is incorrect, and, holistically, is insufficient to show any understanding.

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x - 8) + 4 = 2(x - 4)$$

Show your work.

Answer $x =$ _____

EXEMPLARY RESPONSE

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x - 8) + 4 = 2(x - 4)$$

Show your work.

$(^3/_4)x - 2 + 4 = 2x - 8$
$(^3/_4)x + 2 = 2x - 8$
$(^3/_4)x = 2x - 10$
$(^{-5}/_4)x = -10$
$x = 8$

OR other valid process

Answer $x =$ 8

GUIDE PAPER 1

46

What value of x makes the equation shown below true? [2]

$$\frac{1}{4}(3x - 8) + 4 = 2(x - 4)$$

Show your work.

$\frac{1}{4}(3x-8)+4=2(x-4)$

$\frac{3}{4}x-2+4=2(x-4)$

$\frac{3}{4}x-2+4=2x-8$

$\frac{3}{4}x+2=2x-8$

$3x+8=8x-32$

$3x-8=-32-8$

$-5x=-32-8$

$\frac{-5x}{-5}=\frac{-40}{-5}$

$x=8$

Answer $x =$ 8

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The value of x is correctly determined using mathematically sound procedures, and the correct solution is provided. Some inconsequential errors are made, but these do not detract from the demonstration of a thorough understanding. Holistically, this response contains sufficient work to show a thorough understanding.

GUIDE PAPER 2

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x-8)+4=2(x-4)$$

Show your work.

1/4(3x-8)+4=2(x-4)
distribute 1/4 to 3x and -8 , distribute 2 to x and -4
3/4x-2+4=2x-8
add -2 and 4
3/4x+2=2x-8
subtract 3/4x to both sides
$2=1\frac{1}{4}$ x -8
add 8 to both sides
$10=1\frac{1}{4}$ x
divide $1\frac{1}{4}$ on both sides
x=8

Answer $x =$ x=8

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The value of x is correctly determined using mathematically sound procedures, and the correct solution is provided. This response is complete and correct.

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x-8)+4=2(x-4)$$

Show your work.

1/2(3x-8)+4=2(x-4) DCMAM
3/4x-2+4=2x-8
3/4x+2=2x-8
-3/4x -3/4x
2=1 1/4x-8
+8 +8
10=1 1/4x
8=x

Answer $x =$ 8

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The value of x is correctly determined using mathematically sound procedures, and the correct solution is provided. Although ¼ is written instead of ½ on the first line, the ¼ is used to solve the equation. This response contains sufficient work to show a thorough understanding.

GUIDE PAPER 4

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x-8)+4=2(x-4)$$

Show your work.

$\frac{1}{4}$ (3x - 8) + 4 = 2(x-4)
0.75x - 2 + 4 = 2x-8
0.75x + 2 = 2x-8
2.75x = -10
-10 ÷ 2.75 = x
x = -3.64

Answer $x =$ -3.64

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The distribution of terms is performed correctly, but an error occurs when combining like terms. The rest of the work is performed correctly, but an incorrect and inappropriately rounded solution is provided. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

46

What value of x makes the equation shown below true? [2]

$$\frac{1}{4}(3x - 8) + 4 = 2(x - 4)$$

.75x - 2 + 4 = 2x - 8

Show your work.

Answer $x =$ _____

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The distribution of terms is performed correctly, but no other work is performed. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x-8)+4=2(x-4)$$

Show your work.

$\frac{1}{4}x$ (3x-8) +4 = 2(x-4)

$\frac{3}{4}x$ -2+4 = 2x-8

$\frac{3}{4}x$ +2 = 2x-8

2 = 1.25x

x = 1.6

Answer $x =$ 1.6

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The distributive property is correctly applied; however, a math error occurs when like terms are being combined, resulting in an incorrect solution. The rest of the work is performed correctly. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 7

46

What value of x makes the equation shown below true?

$$\frac{1}{4}(3x-8)+4=2(x-4)$$

Show your work.

1/4(3x-8)+4=2(x-4)
3/4x+2+4=2x-0.5
-2x -2x
-1 1/4x+2+4=-0.5

Answer $x =$ -0.5

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the work contains some correct elements, the required work is incomplete and contains mathematical errors. Holistically the work is not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

46

What value of x makes the equation shown below true? [2]

$$\frac{1}{4}(3x - 8) + 4 = 2(x - 4)$$

Show your work. 1/4(3(4)-8)+4=2(4-4)

1/4(3(3)-8)+4=2(3-4) X
2.25 - 2 + 4 = 0 - 4
2.25 - 0 = 0 - 4
-3.75 = 2

1/4(3(2)-8)+4=2(2-4) X
1.5 - 2 + 4 = 4 - 8
1.5 - 0 = 4 - 8
-4.5 = -4

Answer $x =$ _____

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although a trial and error method is attempted, computational errors occur, and no solution is provided. Holistically, this response shows no overall understanding of the task.

47

A list of numbers is shown below.

- $\sqrt{49}$
- $1.\overline{3}$
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational.

Explain your answer.

EXEMPLARY RESPONSE

47

A list of numbers is shown below.

- $\sqrt{49}$
- $1.\overline{3}$
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational.

Explain your answer.

The rational numbers include:

$\sqrt{49} = 7$	**rational because it is the integer 7, and all integers are rational numbers, *OR*, rational because 49 is a perfect square.**
1.3333...	**rational because it is a nonterminating, repeating decimal.**
$^7/_2 = 3.5$	**rational because the decimal equivalent 3.5 is a terminating decimal.**
1.234	**rational because it is a terminating decimal.**

The irrational number is $\sqrt{32}$ because 32 is not a perfect square.

OR other valid explanation

47

A list of numbers is shown below.

- $\sqrt{49} = 7$
- $1.\overline{3}$
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational. [2]

Explain your answer.

$\sqrt{49}$ is rational because when you simplify, you get 7 as your answer, which is a whole number. $1.\overline{3}$ is rational because it is a repeating decimal. $\sqrt{32}$ is irrational because when you simplify, you get a non-repeating and non-terminating number. $\frac{7}{2}$ is rational because it is a fraction. 1.234 is rational because it is a terminating decimal.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. All listed numbers are correctly classified, and explanations are valid. Holistically, this response is sufficient to demonstrates a thorough understanding of the concepts in the task.

GUIDE PAPER 2

47

A list of numbers is shown below.

- $\sqrt{49}$ rational, it terminates
- $1.\overline{3}$ rational, it repeats
- $\sqrt{32}$ irrational, it doesn't repeat or terminate
- $\frac{7}{2}$ rational, it terminates
- 1.234 rational, it terminates

Classify each number as either rational or irrational. Be sure to include how you know a number is rational. [2]

Explain your answer.

as you can see by my work if it is rational, it repeats or terminates

Irrational is it goes on forever

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. All listed numbers are correctly classified, and all explanations are valid. This response is complete and correct.

GUIDE PAPER 3

47

A list of numbers is shown below.

- $\sqrt{49}$
- $1.\overline{3}$
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational.

Explain your answer.

A number is rational when it is just a whole number or when the decimal repeats or terminates
$\sqrt{49} = 7$ *rational*
$1.\overline{3}$ = rational, repeats
$\sqrt{32}$ = irrational
$\frac{7}{2}$ = rational, terminates
1.234 =rational, terminates

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. All listed numbers are correctly classified, and all explanations are valid. This response is complete and correct.

GUIDE PAPER 4

47

A list of numbers is shown below.

- $\sqrt{49}$
- $1.\overline{3}$
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational.

Explain your answer.

$\sqrt{49}$ *rational*
1.333333333333333333333333333333333333333333333333333333 is rational
$\sqrt{32}$ irrrational
$\frac{7}{2}$ rational
1.234 rational
basically irrratinal numbers are everlasting numbers that do not repeat.rational numbers are opposite of that.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The listed numbers are correctly classified. The explanation suggests an understanding that irrational numbers have decimal expansions that do not terminate and do not repeat, but the reason the other values are rational is not clearly explained. This response addresses some elements of the task correctly but provides reasoning that is incomplete.

GUIDE PAPER 5

47

A list of numbers is shown below.

- $\sqrt{49}$
- $1.\overline{3}$
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational.

Explain your answer.

$\sqrt{49}$ rational
1.3 rational
$\sqrt{32}$ irrational
$\frac{7}{2}$ rational
1.234 rational

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The listed numbers are correctly classified, but no explanation is provided. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

47

A list of numbers is shown below.

- $\sqrt{49}$
- $1.3\overline{3}$ 1,33333
- $\sqrt{32}$
- $\frac{7}{2}$
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational. [2]

Explain your answer.

$\sqrt{49}$ is rational because you can find the square root for it which is 7. A number isn't rational when you can't find the square root or number is also rational when its repeating so 1,23| and 1.3 are also rational.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The numbers $\sqrt{32}$ and 7/2 have not been classified, and the explanation suggests a partial understanding that a rational number can have repetition in its decimal expansion. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

47

A list of numbers is shown below.

- $\sqrt{49}$ rational
- $1.\overline{3}$ irrational
- $\sqrt{32}$ rational
- $\frac{7}{2}$ rational
- 1.234 irrational

Classify each number as either rational or irrational. Be sure to include how you know a number is rational. [2]

Explain your answer.

A number is rational if your diviling it over a different number then it's rational.

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Only two of the listed numbers ($\sqrt{49}$ and ⁷⁄₂) are correctly classified, and an incorrect explanation is provided. Holistically, the response is insufficient to show any understanding.

47

A list of numbers is shown below.

- $\sqrt{49}$ = 7
- $1.\overline{3}$ 1.3333
- $\sqrt{32}$ 6
- $\frac{7}{2}$ 3.5
- 1.234

Classify each number as either rational or irrational. Be sure to include how you know a number is rational. [2]

Explain your answer.

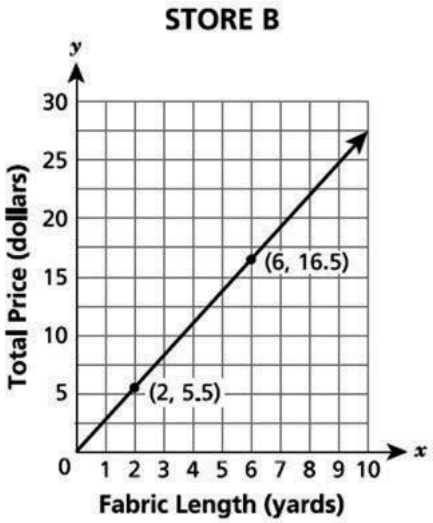
$\sqrt{49}$ is a rational number. $1.\overline{3}$ is rational. $\sqrt{32}$ is irrational. 7/2 is rational. 1234 is irrational I know a number is rational if you are equal

Score Credit 0 (out of 2 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although some elements are correct, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task.

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ _____ per yard of fabric

Store B $ _____ per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

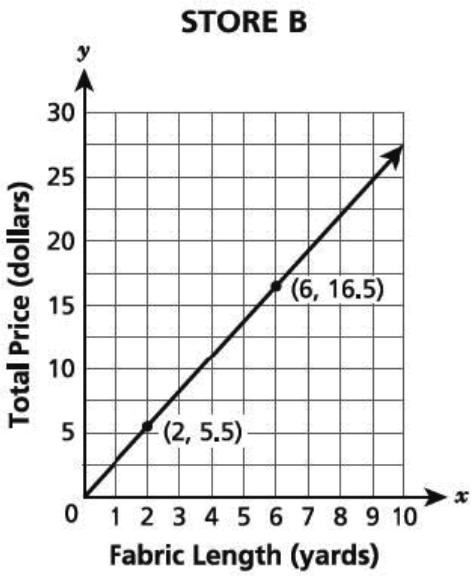
Show your work.

Answer $ _____

EXEMPLARY RESPONSE

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ 3.50 per yard of fabric

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

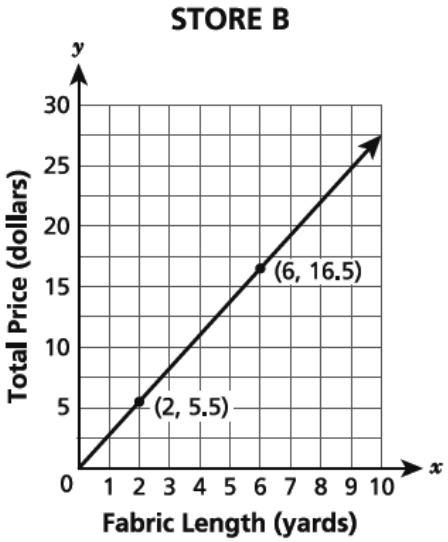
Show your work.

9 yards of fabric at Store A is \$31.50. (3.5)(9)=31.5.
9 yards of fabric at Store B is \$24.75. (2.75)(9) = 24.75
The price of 9 yards of fabric at Store A would be \$6.75 more because 31.5 - 24.75 = 6.75.
OR other valid process

Answer $ 6.75

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ 3.50 per yard of fabric

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

3.50 × 9 = 31.5 2.75 × 9=24.75
31.50-24.75=6.75

Answer $ 6.75

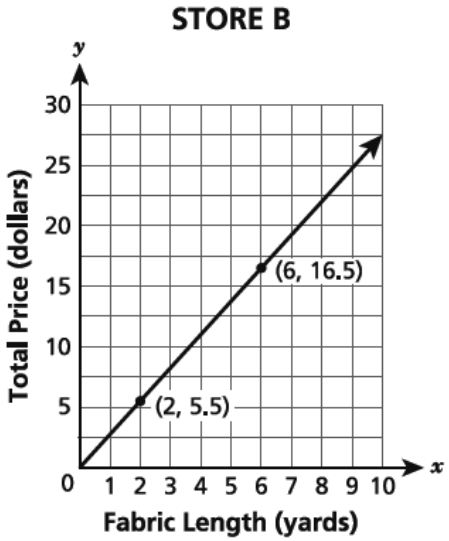
Score Credit 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Both rates are correctly identified, and the price of 9 yards of fabric at each store and the difference in prices are correctly determined. This response is complete and correct.

GUIDE PAPER 2

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ 3.50 per yard of fabric

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

store a= y=3.5x=y=3.5(9)=y=31.5
store b=y=2.75x=y=2.75(9)=y=24.75
31.5-24.75=6.75

Answer $ 6.75

Score Credit 3 (out of 3 credits)

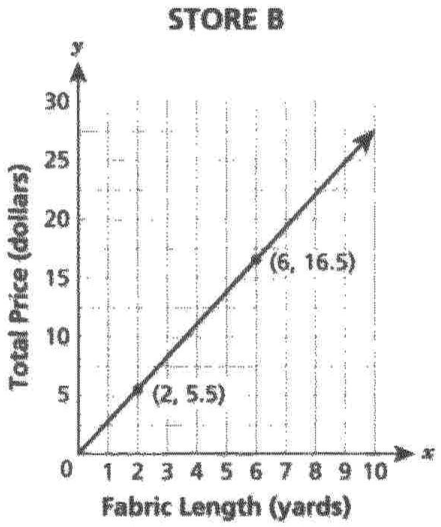
This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Both rates are correctly identified, and the price of 9 yards of fabric at each store and the difference in prices are correctly determined. This response is complete and correct.

GUIDE PAPER 3

48

$ = 3.5 per yard

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store? [3]

Store A $ 3.50 per yard of fabric

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B?

Show your work.

A = 3.5 · 9 = $31.50

B = 2.75 · 9 = $24.75

31.50 - 24.75 = 6.75

Answer $ 6.75

Score Credit 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Both rates are correctly identified, and the price of 9 yards of fabric at each store and the difference in prices are correctly determined. This response is complete and correct.

GUIDE PAPER 4

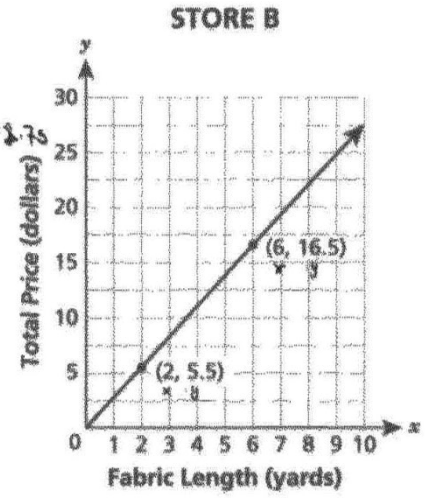
48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.

$\frac{y_2 - y_1}{x_2 - x_1}$

$\frac{16.5 - 5.5}{6 - 2} = \frac{11}{4} = 2\frac{3}{4} = 2.75$

$y = 2.75x$



What is the unit rate for the price of fabric, per yard, at each store? [3]

Store A $ 3.50 per yard of fabric

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B?

Show your work.

$3.5 \times 9 = 12.5$ $\quad 12.5 - 11.75 = 0.75$

$2.75 \times 9 = 11.75$

Answer $ 0.75

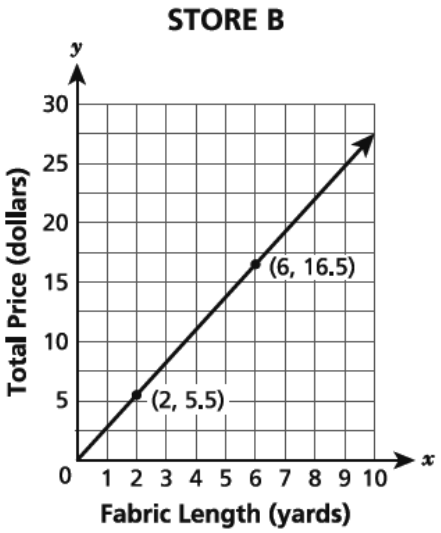
Score Credit 2 (out of 3 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Both rates are correctly identified, but to calculate the price of 9 yards of fabric at each store, addition is used instead of multiplication. These incorrect totals are then correctly used to calculate the difference in prices. This response reflects some minor misunderstanding of the underlying mathematical concepts and procedures.

GUIDE PAPER 5

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ 3.50 per yard of fabric

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

store A=31.50
store B= 24.75
31.50-24.75=

Answer $ 6.75

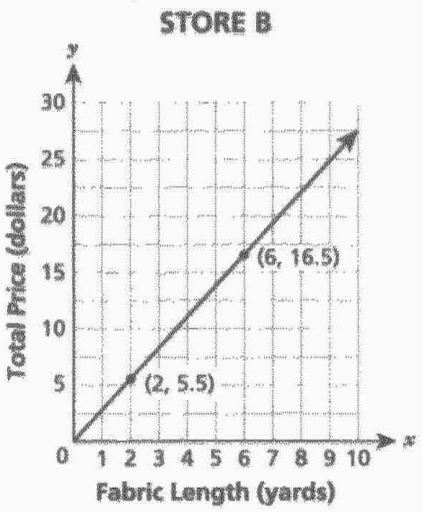
Score Credit 2 (out of 3 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. Both rates are correctly identified. Although the total price of 9 yards of fabric at each store is correctly stated, no work is shown to support these values. The difference in prices is correctly determined and provided as the solution. This response appropriately addresses most but not all aspects of the task.

GUIDE PAPER 6

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents
price, y, in dollars, for x yards of fabric at Store A. The graph below represents the p
for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store? [3]

Store A $ 3.5 per yard of fabric

Store B $ 2.5 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B?

Show your work.

A 3.5 × 9 = 31.5

2.5 × 9 = 22.5

31.5 − 22.5 = 9.0

Answer $ 9.0

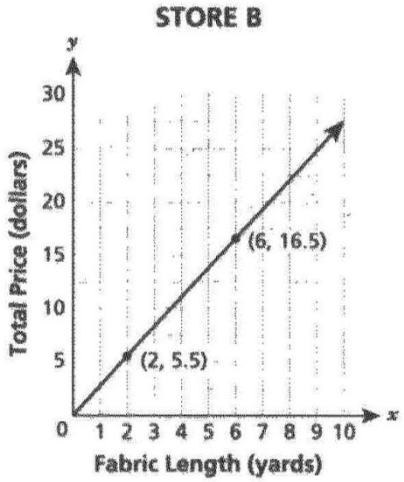
Score Credit 2 (out of 3 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The unit rate at Store A is correctly identified, but the unit rate at Store B is incorrect. The rest of the work to calculate the price of 9 yards of fabric at each store and the difference in prices is carried out correctly. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 7

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store? [3]

Store A $ 2.75 per yard of fabric

16.5/6=2.75

5.5/2=2.75

Store B $ 2.75 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B?

Show your work.

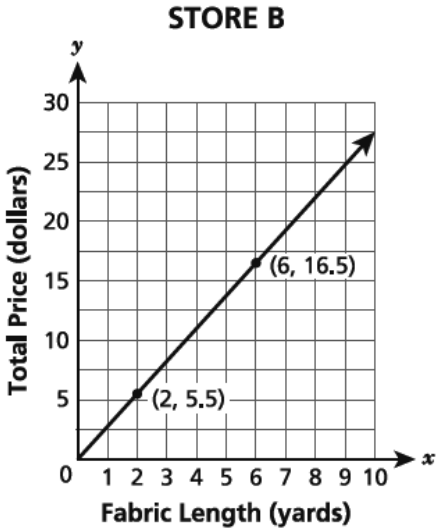
Answer $ 0

Score Credit 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The unit rate at Store B is correctly identified, but the unit rate at Store A is incorrect. No work is shown, and it is not clear how the incorrect solution is determined. This response addresses some elements of the task correctly but reaches an inadequate solution and provides reasoning that is faulty or incomplete.

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ 3.50 per yard of fabric

Store B $ 2.50 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

3.50 x 9 = 30.60
2.50 x 9 = 22.50
30.60 - 22.50
8.10

Answer $ 8.10 more

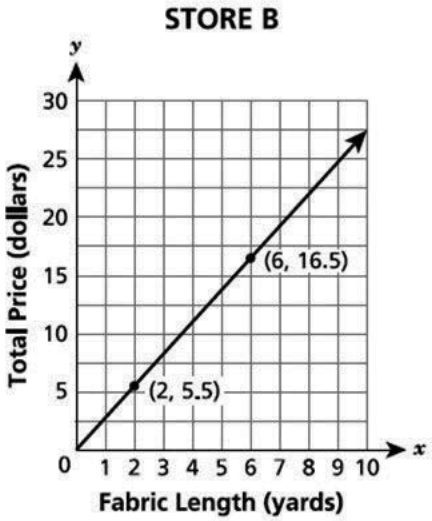
Score Credit 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The unit rate at Store A is correctly identified, but the unit rate at Store B is incorrect. A computation error occurs when calculating the price of 9 yards of fabric for Store A, but the difference in prices is correctly determined based on the values used. This response addresses some elements of the task correctly but exhibits multiple flaws related to misunderstanding of important aspects of the task.

GUIDE PAPER 9

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ 3.5 per yard of fabric

Store B $ 2.5 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

Store B = 9 yards = $8.75

Store A= 9 yards=$31.5

31.5-8.75=22.75

Answer $ 22.75

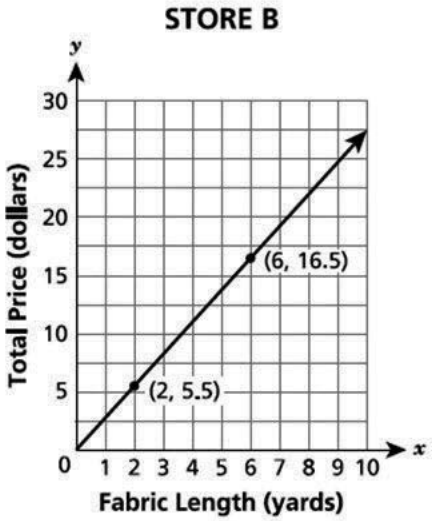
Score Credit 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. The unit rate at Store A is correctly identified, but the unit rate at Store B is incorrect. The price of 9 yards of fabric at Store A is correctly stated; however, the price of 9 yards of fabric at Store B is incorrect, and with no work shown it is not clear how this value is determined. The difference determined is correct for the values used. This response addresses some elements of the task correctly but exhibits multiple flaws related to misunderstanding of important aspects of the task.

GUIDE PAPER 10

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.



What is the unit rate for the price of fabric, per yard, at each store?

Store A $ .50 per yard of fabric

Store B $ 2.50 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

on the graph the 9 would be right below the 10 and 3.75 is where it is.

Answer $ 3.75

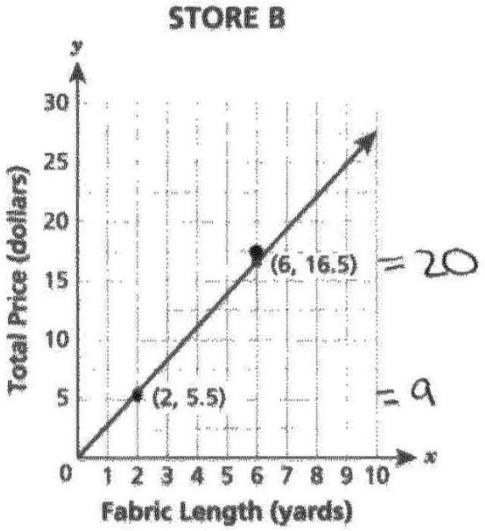
Score Credit 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Two incorrect rates are provided. An incorrect procedure is used to obtain an incorrect solution for the difference in the prices for 9 yards of fabric. Holistically, this response is insufficient to show any understanding.

48

Store A and Store B sell fabric for different prices. The equation $y = 3.5x$ represents the price, y, in dollars, for x yards of fabric at Store A. The graph below represents the price for the same type of fabric at Store B.

$y=3.5x$



What is the unit rate for the price of fabric, per yard, at each store? [3]

Store A $ 9 per yard of fabric

Store B $ 20 per yard of fabric

How much more would the price of 9 yards of fabric be at Store A than at Store B ?

Show your work.

$$\begin{array}{r} 20 \\ -\ 9 \\ \hline 11 \end{array}$$

Answer $ 11

Score Credit 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Two incorrect rates are provided. The calculated unit rates are subtracted, and inappropriately provided as the solution. This response is incorrect, and, holistically, is insufficient to show any understanding.

Grade 8
Mathematics

Scoring Leader Materials
2024 Training Set