Name: _____

New York State Testing Program

Mathematics Test
Session 1

Grade 6

Spring 2024

RELEASED QUESTIONS

Session 1

TIPS FOR TAKING THE TEST

Here are some ideas to help you do your best:

- Read each question carefully. Take your time.
- You have a ruler, a protractor, and a reference sheet that you can use on the test if they help you answer the question.

Grade 6 Mathematics Reference Sheet

CONVERSIONS

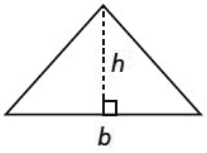
1 yard = 3 feet
1 mile = 5,280 feet

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 liter = 1,000 milliliters

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

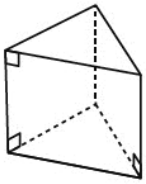
FORMULAS AND FIGURES

Triangle

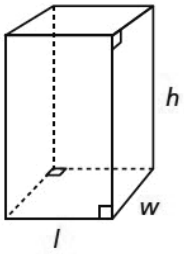


$A = \frac{1}{2}bh$

Right Triangular Prism

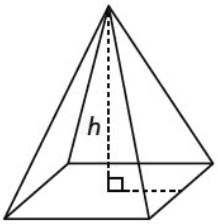


Right Rectangular Prism



$V = lwh$
$V = Bh$

Right Rectangular Pyramid



2 Which expression represents 5 more than the product of 2 and y?

A $2 + y + 5$

B $2y + 5$

C $5 + \frac{2}{y}$

D $5 + \frac{y}{2}$

GO ON

3 Which value of b makes the inequality $3b > 12$ true?

A 2

B 3

C 4

D 5

4 A coordinate plane can be used to show the distance, in units, between two locations. The location of Jack's house and a store are listed below.

- Jack's house is located at $(-7, -8)$.
- The store is located at $(-7, 4)$.

What is the distance, in units, between Jack's house and the store?

A 4

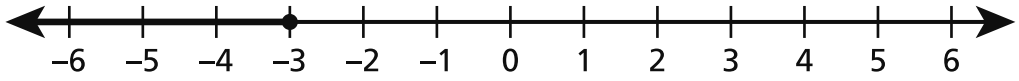
B 8

C 12

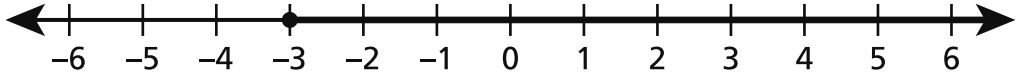
D 14

11 Which number line represents $x \geq -3$?

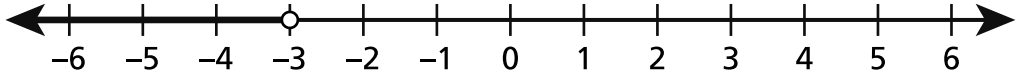
A



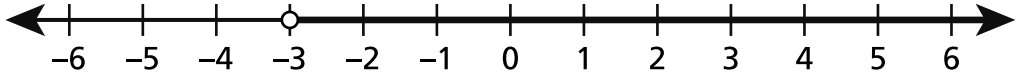
B



C



D



14 What is the value of the expression $8^2 \div 4 \times 2^3$?

A 16

B 24

C 96

D 128

15 Ben purchases $1\frac{1}{4}$ pounds of nuts and puts them into bags. Each bag holds $\frac{1}{8}$ pound of nuts. He uses all the nuts to fill each bag completely. How many bags does Ben fill with nuts?

A $\frac{5}{32}$

B $1\frac{1}{8}$

C 2

D 10

18 Which expression represents the opposite of the number $-2\frac{1}{2}$?

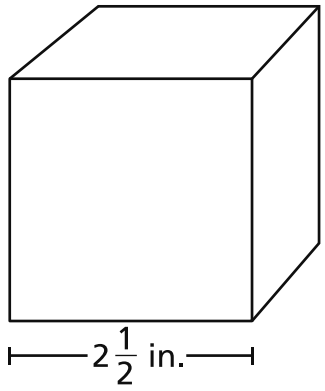
A $-\left(2\frac{1}{2}\right)$

B $-\left(-2\frac{1}{2}\right)$

C $-2\left(\frac{1}{2}\right)$

D $2\left(-\frac{1}{2}\right)$

20 A diagram of a cube is shown below.



What is the volume, in cubic inches, of the cube?

A $1\frac{7}{8}$

B $7\frac{1}{2}$

C $15\frac{5}{8}$

D $20\frac{5}{6}$

22 Tammy and Jacob collect stamps. Tammy has s stamps. Jacob has 4 fewer than 3 times the number of stamps Tammy has. Which expression can be used to represent the number of stamps Jacob has?

A $3 - 4s$

B $3s - 4$

C $4 - 3s$

D $4s - 3$

23 A container holds 6 gallons of liquid. How many pints of liquid does the container hold?

A 6

B 8

C 24

D 48

GO ON

26 What ordered pair represents the location of a point that is the reflection of the point $(-4, 6)$ over the x-axis?

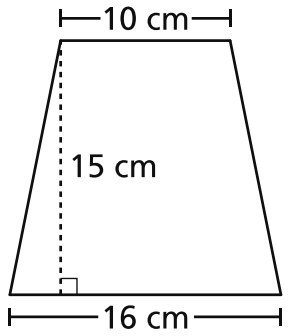
A $(4, 6)$

B $(-4, -6)$

C $(6, -4)$

D $(-6, 4)$

28 An isosceles trapezoid is shown below.



What is the area, in square centimeters, of the isosceles trapezoid?

A 120

B 150

C 195

D 240

29 An inequality is shown below.

$$-\frac{9}{20} > -\frac{21}{24}$$

Which statement about the locations of the numbers on a number line is true?

A $-\frac{9}{20}$ is to the left of $-\frac{21}{24}$ and to the right of 0 on a number line.

B $-\frac{9}{20}$ is to the right of $-\frac{21}{24}$ and to the left of 0 on a number line.

C $-\frac{9}{20}$ is to the left of $-\frac{21}{24}$ and to the left of 0 on a number line.

D $-\frac{9}{20}$ is to the right of $-\frac{21}{24}$ and to the right of 0 on a number line.

Session 2

TIPS FOR TAKING THE TEST

Here are some ideas to help you do your best:

- Read each question carefully. Take your time.
- You have a ruler, a protractor, a reference sheet, and a calculator that you can use on the test if they help you answer the question.
- Be sure to show your work when asked.
- Be sure to explain your answer when asked.

31 There are 104 calories in an 8-ounce serving of soda. How many calories are in 1 ounce of soda?

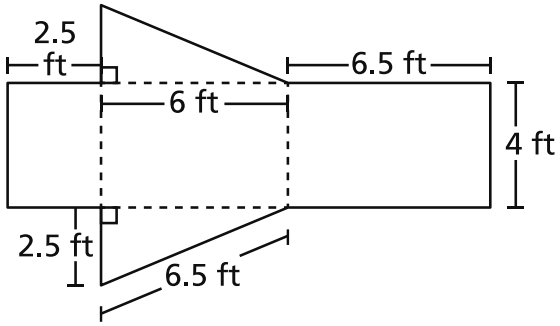
A 13

B 26

C 52

D 96

32 Jose builds a skateboard ramp in the shape of a right triangular prism. The net below shows the dimensions of each part of the ramp.



What is the surface area, in square feet, of the ramp?

A 90

B 75

C 51

D 44

GO ON

33 The number 4 is 16% of what number?

A 12

B 20

C 25

D 64

34 A machine produces chocolates at a constant rate. In 42 minutes, the machine produces 7 pounds of chocolates. How long, in minutes, will it take the machine to produce 9 pounds of chocolates?

A 6

B 15

C 54

D 63

35 The dimensions of a cereal box in the shape of a right rectangular prism are shown below.

$8\frac{1}{10}$ inches by $4\frac{4}{5}$ inches by $12\frac{1}{2}$ inches

What is the volume, in cubic inches, of the cereal box?

A 24

B $25\frac{2}{5}$

C $384\frac{1}{25}$

D 486

36 A tutoring company charges $\$25.00$ per hour to tutor a student. How many hours of tutoring would cost $\$62.50$?

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

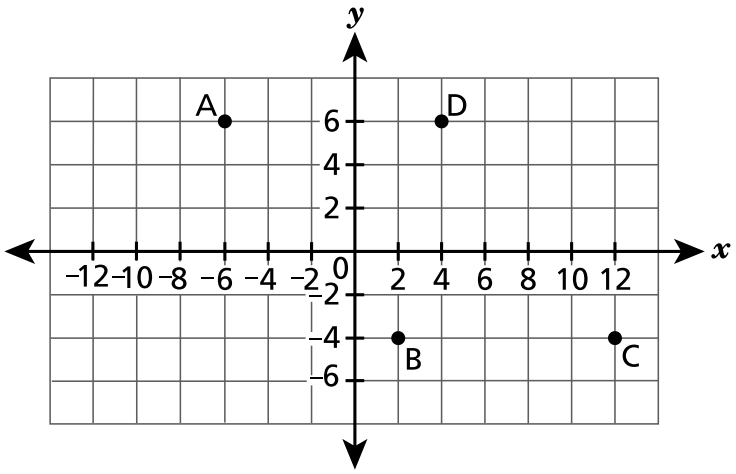
B $3\frac{1}{2}$

C $37\frac{1}{2}$

D $87\frac{1}{2}$

37 **This question is worth 1 credit.**

The four vertices of a parallelogram are plotted on the coordinate plane shown below.



What is the distance, in units, between vertices A and D ?

Answer _____ units

38 **This question is worth 1 credit.**

What value of n makes the equation $\frac{n}{8} = 17$ true?

Answer _____

GO ON

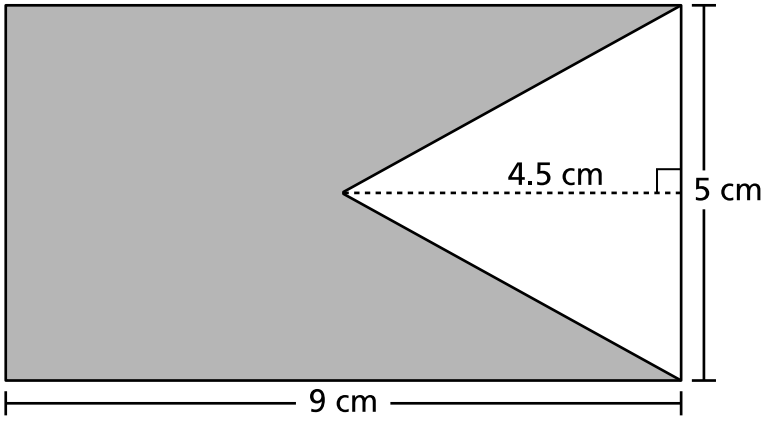
39 **This question is worth 1 credit.**

An artist uses a ratio of 6 gallons of orange paint to 8 gallons of blue paint. If the artist uses 1 gallon of blue paint, how many gallons of orange paint will they use?

Answer _____ gallon(s)

40 **This question is worth 2 credits.**

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

Show your work.

Answer _____ square centimeters

GO ON

41 **This question is worth 2 credits.**

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

42 **This question is worth 2 credits.**

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

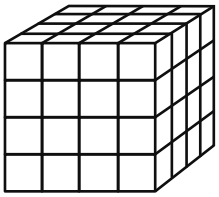
43 **This question is worth 2 credits.**

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

44 **This question is worth 2 credits.**

A prism made of unit cubes is shown below.

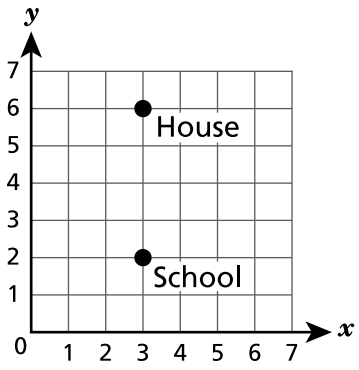


What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

45 **This question is worth 2 credits.**

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

46 **This question is worth 3 credits.**

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

Answer $ _____

STOP

THE STATE EDUCATION DEPARTMENT

THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234

2024 Mathematics Tests Map to the Standards

Grade 6

Question	Type	Key	Points	Standard	Domain	Secondary Standard(s)	Multiple Choice Questions	Constructed Response Questions	
							Percentage of Students Who Answered Correctly (P-Value)	Average Points Earned	P-Value (Average Points Earned ÷ Total Possible Points)
Session 1									
2	Multiple Choice	B	1	NGLS.Math.Content.NY-6.EE.2a	Expressions and Equations		0.71		
3	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.5	Expressions and Equations		0.71		
4	Multiple Choice	C	1	NGLS.Math.Content.NY-6.NS.8	The Number System		0.62		
11	Multiple Choice	B	1	NGLS.Math.Content.NY-6.EE.8	Expressions and Equations		0.55		
14	Multiple Choice	D	1	NGLS.Math.Content.NY-6.EE.1	Expressions and Equations		0.58		
15	Multiple Choice	D	1	NGLS.Math.Content.NY-6.NS.1	The Number System		0.54		
18	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.6a	The Number System		0.28		
20	Multiple Choice	C	1	NGLS.Math.Content.NY-6.G.2	Geometry		0.44		
22	Multiple Choice	B	1	NGLS.Math.Content.NY-6.EE.6	Expressions and Equations		0.58		
23	Multiple Choice	D	1	NGLS.Math.Content.NY-6.RP.3d	Ratios and Proportional Relationships		0.54		
26	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.6b	The Number System		0.38		
28	Multiple Choice	C	1	NGLS.Math.Content.NY-6.G.1	Geometry		0.35		
29	Multiple Choice	B	1	NGLS.Math.Content.NY-6.NS.7a	The Number System		0.47		
Session 2									
31	Multiple Choice	A	1	NGLS.Math.Content.NY-6.RP.2	Ratios and Proportional Relationships		0.89		
32	Multiple Choice	B	1	NGLS.Math.Content.NY-6.G.4	Geometry		0.53		
33	Multiple Choice	C	1	NGLS.Math.Content.NY-6.RP.3c	Ratios and Proportional Relationships		0.50		
34	Multiple Choice	C	1	NGLS.Math.Content.NY-6.RP.3b	Ratios and Proportional Relationships		0.73		
35	Multiple Choice	D	1	NGLS.Math.Content.NY-6.G.2	Geometry		0.54		
36	Multiple Choice	A	1	NGLS.Math.Content.NY-6.EE.7	Expressions and Equations	NGLS.Math.Content.NY-6.RP.3b	0.71		
37	Constructed Response	n/a	1	NGLS.Math.Content.NY-6.G.3	Geometry			0.20	0.20
38	Constructed Response	n/a	1	NGLS.Math.Content.NY-6.EE.7	Expressions and Equations			0.58	0.58
39	Constructed Response	n/a	1	NGLS.Math.Content.NY-6.RP.2	Ratios and Proportional Relationships	NGLS.Math.Content.NY-6.RP.3b		0.37	0.37
40	Constructed Response	n/a	2	NGLS.Math.Content.NY-6.G.1	Geometry			0.68	0.34
41	Constructed Response	n/a	2	NGLS.Math.Content.NY-6.EE.4	Expressions and Equations			0.74	0.37
42	Constructed Response	n/a	2	NGLS.Math.Content.NY-6.EE.9	Expressions and Equations			0.57	0.28
43	Constructed Response	n/a	2	NGLS.Math.Content.NY-6.NS.4	The Number System			0.85	0.42
44	Constructed Response	n/a	2	NGLS.Math.Content.NY-6.G.5	Geometry			0.59	0.30
45	Constructed Response	n/a	2	NGLS.Math.Content.NY-6.NS.8	The Number System			0.90	0.45
46	Constructed Response	n/a	3	NGLS.Math.Content.NY-6.RP.3a	Ratios and Proportional Relationships			1.17	0.39

*This item map is intended to identify the primary analytic skills necessary to successfully answer each question. However, some questions measure proficiencies described in multiple standards, including a balanced combination of procedural and conceptual understanding.

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)

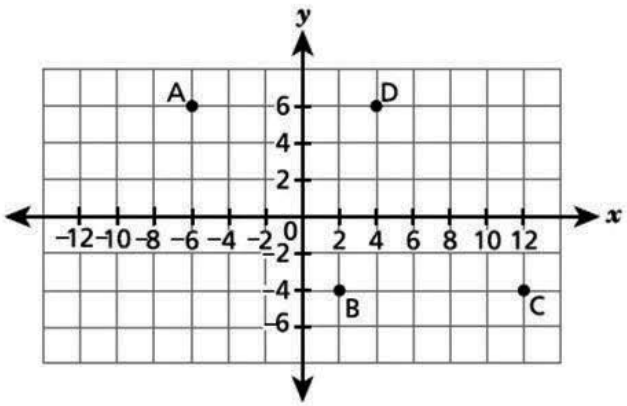
1. The student is **not** required to show work for a 1-credit constructed-response question, therefore, any work shown will **not** be scored. A clearly identified correct response should still receive full credit.
2. If the student clearly identifies a correct answer but fails to write that answer 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.

37

The four vertices of a parallelogram are plotted on the coordinate plane shown below.



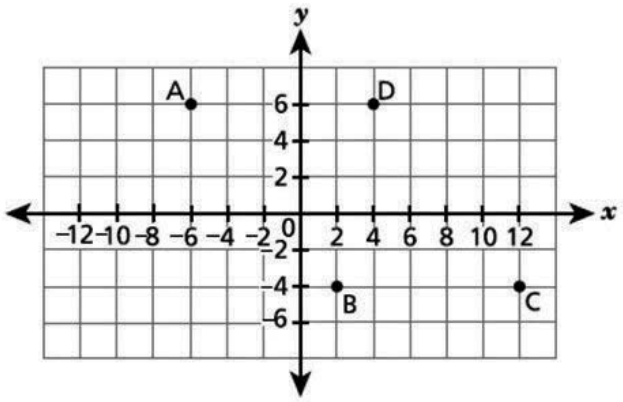
What is the distance, in units, between vertices A and D ?

Answer _____ units

EXEMPLARY RESPONSE

37

The four vertices of a parallelogram are plotted on the coordinate plane shown below.



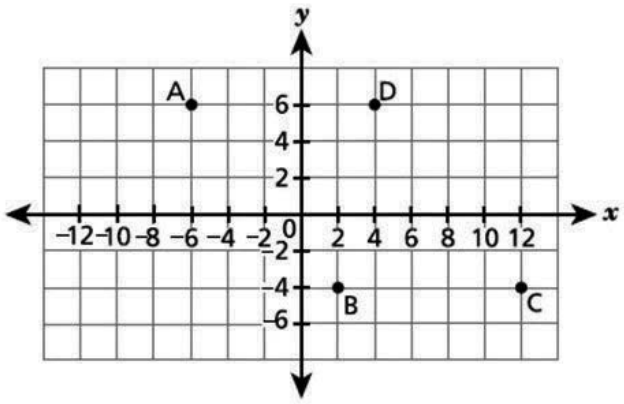
What is the distance, in units, between vertices A and D ?

Answer 10 units

GUIDE PAPER 1

37

The four vertices of a parallelogram are plotted on the coordinate plane shown below.



What is the distance, in units, between vertices A and D ?

Answer 10 units

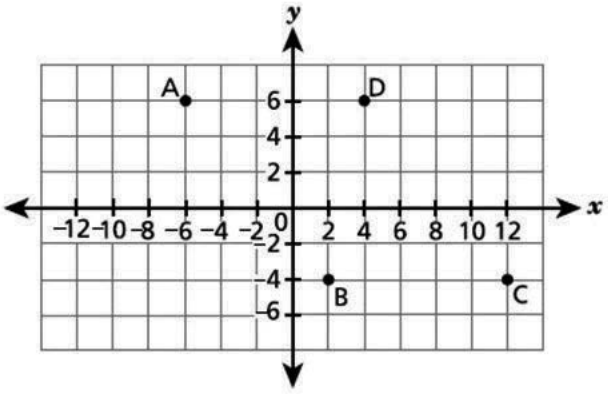
Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 2

37

The four vertices of a parallelogram are plotted on the coordinate plane shown below.



What is the distance, in units, between vertices A and D ?

|6-4| 4

6 + 4 = 10

The distance between vertices A and D is 10 units.

Answer units

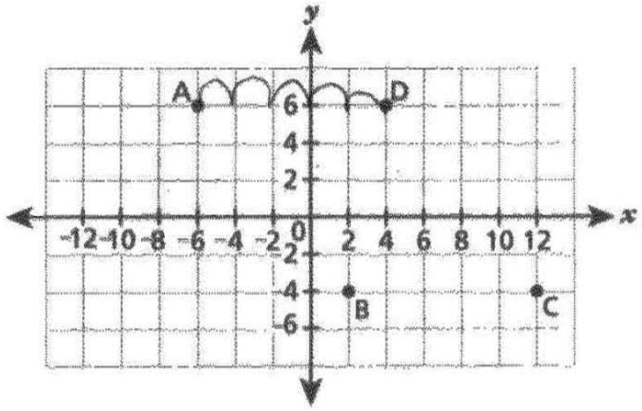
Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 3

37

The four vertices of a parallelogram are plotted on the coordinate plane shown below.



What is the distance, in units, between vertices A and D? [1]

Answer 5 units

Score Credit 0 (out of 1 credit)

An incorrect answer is provided.

38

What value of n makes the equation $\frac{n}{8} = 17$ true?

Answer _____

EXEMPLARY RESPONSE

38

What value of n makes the equation $\frac{n}{8} = 17$ true?

Answer 136

38

What value of n makes the equation $\frac{n}{8} = 17$ true?

Answer

$8 \times 17 =$
136

Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 2

38

What value of n makes the equation $\frac{n}{8} = 17$ true?

$n = 136$

$17 \times 8 = n$

Answer 136

Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 3

38

What value of n makes the equation $\frac{n}{8} = 17$ true?

$\frac{?}{8} \quad \frac{17}{1}$

$\times 2.125$

$8 \overline{)17.000}$

-16

10

-8

20

-16

40

Answer $n = 2.125$

Score Credit 0 (out of 1 credit)

An incorrect answer is provided.

39

An artist uses a ratio of 6 gallons of orange paint to 8 gallons of blue paint. If the artist uses 1 gallon of blue paint, how many gallons of orange paint will they use?

Answer _____ gallon(s)

EXEMPLARY RESPONSE

39

An artist uses a ratio of 6 gallons of orange paint to 8 gallons of blue paint. If the artist uses 1 gallon of blue paint, how many gallons of orange paint will they use?

Answer $^{6}/_{8}$ or 0.75 *OR equivalent* gallon(s)

GUIDE PAPER 1

39

An artist uses a ratio of 6 gallons of orange paint to 8 gallons of blue paint. If the artist uses 1 gallon of blue paint, how many gallons of orange paint will they use?

Answer He will use .75 gallons of orange paint. gallon(s)

Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 2

39

An artist uses a ratio of 6 gallons of orange paint to 8 gallons of blue paint. If the artist uses 1 gallon of blue paint, how many gallons of orange paint will they use? [1]

6:8

3:4

0.75:1

Answer 0.75 gallon(s)

Score Credit 1 (out of 1 credit)

A correct answer is provided.

GUIDE PAPER 3

39

An artist uses a ratio of 6 gallons of orange paint to 8 gallons of blue paint. If the artist uses 1 gallon of blue paint, how many gallons of orange paint will they use?

Answer

$6 \div 8 =$
0.75 or 8
$\times 6 = 48$

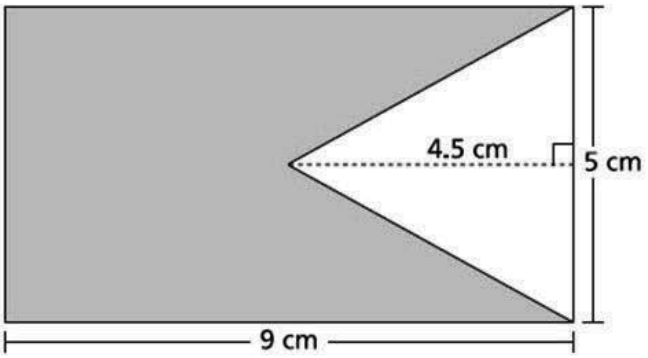
gallon(s)

Score Credit 0 (out of 1 credit)

An incorrect answer is provided.

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

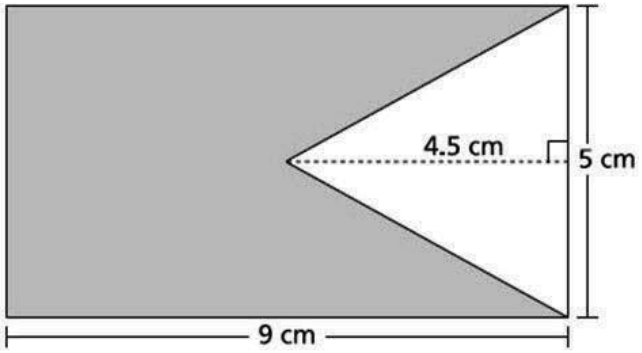
Show your work.

Answer _____ square centimeters

EXEMPLARY RESPONSE

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

Show your work.

$(9 \times 5) - (5 \times 4.5 \div 2) = 45 - 11.25 = 33.75$

OR

$(4.5 \times 2.5 \div 2) \times 2 = 11.25$

$4.5 \times 5 = 22.5$

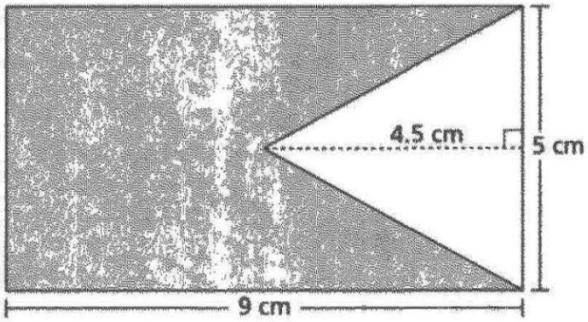
$11.25 + 22.5 = 33.75$

OR other valid process

Answer 33.75 square centimeters

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag? [2]

Show your work.

$9 \times 5 = 45$

$5 \times 4.5 \times \frac{1}{2} = 11.25$

$45 - 11.25 = 33.75$

Answer 33.75 square centimeters

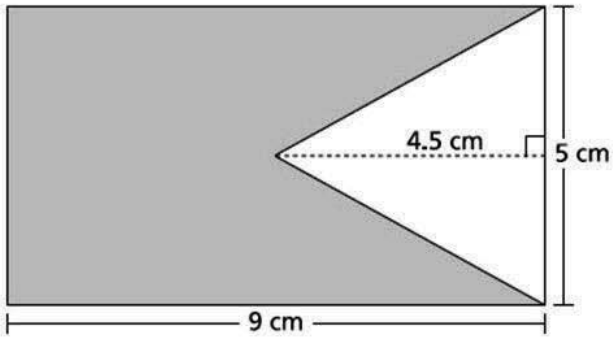
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The area of the unshaded section is correctly calculated and correctly subtracted from the total area of the rectangular flag to determine the area of the shaded section. This response is complete and correct.

GUIDE PAPER 2

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

Show your work.

4.5*5/2=11.25

9-4.5=4.5

4.5*5=22.5 22.5+11.25=33.75

Answer 33.75 square centimeters

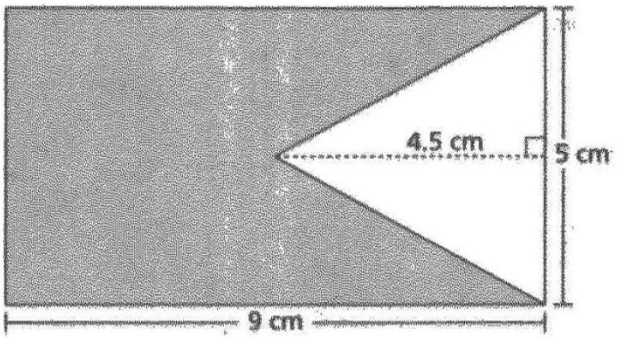
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The shaded section is split in parts, and the areas of the shaded rectangular and triangular parts are correctly calculated and added to determine the total shaded area. This response is complete and correct.

GUIDE PAPER 3

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag? [2]

Show your work.

rectangular flag
B = 9
H = 5
9 · 5 = 45

not shaded
B = 5
H = 4.5
5 · 4.5 = 22.5
$\frac{1}{2}$ 22.5 = 11.25
45 − 11.25 =

Answer 33.75 square centimeters

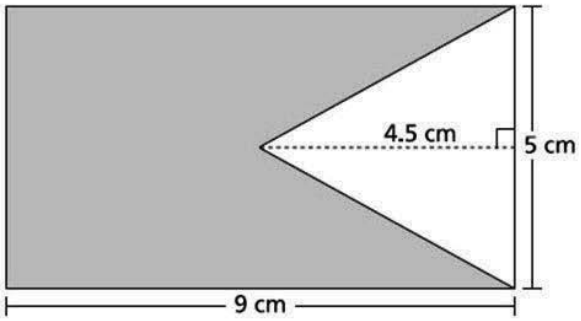
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The area of the unshaded section is correctly calculated and correctly subtracted from the total area of the rectangular flag to determine the area of the shaded section. This response is complete and correct.

GUIDE PAPER 4

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

Show your work.

5.625+5.625=11.25+22.5=33.75

Answer 33.75 square centimeters

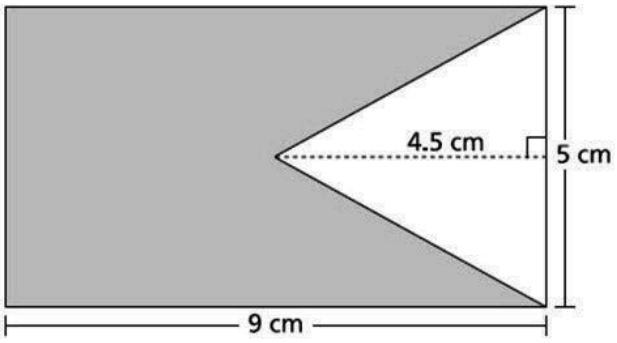
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The shaded section is split in parts, and the areas of the shaded rectangular and triangular parts are correctly identified and added to determine the total shaded area; however, it is not clear from the work how the areas are calculated. This response contains the correct solution, but the required work is incomplete.

GUIDE PAPER 5

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

Show your work.

5 x 9 = 45
4.5 x 5 = 22.5 / 2 = 11.25

45- 11.25 = 32.75 cm

Answer 32.75 cm square centimeters

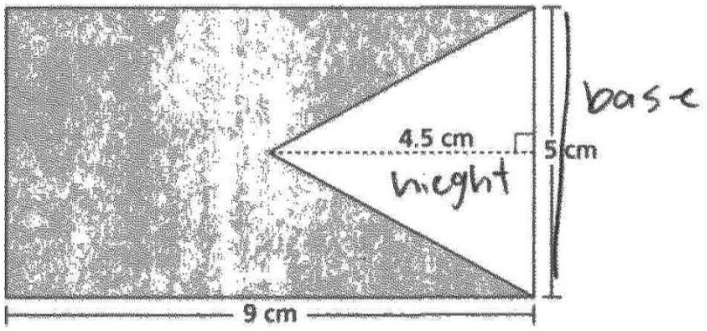
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The area of the unshaded section is correctly calculated; however, a calculation error occurs when subtracting this area from the total area of the rectangular flag. Although incorrect units are referenced in the work, it does not detract from the demonstration of an understanding of the task. This response contains an incorrect solution but applies a mathematically appropriate process.

GUIDE PAPER 6

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag? [2]

Show your work.

formula = $\frac{1}{2} \times b \times h$

$5 \cdot 4.5 = 22.5$

$22.5 cm^2$

$\frac{1}{2} \cdot 5 \cdot 4.5 = 11.25$

$11.25 cm^2$

Answer 11.25 square centimeters

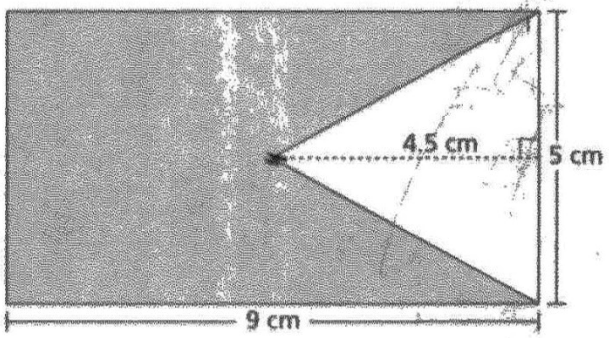
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The area of the unshaded section is correctly calculated; however, the shaded area is not addressed, and the unshaded area is inappropriately provided as a solution. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag? [2]

Show your work.

9cm + 9cm + 5+5

33 (Sc) squre centimeter

9 cm + 9 cm + 5+5+5

each side

in one length

5 cm

9 cm

4.5 cm

5cm

5

5

9 cm

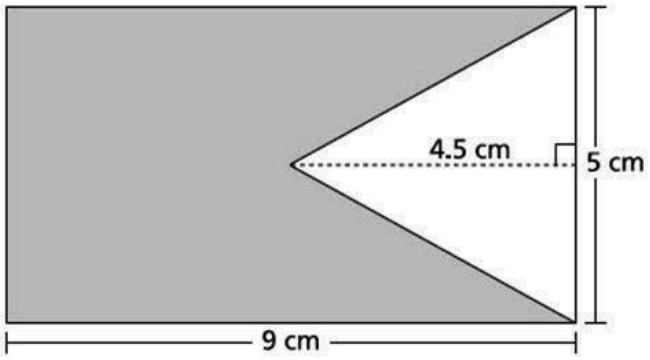
Answer 33 square centimeters

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 lengths are inappropriately added to determine a solution. This response is incorrect and is insufficient to show any understanding.

40

A diagram of a rectangular flag, with a shaded section, is shown below.



What is the area, in square centimeters, of the shaded section of the flag?

Show your work.

it looks like the flag of napal

Answer 33.75 square centimeters

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.

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

EXEMPLARY RESPONSE

41

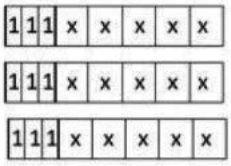
A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$. What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

The expressions are not equivalent. If you distribute the multiplication of the 3 over $3 + 5x$ you will get $9 + 15x$, which is not the same as $6 + 8x$.

OR

The expression $3(3 + 5x)$ means 3 times the quantity $(3 + 5x)$.



So the equivalent expression would be $9 + 15x$, not $6 + 8x$.

OR other valid explanation

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

The student's claim is wrong because instead of multiplying the 3 by the numbers inside of the parenthesis, the student added them and got 6 and 8. The correct way to do it is to multiply the numbers. This would give you a correct answer of 9 + 15x.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The error is correctly explained, and a correct equivalent expression is provided. The explanation is complete and correct.

GUIDE PAPER 2

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$. What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response. [2]

Explain your answer.

The student added instead of multiplying. He did 3+3, 3+5x when it was 3×3, 3×5x so the real awnser should be 9+15x.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The error is correctly explained, and a correct equivalent expression is provided. The explanation is complete and correct.

GUIDE PAPER 3

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

The student is incorrect because during the Distributive Property you have to multiply but this person added. An equivalent to 3(3 + 5x) is 9 + 15x.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The error is correctly explained, and a correct equivalent expression is provided. The explanation is sufficient to show a thorough understanding.

GUIDE PAPER 4

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

What is incorrect about thne sudent claim is that he thinks 3 (3+5x) means that you have to use addition 3 to both 3 and 5 but it really means that you have to use multiplication to 3 and 5.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The error is correctly explained; however, a correct equivalent expression is not provided. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

The expression is incorrect because 3 times 3 = 9 and 3 times 5= 15. Therefore an equilvilent expression would be 2(3 + 4x)

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The error is explained; however, an expression equivalent to $6 + 8x$ instead of $3(3 + 5x)$ is provided with no further explanation. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$. What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response. [2]

Explain your answer.

The student's claim because of the Distributive Property. $3(3+5x)$ is really equivalent to $9+15x$, not $6+8x$.

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. A correct equivalent expression is provided. Although the distributive property is referenced, the explanation is unclear. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$.
What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response.

Explain your answer.

The claim of the student, 3(3+5x) is wrong because it is not equivalent to the expression, 6+8x.

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 correct statement is made, no explanation is provided, and an equivalent expression is not written. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

41

A student claims that the expression $6 + 8x$ is equivalent to the expression $3(3 + 5x)$. What is incorrect about the student's claim? Be sure to include an equivalent expression to $3(3 + 5x)$ in your response. [2]

Explain your answer.

The student is incorrect because the answer to 6+8x doesn't match with the answer of 3(3+5x). An equivalent answer to 3(3+5x) would be 6(2+2x).

6+8x
14x

3 (3+5x)
3·8x
24x

6 (2+2x)
6·4x
24x

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 equivalent expression to $3(3 + 5x)$ is provided, and the explanation is incorrect. The explanation is insufficient to show any understanding.

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

EXEMPLARY RESPONSE

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

The total cost is dependent upon the number of tickets bought. That makes *c* the dependent variable and *t* the independent variable.

The cost of each ticket is 2.75, so the total cost will increase by 2.75 times the increase of the number of tickets bought.

OR other valid explanation

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

c = 2.75t
c = dependent
t = independent
C depends on T to know how many bus tickets Mike bought.
If we don't know T, we don't know C.
$2.75 per ticket
Let's say that he rides the bus 2 times a day. Well, the equation will look like this. c = 2.75(2)
Then the cost will be, $5.50

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The relationship between the number of tickets sold and the total cost is correctly explained by identifying the cost per ticket and explaining the equation in the context. The dependent and independent variables are correctly identified. The explanation is complete and correct.

GUIDE PAPER 2

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

The relationship between C the total cost, and T the number of tickets is they affect each other. They affect each other because if you add one more T than you would have to add 2.75 (the cost of one ticket) to what C equals. The variable that is dependent is C because it only changes if T changes and T is independent because Mike is gonna keep on buying more train tickets so what T equals will keep on chnaging.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The relationship between the number of tickets sold and the total cost is correctly explained by identifying the cost per ticket and explaining the equation in the context. The dependent and independent variables are correctly identified. The explanation is complete and correct.

GUIDE PAPER 3

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

The relationship between the c, total cost and t, the number of tickets is that for every ticket he buys, the total cost will increase. The independent variable is the tickets that Mike buys and the dependent variable is the total cost because the total cost depends on how many tickets Mike will buy.

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The relationship between the number of tickets sold and the total cost is sufficiently explained. The dependent and independent variables are correctly identified. The explanation is sufficient to show a thorough understanding.

GUIDE PAPER 4

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

The relationship between T & C is that when t increases c also increases due to t meaning how mnay tickets he bought, So if the amount if tickets he buys increases c (the cost of the tickets) will also increase. The cost of each ticket is the depeondent variable and the amount of tickets he buys is the independent variable.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The relationship between the number of tickets sold and the total cost is correctly explained. The independent variable is correctly identified; however, the dependent variable is incorrectly identified as the cost of each ticket instead of the total cost. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer. [2]

Explain your answer.

T represents the amount of tickets Mike buys meaning 2.75 x t = C, the total cost. T is independent and C is dependent

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The dependent and independent variables are correctly identified; however, the equation is rewritten and the relationship between the two variables is not clearly explained. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer. [2]

Explain your answer.

The c is the dependent and the t is the independent because the the total cost depends on how many tickets he buys.

Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The dependent and independent variables are correctly identified; however, the explanation only addresses the dependency between the two variables, and the relationship between the two variables is not clearly explained. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer. [2]

Explain your answer.

They have a relationship with t and the ticketcts that Mike buys is because t stands for tickets & c is the total cost t is the independent varible and t is the dependent varible.

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 relationship between the two variables is not explained, and the independent and dependent variables are incorrectly identified. Holistically, the explanation is insufficient to show any understanding.

42

Mike needs a ticket every time he rides the bus. Given the equation $c = 2.75t$, what is the relationship between t, the number of tickets that Mike buys, and c, the total cost? Be sure to identify which variable is independent and which variable is dependent in your answer.

Explain your answer.

The amount of tickets Mike needs to buy tells us how much all the tickets will cost.

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 correct statement relating cost to the amount of tickets is provided, the relationship of how the increase in the number of tickets purchased affects the total cost is not explained, and the independent and dependent variables are not identified. Holistically, the explanation is insufficient to show any understanding.

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

EXEMPLARY RESPONSE

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

No, the student's claim is not correct. Although 4 is a factor of both 24 and 40, it is not the greatest common factor.

Both 24 and 40 are also multiples of 8, which means that 8 is a greater factor of both numbers than 4.
Multiples of 8: 8, 16, 24, 32, 40

OR other valid explanation

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

No, the students claim is wrong. The answer is 8.

24: 1, 2, 3, 4, 6, 8, 12, 24

40: 1, 2, 4, 5, 8, 10, 20, 40

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct negative claim is made, and a correct explanation listing factors of 24 and 40 is provided to show that 4 is not the greatest common factor. The explanation is complete and correct.

GUIDE PAPER 2

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct? [2]

Explain how you determined your answer.

no because the real greatest common factor is 8 because 24÷8=3 40÷8=5

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct negative claim is made, and a correct explanation using two math facts with 8 as a factor of both 24 and 40 is provided to show that 4 is not the greatest common factor. The explanation is complete and correct.

GUIDE PAPER 3

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

No actually he is wrong the greatest common factor is actually 8 as it goes

8,16,24,32,40
8,16,24

Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. A correct negative claim is made, and a correct explanation listing multiples of 8 is provided to show that 4 is not the greatest common factor. The explanation is complete and correct.

GUIDE PAPER 4

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct? [2]

Explain how you determined your answer.

No the greatest common factor is 8 because if is the highest number it can go into.

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 negative claim is made, and 8 is correctly identified as the greatest common factor; however, the explanation is incomplete. It is not clear from the explanation why 24 and 40 are multiples of 8. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

No, the student's claim is not correct, because 4 is not the greatest common factor of 24 and 40. The two numbers also aren't multiples of 4. The correct greatest common factor of 24 and 40 is 8. I found this by doing what is shown below.
24: 1,2,3,4,6,8,12,24
40: 1,2,4,5,8,10,20,40

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 negative claim is made, and factors of 24 and 40 are correctly listed to show that 4 is not the greatest common factor. However, the explanation contains an incorrect statement about multiples of 4. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct? [2]

Explain how you determined your answer.

The students claim is not correct. The correct answer is 8.

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 negative claim is made, and 8 is correctly identified as the greatest common factor; however, it is not clear from the explanation why 8 is a factor of 24 and 40. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct?

Explain how you determined your answer.

4,8,12,16,24,28,32,36,40

yes the studenets clam is true 4 goes into both.

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 claim is made, based on listing only the multiples of 4. Holistically, the explanation is insufficient to show any understanding.

43

A student claims that 4 is the greatest common factor of 24 and 40, because the two numbers are both multiples of 4. Is the student's claim correct? [2]

Explain how you determined your answer.

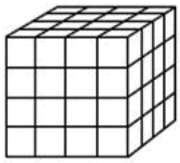
No because the page looking for GCF not multiples

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 correct negative claim is made, the explanation is irrelevant and does not explain why 4 is not the greatest common factor. The explanation is insufficient to show any understanding.

44

A prism made of unit cubes is shown below.



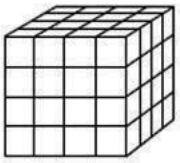
What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

EXEMPLARY RESPONSE

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

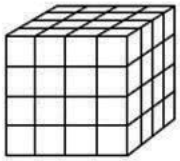
The volume of the prism is $l \times w \times h$, which is $4 \times 4 \times 4 = 64$.

Since 64 results from multiplying 4 by itself 3 times, which is 4^3, then 64 is a perfect cube.

OR other valid explanation

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

The volume of this pefect cube is 64 unit cubes. I got this by multiplying 4x4x4 which is our lenght, width, and height. I know that a cube has the same length on each side, so this can also be written as 4^3 which again equals 64.

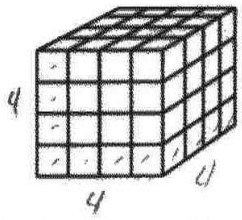
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The volume is correctly determined, and the process of cubing is correctly explained using the exponent of 3. The explanation is complete and correct.

GUIDE PAPER 2

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

I know that the volume of the prism is 64 units^3 because I know that volume equals L x W x H. Which means I did 4 to the power of 3.

4 x 4 x 4 = 64 units^3

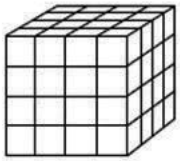
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The volume is correctly determined, and the process of cubing is correctly explained using the power of 3. The explanation is complete and correct.

GUIDE PAPER 3

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

$L \times W \times H \rightarrow 4 \times 4 \times 4 = 4^3 = 64$ volume

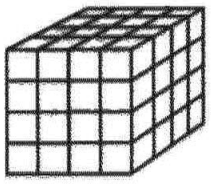
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The volume is correctly determined, and the process of cubing is correctly explained using the exponent of 3. The explanation is sufficient to show a thorough understanding.

GUIDE PAPER 4

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

The formula for volume is lwh which for the prism is 4x4x4 this can also be shorter into a exponat which is 4^3

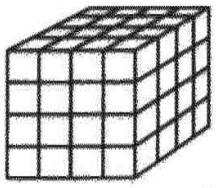
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The process of cubing is correctly explained using the exponent of 3; however, the perfect cube is not calculated. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

The cube in the image above is a square all the sides are the same length. The volume would be V=lwh; volume=64 unit cubes squared.

4x4x4

16x4=64

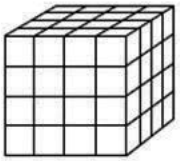
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The volume is correctly determined; however, the explanation is incomplete. The process of cubing using the exponent of 3 is not addressed. Although an incorrect unit is referenced in the work, it does not detract from the demonstration of an understanding. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

A percfect cube would be 3 by 3 by 3 the volume of a perfect cube is 27 and the exponents is 3^3

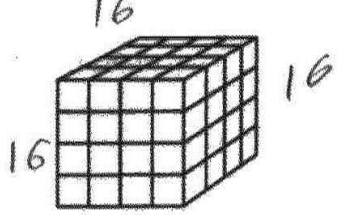
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. A correct explanation is provided to show how the perfect cube value is determined using the exponent; however, the volume of a different prism is calculated. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

I counted the cubes and got all 16 and multiplied them and got 4096

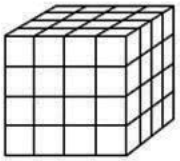
16 × 16 × 16 = 4096

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 determine the volume of the prism. The explanation is incorrect and is insufficient to show any understanding.

44

A prism made of unit cubes is shown below.



What perfect cube is represented by the volume of the prism? Be sure to include what you know about volume and exponents in your answer.

Explain your answer.

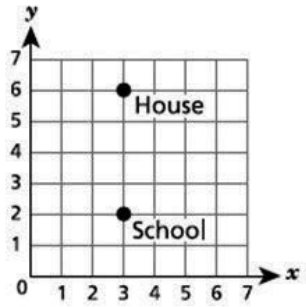
The prism is a 4x4 prism. This is because the amount of unit cubes for the volume is 4. Also, since the prism has 4 cubes going each way the amont of cubes is $_4{}^4$.

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 exponent is used to determine the volume, and an incorrect explanation of the process is provided. The explanation is insufficient to show any understanding.

45

The location of Jake's school and house are represented on the coordinate plane shown below.



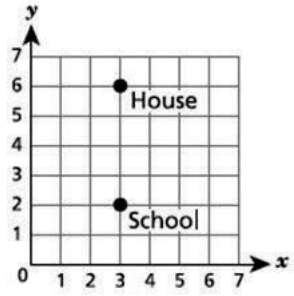
What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

EXEMPLARY RESPONSE

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

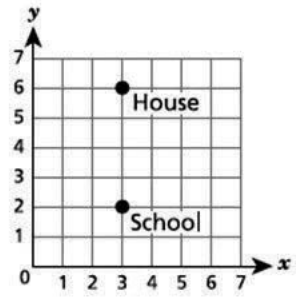
The school is located at (3, 2) and the house is located at (3, 6).

The distance from Jake's house to the school is 4 units, because 6 - 2 = 4.

OR other valid explanation

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

House= (3,6) School= (3,2) The answer is 4 units because 6-4 =2 and if you count it on the coordinate plane you will end up with 4.

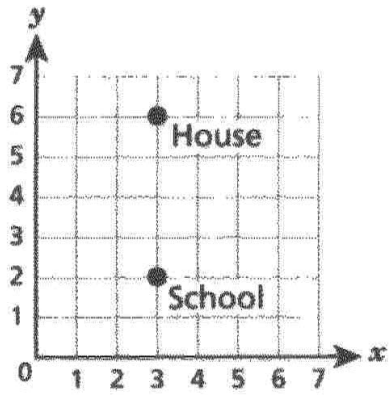
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The coordinates for both locations are correctly stated, and the distance between the two locations is correctly calculated and explained using subtraction and counting. The explanation is complete and correct.

GUIDE PAPER 2

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer. [2]

Explain how you determined your answer.

There are 4 units between Jake's school and house. His school is at (3, 2) and his house is at (3,6). The x-axis is the same, and 6 - 2 = 4.

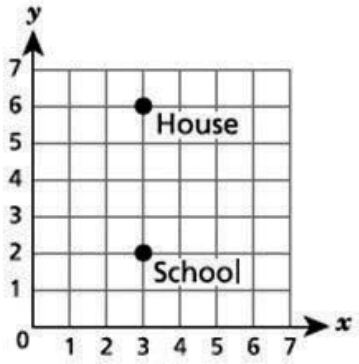
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The coordinates for both locations are correctly stated, and the distance between the two locations is correctly calculated and explained by subtracting *y*-coordinates. The reference to *x*-coordinate as "*x-axis*" is considered inconsequential. The explanation is sufficient to show a thorough understanding.

GUIDE PAPER 3

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

4 units. I know this because if you go south 4 units from (3,6), you would get to the school at (3,2).

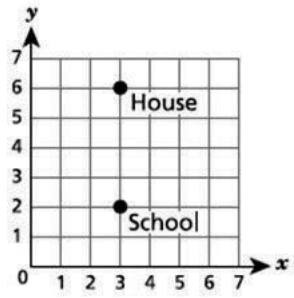
Score Credit 2 (out of 2 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The coordinates for both locations are correctly stated, and the distance between the two locations is correctly calculated and explained by counting units on the graph. The explanation is sufficient to show a thorough understanding.

GUIDE PAPER 4

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

Jake's house is only 4 units away because they both have the same x axis so he goes straight up and the distance between 2 and 6 is 4 so his house is 4 units

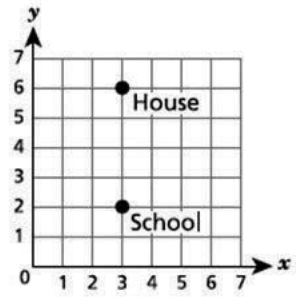
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The distance between the two locations is correctly calculated and explained by subtracting *y*-coordinates; however, the coordinates for both locations are not stated. The reference to *x*-coordinate as "*x axis*" is considered inconsequential. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

H=(3,6)
S=(3,2)
You could minus 6 from 2 and get 4 units which would be your answer

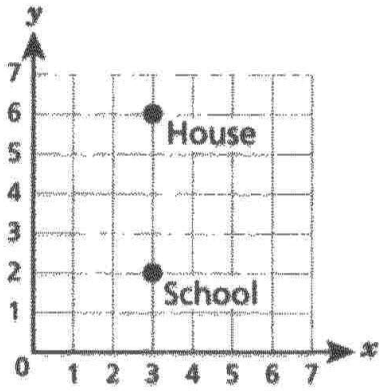
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The coordinates for both locations and the distance between the two locations are correctly stated; however, the subtraction is explained in an incorrect order. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer. [2]

Explain how you determined your answer.

the distance between (3,6) and (3,2) is 4.

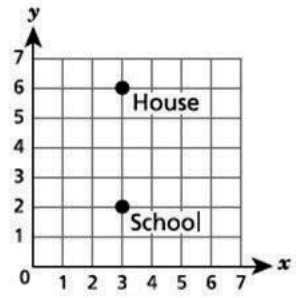
Score Credit 1 (out of 2 credits)

This response demonstrates only a partial understanding of the mathematical concepts and procedures in the task. The coordinates for both locations and the distance between the two locations are correctly stated; however, it is not clear from the explanation how the distance is calculated. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer.

Explain how you determined your answer.

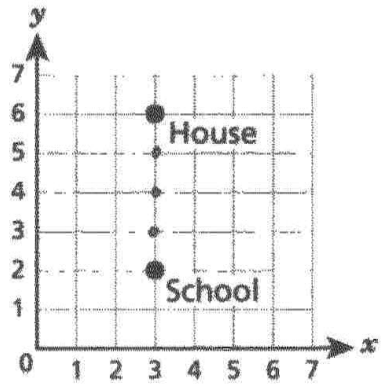
4 units

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 correct distance is stated, no explanation is provided. Per Scoring Policy #3 for 2- and 3-credit responses, this response receives no credit.

45

The location of Jake's school and house are represented on the coordinate plane shown below.



What is the distance, in units, from Jake's school to his house? Be sure to include the coordinates for both locations and how those coordinates can be used to determine your answer. [2]

Explain how you determined your answer.

Jake's house coordinates are 3,6 and the schools is 3,2. The distance is 3 units. I counted the dots I made inbetween Jake's house and the school, thats how I get my answer.

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 coordinates for both locations are stated without parentheses, and an incorrect process is used to determine the distance between the two locations. Holistically, the explanation is insufficient to show any understanding.

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

Answer $ _____

EXEMPLARY RESPONSE

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

Rex:
72 ÷ 8 = $9 per month
16 × 9 = $144 after 16 months

Nero:
144 ÷ 12 = $12 per month
16 × 12 = $192 after 16 months
192 – 144 = $48

OR

18 ÷ 2 = $9
36 ÷ 3 = $12

12 – 9 = 3
3 × 16 = $48

OR other valid process

Answer $ 48

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of the month for different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

R: 18 ÷ 2 = 9 × 9 = 144

N: 36 ÷ 3 = 12 × 12 = 192

144 − 96 = 48

Answer $ 48

Score Credit 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The unit rates and Rex's and Nero's total savings at the end of 16 months are correctly calculated, and the difference in total savings is correctly determined. This response is complete and correct.

GUIDE PAPER 2

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

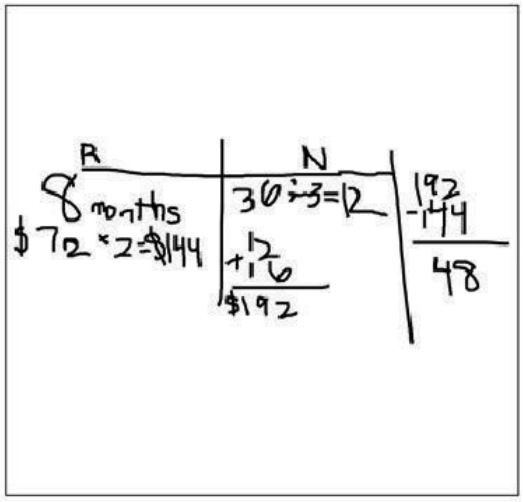
Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.



Answer $ 48

Score Credit 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. Nero's savings rate and Rex's and Nero's total savings at the end of 16 months are correctly calculated, and the difference in total savings is correctly determined. The reference to 8 months in the chart does not detract from the correct solution. This response contains sufficient work to demonstrate a thorough understanding.

GUIDE PAPER 3

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

$9 \times 16 = 144$
$12 \times 16 = 192$
$192 - 144 = 48$

Answer $ 48

Score Credit 3 (out of 3 credits)

This response demonstrates a thorough understanding of the mathematical concepts and procedures in the task. The unit rates are correctly identified, and Rex's and Nero's total savings at the end of 16 months are correctly determined. Although the work for calculating the unit rates is not shown, this response contains sufficient work to demonstrate a thorough understanding.

GUIDE PAPER 4

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

Rex gets 9 dollars every month, and Nero gets 12 dollars every month.

$9 \times 16 = 144$

$12 \times 16 = 192$

$192 - 144 = 28$

Answer $ 28

Score Credit 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. The unit rates are correctly identified, and Rex's and Nero's total savings at the end of 16 months are correctly determined; however, a calculation error occurs when determining the difference in total savings. This response contains an incorrect solution but provides sound procedures.

GUIDE PAPER 5

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

rex 18 ÷ 2=9 9 × 16=144
nero 36 ÷ 2=18 18 × 16=288 288-144=144

Answer $ 144

Score Credit 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. An incorrect number of months is used when calculating Nero's savings rate per month. The rest of the work calculating Rex's savings rate, Rex's and Nero's total savings at the end of 16 months and the difference in total savings is carried out correctly. This response appropriately addresses most, but not all, aspects of the task.

GUIDE PAPER 6

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of the month for different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8	16
Savings (dollars)	18	36	54	72	144

NERO'S SAVINGS

Number of Months	3	6	9	12	16
Savings (dollars)	36	72	108	144	222

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

REX

# M	$ $
2	18
4	36
6	54
8	72
10	90
12	108
14	126
16	144

72 + 18 = 90; 18 = 108; 18 = 126; 18 = 144

144 + 36 = 210; 12 = 222

144 ÷ 3 = 36

Nero

# M	$ $
3	36
6	72
9	108
12	144
15	210
16	222

222 − 144 = 078

Answer $ 78

Score Credit 2 (out of 3 credits)

This response demonstrates a partial understanding of the mathematical concepts and procedures in the task. Rex's total savings are correctly calculated by completing the table to include 16 months of savings. A calculation error occurs when determining Nero's total savings at the end of 15 months. The rest of the work calculating Nero's total savings at the end of 16 months and the difference in total savings is carried out correctly. This response reflects some minor misunderstanding of the underlying mathematical concepts and procedures.

GUIDE PAPER 7

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

2 4 6 8

18 36 54 72

you multiply by 9 in Rex's savings.

3 6 9 12

36 72 108 144

You multiply by 12 in Nero's savings.

144 − 72 = 72

There is a $72 difference.

Answer $ 72

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 rates are correctly determined; however, Rex's and Nero's total savings at the end of 16 months are not clearly addressed, and the difference in total savings at the end of 12 and 8 months is inappropriately provided as the solution. This response reflects a lack of essential understanding of the underlying mathematical concepts.

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

$192 - 144 = 48$

Nero saved 48 more dollars than rex

Answer $ 48

Score Credit 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. Although the difference in total savings is correctly calculated, the unit rates are not identified, and it is not clear from the work how the total savings at the end of 16 months are calculated. This response contains the correct solution, but the required work is limited.

GUIDE PAPER 9

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of the month for different numbers of months.

REX'S SAVINGS +18

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS +36

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

Rex

8	10	12	14	16
72	90	108	126	144

12	14	16
144	180	216

216 − 144
72

Answer $ 72

Score Credit 1 (out of 3 credits)

This response demonstrates only a limited understanding of the mathematical concepts and procedures in the task. Rex's total savings are correctly calculated by completing the table to include 16 months of savings. Nero's total savings at the end of 15 months is incorrectly labeled as savings at the end of 14 months, and an incorrect savings rate per month is used to calculate Nero's total savings at the end of 16 months. 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

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

9+12=21

Answer $ 21

Score Credit 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. Although 9 and 12 are used in the work, it is not clear from the work that these values represent unit rates. Rex's and Nero's total savings after 16 months are not calculated, and the values are inappropriately added. Holistically, this response is insufficient to show any understanding.

46

Rex and Nero are saving money for new bikes. They both start with $0.00 and save at a constant rate for 16 months. The tables below show Rex's and Nero's total savings, in dollars, at the end of the month for different numbers of months.

REX'S SAVINGS

Number of Months	2	4	6	8
Savings (dollars)	18	36	54	72

NERO'S SAVINGS

Number of Months	3	6	9	12
Savings (dollars)	36	72	108	144

At the end of 16 months, what is the difference between the amount of money Rex saved and the amount of money Nero saved?

Show your work.

14
144
− 72
72

Answer $ 72

Score Credit 0 (out of 3 credits)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts and procedures in the task. Rex's and Nero's total savings at the end of 16 months are not addressed, and the difference in total savings at the end of 12 and 8 months is inappropriately provided as the solution. This response is incorrect and is insufficient to show any understanding.