

New York NYSTP 2018 Grade 7 Math

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Grade 7 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters

1 meter = 39.37 inches

1 mile = 5,280 feet

1 mile = 1,760 yards

1 mile = 1.609 kilometers

1 kilometer = 0.62 mile

1 pound = 16 ounces

1 pound = 0.454 kilogram

1 kilogram = 2.2 pounds

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

FORMULAS

Triangle

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

Parallelogram

$$A = bh$$

Circle

$$A = \pi r^2$$

Circle

$$C = \pi d \text{ or } C = 2\pi r$$

General Prisms

$$V = Bh$$

Name: _____



New York State *Testing Program*

2018 Mathematics Test Session 1

Grade **7**

May 1–3, 2018

Released Questions

Session 1



TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice.
- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.

1 What is the decimal equivalent of the fraction $\frac{8}{15}$?

- A 0.53
- B $0.\overline{53}$
- C $0.5\overline{3}$
- D 0.533

2 The circumference of a circle is 15π centimeters. What is the area of the circle in terms of π ?

- A $7.5\pi \text{ cm}^2$
- B $15\pi \text{ cm}^2$
- C $56.25\pi \text{ cm}^2$
- D $225\pi \text{ cm}^2$

3 Bob buys eggs and potatoes at a store.

- He pays a total of \$25.92.
- He pays \$2.57 for the eggs.
- He buys 5 bags of potatoes that each cost the same amount.

Which equation can be used to determine the cost, x , of each bag of potatoes?

- A $x = (25.92 - 2.57) \div 5$
- B $x = 25.92 \div 5 + 2.57$
- C $x = (25.92 + 2.57) \div 5$
- D $x = 25.92 \div 5 - 2.57$

GO ON

6

A spinner is divided into four colored sections that are not of equal size: red, blue, purple, and orange. The arrow on the spinner is spun several times.

SPINNER RESULTS

Color	Number of Times
Red	15
Blue	24
Purple	12
Orange	9

The arrow on the spinner will be spun one more time. Based on these results, what is the probability that the arrow will land on the purple section?

- A $\frac{1}{4}$
- B $\frac{1}{5}$
- C $\frac{1}{6}$
- D $\frac{1}{12}$

GO ON

7

The table below shows the lowest temperature, in degrees Fahrenheit, on each of 5 days for a city.

**LOWEST DAILY
TEMPERATURES**

Day	Temperature($^{\circ}$ F)
Monday	-36 $^{\circ}$
Tuesday	-25 $^{\circ}$
Wednesday	12 $^{\circ}$
Thursday	-3 $^{\circ}$
Friday	18 $^{\circ}$

What is the mean lowest temperature, in degrees Fahrenheit, in the city for those 5 days?

- A -18.8 $^{\circ}$
- B -6.8 $^{\circ}$
- C 6.8 $^{\circ}$
- D 18.8 $^{\circ}$

GO ON

10

Which expression is equivalent to $(-18) - 64n$?

A $-2(9 - 32n)$

B $2(9 - 32n)$

C $-2(9 + 32n)$

D $2(9 + 32n)$

11

Verda used a sensor to measure the speed of a moving car at different times. At each time, the sensor measured the speed of the car in both miles per hour and kilometers per hour. The table below shows her results.

RECORDED SPEEDS

Speed (miles per hour)	Speed (kilometers per hour)
11.0	17.699
26.0	41.834
34.0	54.706

Based on her results, which statement describes the relationship between m , the speed of the car in miles per hour, and k , the speed of the car in kilometers per hour?

- A The relationship is proportional because the ratio of m to k is constant.
- B The relationship is not proportional because the ratio of m to k is constant.
- C The relationship is proportional because the difference between m and k is constant.
- D The relationship is not proportional because the difference between m and k is constant.

GO ON

16

Bonnie deposits \$70.00 into a new savings account.

- The account earns 4.5% simple interest per year.
- No money is added or removed from the savings account for 3 years.

What is the total amount of money in her savings account at the end of the 3 years?

- A \$9.45
- B \$79.45
- C \$94.50
- D \$164.50

17

Which situation results in a final value of zero?

- A The temperature after a decrease of 5°F from a temperature of -5°F .
- B The height of an airplane after taking off from ground level and rising 1,000 feet.
- C The amount of money received in change after making a \$10 purchase with a \$20 bill.
- D The distance above sea level after increasing 24 meters from a depth of 24 meters below sea level.

GO ON

22

Three classes at a junior high school raised money to buy new computers.

- Ms. Moore's class raised \$249.00.
- Ms. Aguilar's class raised \$396.62 more than Ms. Moore's class.
- Mr. Barry's class raised \$430.43 less than Ms. Aguilar's class.

What is the total amount of money raised by all three classes?

- A \$215.19
B \$464.19
C \$1,076.05
D \$1,109.81

23

A farm grew 19.8 tons of wheat in 2013. The farm's wheat output increased by 9.8% from 2013 to 2014 and by 5.1% from 2014 to 2015. Which expression represents a strategy for estimating the total output of wheat, in tons, in 2015?

- A $20 + 10 + 5$
B $20(10)(5)$
C $20 + 1.1 + 1.05$
D $20(1.1)(1.05)$

GO ON

26

Lea wants to save money on a new computer. At the store near her, the computer she wants is listed at a regular price of \$400.00.

- On Saturday, the store will have a sale and discount the computer by 30%.
- Shoppers who buy a computer that same Saturday before 9:00 a.m. will also receive an additional 10% off the sale price.

How much will Lea pay, without tax, when she buys the computer that Saturday before 9:00 a.m.?

- A \$148.00
B \$160.00
C \$240.00
D \$252.00

27

Which expression can go in the blank to make the equation true?

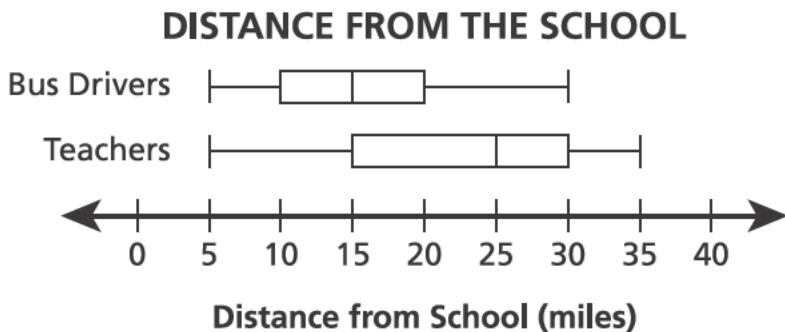
$$-4.5 + 4.4 + \underline{\quad} = 0$$

- A $-6.7 + 6.8$
B $-6.7 + (-6.6)$
C $7.2 + (-7.2)$
D $7.2 + (-7.3)$

GO ON

28

A principal gathered data about the distance, in miles, that his teachers and bus drivers live from the school. The box plots below show these data.



Based on the box plots, which statement is true?

- A The interquartile range of the distances for the bus drivers is twice the interquartile range of the distances for the teachers.
- B The range of the distances for the teachers is twice the range of the distances for the bus drivers.
- C The interquartile range of the distances for the bus drivers is 5 miles less than the interquartile range of the distances for the teachers.
- D The range of the distances for the teachers is 5 miles less than the range of the distances for the bus drivers.

29

At midnight, the temperature was -8°F . At noon, the temperature was 23°F .

Which expression represents the increase in temperature?

- A $-8 - 23$
- B $|-8| - 23$
- C $-8 - |23|$
- D $|-8 - 23|$

GO ON

30

A spinner with seven equal-sized sections was used to play a game.

- It was used 250 times in the first game.
- Of those 250, the arrow landed on section 7 a total of 35 times.
- The same spinner was used 150 times in the second game.

How many times did the spinner **most likely** land on section 7 in the second game?

A 14

B 21

C 30

D 35

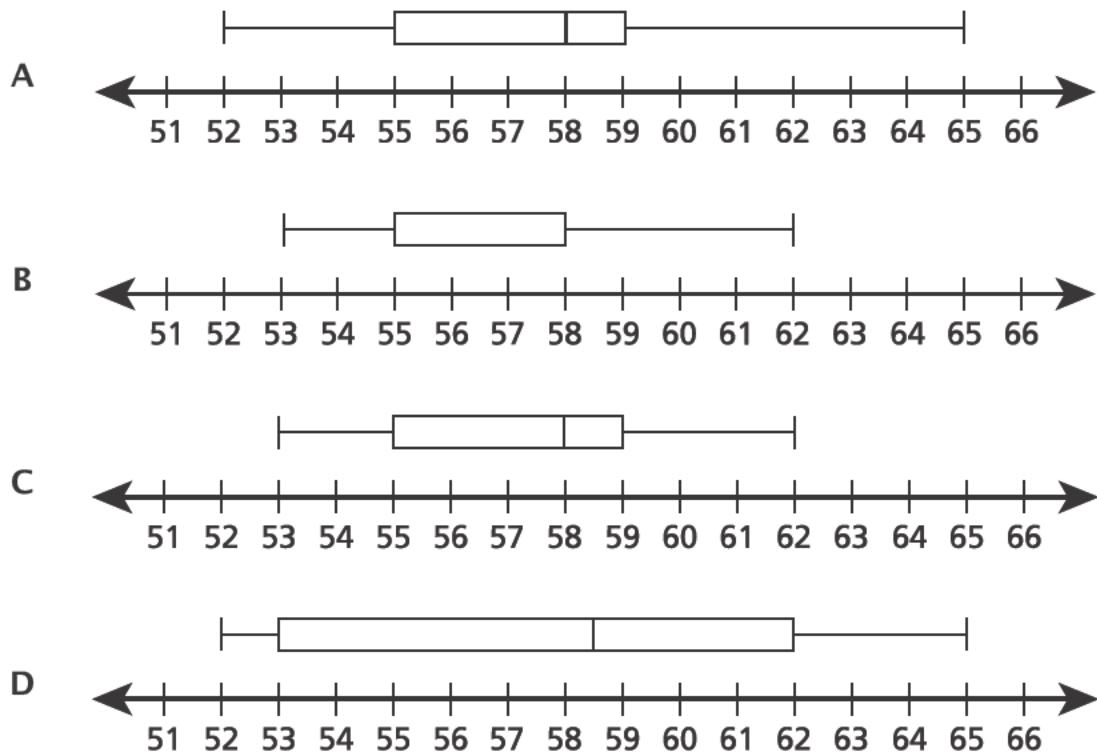
GO ON

31

Amanda surveyed 13 students in her class about their heights in inches. Her data are listed below.

52, 53, 55, 55, 56, 57, 58, 58, 59, 59, 59, 62, 65

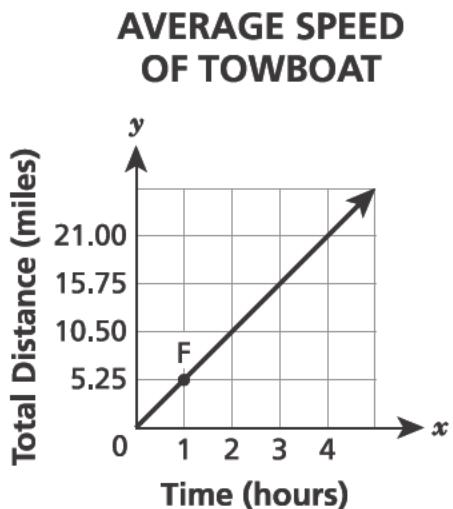
Which box plot correctly displays her data?



GO ON

32

The graph below shows the total distance, in miles, traveled by a towboat over time, in hours.



Which statement **best** describes the meaning of the coordinates of point F on the graph?

- A It shows the unit rate of the graph in hours per mile.
- B It shows the unit rate of the graph in miles per hour.
- C It shows the time, in hours, it takes the towboat to travel 1 mile.
- D It shows the distance traveled, in miles, by the towboat after 5.25 hours.

GO ON

33

A computer program selects blue, red, or green as the background color each time the program is used.

- The program was used 45 times on the same computer in one week.
- Of those 45 times, a blue background appeared 12 times and a red background appeared 21 times.

Based on this information, which statement about the likelihood of the green background appearing the next time the program is used is true?

- A** Green is just as likely as red or blue to appear.
- B** Green is just as likely as blue to appear, but not as likely as red.
- C** Green is not as likely as red or blue to appear.
- D** Green is not as likely as blue to appear, but is as likely as red.

STOP

Session 2



TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice or writing your response.
- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.
- Be sure to show your work when asked.

34 Which number represents the probability of an event that is very likely to occur?

- A 0.12
- B 1.3
- C 0.89
- D 0.09

35 Which expression is equivalent to $n + n - 0.18n$?

- A $1.18n$
- B $1.82n$
- C $n - 0.18$
- D $2n - 0.82$

36 Nick is making bread dough.

- The recipe requires $\frac{3}{4}$ cup of flour and $1\frac{1}{8}$ teaspoons of salt.
- Nick wants to make the recipe using 1 cup of flour.

To maintain the ratio, how much salt is required when 1 cup of flour is used?

- A $\frac{27}{32}$ teaspoon
- B $\frac{2}{3}$ teaspoon
- C $1\frac{1}{2}$ teaspoons
- D $1\frac{7}{8}$ teaspoons

GO ON

- 37** Which expression is equivalent to $-\frac{1}{3}(6x + 15) - 3$?

- A $-2x + 12$
B $-2x + 2$
C $-2x - 2$
D $-2x - 8$

- 38** Josh has a rewards card for a movie theater.

- He receives 15 points for becoming a rewards card holder.
- He earns 3.5 points for each visit to the movie theater.
- He needs at least 55 points to earn a free movie ticket.

Which inequality can Josh use to determine x , the minimum number of visits he needs to earn his first free movie ticket?

- A $55 \geq 3.5x + 15$
B $55 \geq 15x + 3.5$
C $55 \leq 3.5x + 15$
D $55 \leq 15x + 3.5$

39

At a store, a hat has a regular price of x dollars. During a sale, the price of the hat is discounted by 20%. The expression $0.8x$ describes the discounted price, in dollars, of the hat. Which expression also describes the discounted price, in dollars, of the hat?

- A $0.2x$
- B $x - 20$
- C $x - 0.2$
- D $x - 0.2x$

40

Howard has a scale model of the Statue of Liberty.

- The model is 15 inches tall.
- The scale of the model to the actual statue is 1 inch : 6.2 meters.

Which equation can Howard use to determine x , the height in meters, of the Statue of Liberty?

- A $15x = 6.2$
- B $6.2x = 15$
- C $\frac{1}{6.2} = \frac{x}{15}$
- D $\frac{1}{6.2} = \frac{15}{x}$

GO ON

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

Answer _____ square inches

GO ON

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the **greatest** number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

Answer _____ cycling outfits

GO ON

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality _____

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

GO ON

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

Answer _____ yards of fabric per curtain

GO ON

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

Answer _____ miles

GO ON

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

Answer _____

GO ON

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

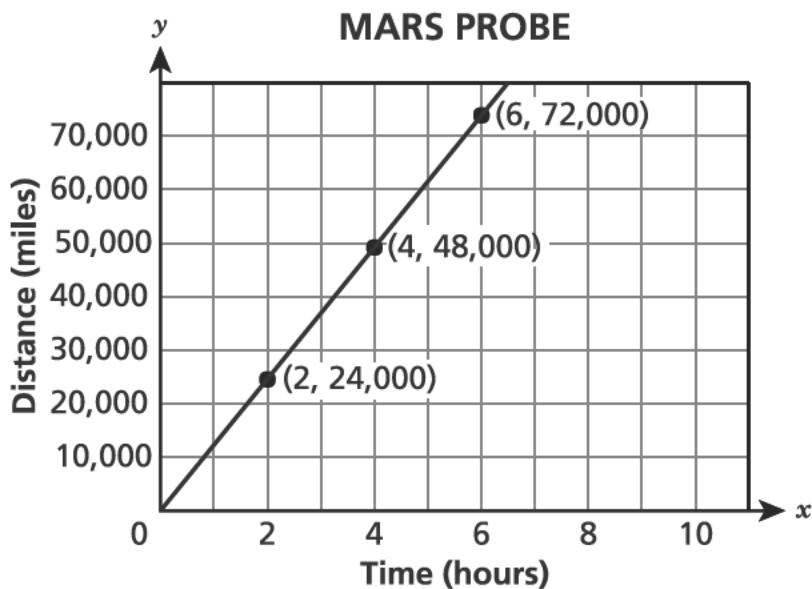
Show your work.

Answer _____ scooters

GO ON

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

Answer _____ miles

STOP

THE STATE EDUCATION DEPARTMENT
THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234
2018 Mathematics Tests Map to the Standards
Grade 7 Released Questions on EngageNY

Question	Type	Key	Points	Standard	Cluster	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								
1	Multiple Choice	B	1	CCSS.Math.Content.7.NS.A.2d	The Number System	0.83		
2	Multiple Choice	C	1	CCSS.Math.Content.7.G.B.4	Geometry	0.43		
3	Multiple Choice	A	1	CCSS.Math.Content.7.EE.B.4a	Expressions and Equations	0.75		
6	Multiple Choice	B	1	CCSS.Math.Content.7.SP.C.7b	Statistics and Probability	0.51		
7	Multiple Choice	B	1	CCSS.Math.Content.7.NS.A.3	The Number System	0.68		
10	Multiple Choice	C	1	CCSS.Math.Content.7.EE.A.1	Expressions and Equations	0.57		
11	Multiple Choice	A	1	CCSS.Math.Content.7.RP.A.2a	Ratios and Proportional Relationships	0.53		
16	Multiple Choice	B	1	CCSS.Math.Content.7.RP.A.3	Ratios and Proportional Relationships	0.54		
17	Multiple Choice	D	1	CCSS.Math.Content.7.NS.A.1a	The Number System	0.71		
22	Multiple Choice	D	1	CCSS.Math.Content.7.NS.A.3	The Number System	0.60		
23	Multiple Choice	D	1	CCSS.Math.Content.7.EE.B.3	Expressions and Equations	0.35		
26	Multiple Choice	D	1	CCSS.Math.Content.7.RP.A.3	Ratios and Proportional Relationships	0.49		
27	Multiple Choice	A	1	CCSS.Math.Content.7.NS.A.1d	The Number System	0.68		
28	Multiple Choice	C	1	CCSS.Math.Content.7.SP.B.3	Statistics and Probability	0.57		
29	Multiple Choice	D	1	CCSS.Math.Content.7.NS.A.1c	The Number System	0.33		
30	Multiple Choice	B	1	CCSS.Math.Content.7.SP.C.6	Statistics and Probability	0.58		

Question	Type	Key	Points	Standard	Cluster	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 continued								
31	Multiple Choice	A	1	CCSS.Math.Content.6.SP.B.4	Statistics and Probability	0.62		
32	Multiple Choice	B	1	CCSS.Math.Content.7.RP.A.2d	Ratios and Proportional Relationships	0.58		
33	Multiple Choice	B	1	CCSS.Math.Content.7.SP.C.7b	Statistics and Probability	0.54		
Session 2								
34	Multiple Choice	C	1	CCSS.Math.Content.7.SP.C.5	Statistics and Probability	0.46		
35	Multiple Choice	B	1	CCSS.Math.Content.7.EE.A.1	Expressions and Equations	0.40		
36	Multiple Choice	C	1	CCSS.Math.Content.7.RP.A.1	Ratios and Proportional Relationships	0.53		
37	Multiple Choice	D	1	CCSS.Math.Content.7.EE.A.1	Expressions and Equations	0.61		
38	Multiple Choice	C	1	CCSS.Math.Content.7.EE.B.4b	Expressions and Equations	0.49		
39	Multiple Choice	D	1	CCSS.Math.Content.7.EE.A.2	Expressions and Equations	0.39		
40	Multiple Choice	D	1	CCSS.Math.Content.7.G.A.1	Geometry	0.51		
41	Constructed Response		2	CCSS.Math.Content.7.G.A.1	Geometry		0.84	0.42
42	Constructed Response		2	CCSS.Math.Content.7.NS.A.3	The Number System		1.44	0.72
43	Constructed Response		2	CCSS.Math.Content.7.EE.B.4b	Expressions and Equations		0.86	0.43
44	Constructed Response		2	CCSS.Math.Content.7.EE.B.3	Expressions and Equations		1.2	0.60
45	Constructed Response		2	CCSS.Math.Content.7.NS.A.3	The Number System		1.32	0.66
46	Constructed Response		2	CCSS.Math.Content.7.EE.B.4a	Expressions and Equations		0.68	0.34
47	Constructed Response		2	CCSS.Math.Content.7.RP.A.3	Ratios and Proportional Relationships		1.1	0.55
48	Constructed Response		3	CCSS.Math.Content.7.RP.A.2b	Ratios and Proportional Relationships		1.38	0.46

*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.

2-Point Holistic Rubric

2 Point	A two-point 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 <ul style="list-style-type: none">• 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 Point	A one-point response demonstrates only a partial understanding of the mathematical concepts and/or procedures in the task. This response <ul style="list-style-type: none">• 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 Point*	A zero-point 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-Point Holistic Rubric

3 Point	<p>A three-point response includes the correct solution(s) to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none"> • 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 Point	<p>A two-point response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none"> • 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 Point	<p>A one-point response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none"> • 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 Point*	<p>A zero-point 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.</p>

* 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).

2018 2- and 3-Point Mathematics Scoring Policies

Below are the policies to be followed while scoring the mathematics tests for all grades:

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, a correct answer with **no** work shown receives **no** credit.
4. If students are **not** directed to show work, any work shown will **not** be scored. This applies to items that do **not** ask for any work and items 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 has been crossed out, the student shall not receive full credit.
8. If the student makes a conceptual error (that is an error in understanding rather than an arithmetic or computational error), that student shall not receive more than 50% credit.
9. Trial-and-error responses are **not** subject to Scoring Policy #6 above, since crossing out is part of the trial-and-error process.
10. 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.
11. In questions requiring number sentences, the number sentences must be written horizontally.
12. When measuring angles with a protractor, there is a +/- 5 degrees deviation allowed of the true measure.
13. 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.

EXEMPLARY RESPONSE

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

$$\frac{36}{9} = \frac{4 \text{ ft}}{\text{scale in.}} = \frac{48 \text{ in.}}{\text{scale in.}}$$

OR

$$\frac{32}{4} = \frac{32 \times 12}{48} = 8$$

$$\frac{9}{36} = \frac{x}{32}$$
$$36x = 288$$
$$x = 8$$

$$9 \times 8 = 72$$

or other valid process

Answer 72 square inches

GUIDE PAPER 1

Additional

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

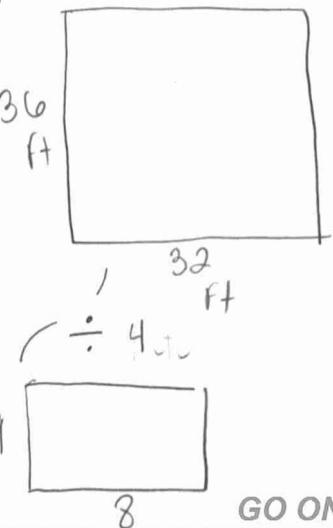
$$\begin{array}{r} 09 \\ 4 \overline{) 36} \\ -32 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 08 \\ 4 \overline{) 32} \\ -32 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 136 \\ \times 32 \\ \hline 172 \\ +1080 \\ \hline 1152 \end{array} \rightarrow \text{actual area of the classroom}$$

- The floor in the scale drawing is $\frac{1}{4}$ smaller than the actual length and width of the rectangular floor.

72 inches
Answer 72 square inches



Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The area of the scale drawing is calculated correctly using sound procedures.

GUIDE PAPER 2

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

Actual:

$$\begin{aligned}A &= l \times w \\A &= 36 \times 32 \\A &= 1,152 \text{ feet}\end{aligned}$$

$$\begin{aligned}36 \div 4 &= 9 \\32 \div 4 &= 8\end{aligned}$$

Scale:

$$\begin{aligned}A &= l \times w \\A &= 9 \times 8 \\A &= 72\end{aligned}$$

Answer

72

square inches

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The area of the scale drawing is calculated correctly using sound procedures.

GUIDE PAPER 3

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

$$36 \times 32 = 432$$

$$32 \times 12 = 384$$

$$\frac{384}{48} = 8 \quad \frac{432}{a} = 46$$

$$A = Bh$$

$$9 \times 8 = 72$$

Answer 72 square inches

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The area of the scale drawing is calculated correctly using sound procedures.

GUIDE PAPER 4

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

$$36 \div 9 = 4 \quad 32 \div 4 = 8 \quad 9 + 8 = 17$$

Answer

17

square inches

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The correct scale factor is determined; however, the scale area is calculated using addition rather than multiplication. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

$$\frac{36}{9} = 4 \quad 4:1$$

$$36 \times 32 = 1152$$

$$\frac{1152}{4} = 288 \text{ sq.in.}$$

Answer 288 square inches

Score Point 1 (out of 2 points)

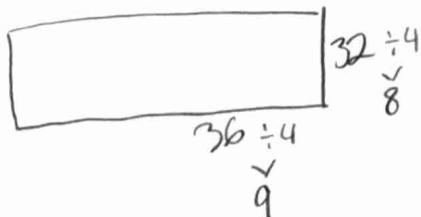
This response demonstrates only a partial understanding of the concepts in the task. The correct scale factor and true area are determined; however, the scale area is calculated incorrectly. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.



Answer 8 square inches

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The correct scale width is determined; however, it is not used to calculate the scale area. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

$$36 \times 32 = 1,152\text{in}$$

Answer

1,152

square inches

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. Although the true area is calculated, there is no evidence of an understanding of scale.

GUIDE PAPER 8

Additional

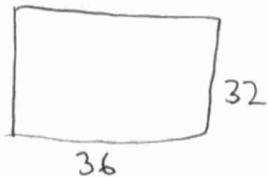
41

The rectangular floor of a classroom is 36 feet in length and 32 feet in width. A scale drawing of the floor has a length of 9 inches. What is the area, in square inches, of the floor in the scale drawing?

Show your work.

$$\begin{array}{r} \times \frac{36}{12} \\ 432 \cdot 21 = 864 = 9 \end{array}$$

$$\begin{array}{r} \times \frac{32}{12} \\ 384 \cdot 21 = 768 = 8 \\ x = 8 \end{array}$$



DO NOT WRITE BEYOND THIS AREA

Answer 8 square inches

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. Although the work contains correct values for the scale length and width, they are obtained through incorrect procedures and no attempt is made to calculate the area.

EXEMPLARY RESPONSE

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$3 \times 7.23 = 21.69$$

$$500 - (273.98 + 21.69 + 42.36)$$

$$500 - 338.03 = 161.97$$

$$\frac{161.97}{78.12} = 2.07\dots \quad OR \quad 161.97 - 78.12 = 83.85$$

$$83.85 - 78.12 = 5.73$$

or other valid process

Answer 2 cycling outfits

GUIDE PAPER 1

Additional

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$\begin{array}{r} 273.98 + 7.23 \cdot 3 + 42.36 \\ \hline 338.03 \end{array}$$

$$500 - 338.03 = 161.97$$

$$\begin{aligned} 161.97 &\geq 78.12x \\ 2.073 &\geq x \\ 2 &\geq x \end{aligned}$$

Answer

2

cycling outfits

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The greatest number of outfits is calculated correctly using an appropriate inequality.

GUIDE PAPER 2

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

500.00 to Spend bicycle
cost

3 bicycle 500.00 - 273.98 ↙
reflector for \$7.23 Now he has 226.02

Buys 3 bicycle reflectors 21.69
cost 7.23 and helmet cost 42.36

226.02
- 64.05
—————
161.97

Now he has 161.97
Cost for cycling outfit ↓

161.97 - 78.12 = 83.85
83.85 - 78.12 = 5.73

He can only buy
2 Cycling Outfits

Answer 2 cycling outfits

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The greatest number of outfits is calculated correctly by repeatedly subtracting the cost of each outfit until there will not be enough money left.

GUIDE PAPER 3

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$\begin{aligned}273.98 + 7.23(3) + 42.36 \\273.98 + 21.69 + 42.36 \\338.03 \\ \\500 - 338.03 \\161.97 \\78.12 \times 2 = 156.24\end{aligned}$$

Answer

2

cycling outfits

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The greatest number of outfits is appropriately determined by comparing the cost of two outfits to the remaining money.

GUIDE PAPER 4

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$7.23 \cdot 3 = 21.69$$

$$\begin{array}{r} 21.69 \\ + 42.36 \\ \hline 64.05 \end{array}$$

$$\begin{array}{r} 64.05 \\ + 273.98 \\ \hline 338.03 \end{array}$$

$$\begin{array}{r} 500.00 \\ - 338.03 \\ \hline 161.97 \end{array}$$



Answer

2

cycling outfits

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The amount of remaining money is correctly calculated; however, it is not clear how the correct solution was obtained from this result. The required work is incomplete.

GUIDE PAPER 5

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$\begin{aligned}273.98 + 42.36 &= 316.34 \\7.23 \times 3 &= 21.69 \\500 - (21.69 + 316.34) &= 338.03 \\338.03 \div 78.12 &= 4\end{aligned}$$

Answer

4

cycling outfits

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The amount of remaining money is miscalculated (in the third line of the work, only the addition was performed, not the subtraction); however, the incorrect amount is correctly divided by the cost per outfit and the result is truncated to a whole number. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

\$500.000	bike reflectors $7.23 \times 3 = \$21.69 + \$273.98 = \$295.67$
new bike = \$273.98	Total remaining \$204.33 $\$295.67 - \$500.00 = \$204.33$
3 bike reflectors = \$7.23 each	New cycling outfit $\$204.33 - \$78.12 = \$126.21$
1 bike helmet = \$42.36	One outfit \$126.33
new cycling outfit = \$78.12 each	Second outfit \$48.09
Only 2 outfits	

Answer

2

cycling outfits

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The greatest number of outfits is appropriately calculated by repeatedly subtracting the cost of each outfit from the remaining money; however, the cost of the helmet is not included in the money already spent. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$\begin{array}{r} >23^3 \\ \text{Total} \\ 500 \\ + 42.36 \\ \hline 694.27 \end{array}$$

1131
273.98
377.93

He can't buy anything
else

Answer

0

cycling outfits

Score Point 0 (out of 2 points)

Holistically, this response is not sufficient to demonstrate even a limited understanding of the task. The cost per reflector is cubed rather than multiplied by three; the resulting total for the money already spent exceeds the \$500 budget, contradicting the prompt.

GUIDE PAPER 8

Additional

42

Mr. Trager has \$500.00 to spend at a bicycle store. All prices listed below include tax.

- He buys a new bicycle for \$273.98.
- He buys 3 bicycle reflectors for \$7.23 each and 1 bicycle helmet for \$42.36.
- He plans to use the remaining money to buy new cycling outfits for \$78.12 each.

What is the greatest number of cycling outfits that Mr. Trager can buy with the remaining money?

Show your work.

$$273.98 + 7.23(\times 3) + 42.36 = 78.12$$

Answer

146.27

cycling outfits

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The work and solution are incorrect.

EXEMPLARY RESPONSE

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality $(250 \times 0.10) + 21d \leq 115$ or equivalent

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

Jim is wrong because the solution to the inequality is $d \leq 4.29$, and 5 is not less than 4.29.

OR

5 days would cost Jim \$130, which is \$15 over budget.
He can only afford the car for 4 days.

or other valid explanation

GUIDE PAPER 1

Additional

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality $115 \geq (21d + (250 \times .1))$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

He is incorrect as the equation below shows that he only has enough for 4.2 days, or 4 days.

$$115 \geq 21d + (250 \times .1)$$

$$\begin{array}{r} 115 \geq 21d + 25 \\ -25 \\ \hline 90 \geq 21d \\ \hline 21 \end{array}$$

$$4.2 \geq d$$

$$4 = d$$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The inequality and explanation are correct.

GUIDE PAPER 2

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality

$$21x + 0.10(250) \leq 115.00$$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

$$\begin{aligned}21(5) + .10(250) &\leq 115.00 \\250 \times .10 &= 25 \\21 \times 5 &= 105 \\105+25 &= 130 \\ \text{He doesn't have enough money to travel 250 miles in 5 days}\end{aligned}$$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The inequality and explanation are correct. Using x as a variable instead of d is inconsequential and does not detract from the response.

GUIDE PAPER 3

43

multiplier
unit rate

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality $21.00d + 0.10 \cdot 250 \leq 115.00$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

$$21d + 25 \leq 115$$

Explain your answer.

Jim is not correct because I replaced d with 5, then I multiplied 21 and 5 to get 105. Next I added 105 and 25 to get 130. Lastly I found out that 130 is bigger than 115 so he is wrong.

$$\begin{array}{r} 21 \\ \times 5 \\ \hline 105 \end{array}$$
$$\begin{array}{r} 105 \\ + 25 \\ \hline 130 \end{array}$$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The inequality and explanation are correct.

GUIDE PAPER 4

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality $D \cdot P + M = T$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

$$21 \cdot 5 = 105 \quad 0.10 \cdot 250 = 25 \quad 105 + 25 = \$130$$

Explain your answer.

Jim is not correct because, when you multiply $21 \cdot 5 = 105$ and then, $0.10 \cdot 250$ it equals 25 and $105 + 25 = \$130$. So, if he rents the car for 5 days it would be a total of \$130 and not \$115.00.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The explanation is correct; however, the response does not include a correct inequality. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality

$$21d + 25 = 115$$
$$21(4) + 25 = 109$$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

Jim is wrong because if he rents the car for 5 days it will be more than 115. But if he only goes for 4 days he will only spend 109\$ instead of 115. That is why Jim is wrong.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The explanation is correct; however, an equation is written rather than an inequality. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality $115 - (250 \times 0.10) > d \times 21.00$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

The maximum whole number of days he can rent the car is 4. I say 4 because If you multiply 250×10 you get 25. Then you subtract 25 from 115.00 and you get 90. When you divide 90 by 21 you get 4.2857142857142857 . The maximum whole number is 4.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The explanation is correct; however, although the inequality is otherwise correct, it uses a greater than symbol instead of a greater than or equal to symbol. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality

$$250 + 115.00$$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

Jim is correct because if he rents the car for 5 days, the cost would be \$105 whereas if he rented the car for 6 days, he would go over his budget and spend \$126

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. An incorrect expression is provided rather than an inequality, and the explanation is incorrect.

GUIDE PAPER 8

Additional

43

Jim needs to rent a car. A rental company charges \$21.00 per day to rent a car and \$0.10 for every mile driven.

- He will travel 250 miles.
- He has \$115.00 to spend.

Write an inequality that can be used to determine d , the maximum number of days that Jim can rent a car.

Inequality $21.00 \div d + 21.00 \times 250$

Jim believes the maximum whole number of days he can rent the car is 5. Is he correct? Why or why not?

Explain your answer.

Jim is correct because $21 \times 5 = \$105.00$, meaning 5 days is his limit because he wouldn't be able to pay one extra day

$$21 \times 5 = 105$$

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. An incorrect expression is provided rather than an inequality, and the explanation is incorrect.

EXEMPLARY RESPONSE

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$84.5 - 19.7 = 64.8$$

$$\frac{64.8}{6} = 10.8$$

or other valid process

Answer 10.8 yards of fabric per curtain

GUIDE PAPER 1

Additional

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$6x + \cancel{19.7} = 84.5 \text{ yards}$$
$$\underline{-19.7} \quad \underline{-19.7}$$

$$\frac{6x}{6} = \frac{64.8}{6}$$

$$\boxed{x = 10.8}$$

Answer 10.8 yards of fabric per curtain

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The yards of fabric used per curtain is correctly determined using sound procedures.

GUIDE PAPER 2

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$84.5 - 19.7 = 64.8$$

She used 64.8 yards of fabric (in total)

$$64.8 \div 6 = 10.8$$

She used 10.8 yards of fabric for each.

Answer 10.8 yards of fabric per curtain

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The yards of fabric used per curtain is correctly determined using sound procedures.

GUIDE PAPER 3

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$\begin{array}{r} 6x + 19.7 = 84.5 \\ -19.7 \quad -19.7 \\ \hline 6x = 64.8 \end{array}$$

$$\begin{array}{r} 6x = 64.8 \\ \hline 6 \end{array}$$

$$x = 10.8$$

\$ 10.8
Answer _____ yards of fabric per curtain

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The yards of fabric used per curtain is correctly determined using sound procedures. The dollar sign included in the answer is considered an inconsequential error that does not detract from the response.

GUIDE PAPER 4

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$\begin{array}{r} 84.5 \\ - 19.7 \\ \hline 65 \end{array}$$
$$6 \overline{)65} \quad \begin{array}{l} 10.8 = 11 \\ \hline 6 \end{array}$$

- ⑪ She uses 11 yds of fabric
for one curtain.

Answer 11 yards of fabric per curtain

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The yards of fabric used per curtain is correctly determined; however, the answer is rounded. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 5

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$\frac{19.7}{6} = 3.28\overline{3}$$

$$\frac{84.5}{6} = 14.08\overline{3}$$

$$14 - 3 = 11$$

Answer 11 yards of fabric per curtain

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The yards of fabric per curtain, both total and unused, are correctly determined; however, they are inappropriately rounded before taking their difference to determine the solution. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$84.5 - 19.7 \div 6 = 81.22$$

Answer 81.22 yards of fabric per curtain

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The equation written shows some understanding of the correct process; however, it is missing parentheses around the subtraction and the student followed through on this error by following the order of operations. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$\begin{array}{r} 14.08 \\ \hline 6 \overline{) 84.5 } \\ 5.61 \end{array}$$
$$\begin{array}{r} 19.70 \\ -14.08 \\ \hline 5.61 \end{array}$$

Answer 5.61 yards of fabric per curtain

Score Point 0 (out of 2 points)

Holistically, this response is not sufficient to demonstrate even a limited understanding of the task. Although the total amount of fabric is divided by the number of curtains, the result is incorrectly subtracted from the total fabric remaining, showing confusion between totals and quantities per curtain.

GUIDE PAPER 8

Additional

44

Jennifer has 84.5 yards of fabric to make curtains. She makes 6 identical curtains and has 19.7 yards of fabric remaining. How many yards of fabric does Jennifer use per curtain?

Show your work or explain your answer.

$$\begin{array}{r} 3.28333333 \\ 6 \overline{)19.7} \end{array}$$

Answer 3.3 yards of fabric per curtain

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The work and solution are incorrect.

EXEMPLARY RESPONSE

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$\begin{aligned} 22 - \left(4\frac{3}{4} + 5\frac{1}{8} + 0 + 6\frac{1}{4}\right) &= 22 - \left(\frac{19}{4} + \frac{41}{8} + \frac{25}{4}\right) \\ 22 - \left(4\frac{3}{4} + 5\frac{1}{8} + 0 + 6\frac{1}{4}\right) &= 22 - \left(\frac{38}{8} + \frac{41}{8} + \frac{50}{8}\right) \\ = 22 - \left(11 + 5\frac{1}{8}\right) &= 22 - \frac{129}{8} \\ = 22 - 16\frac{1}{8} &= \frac{176}{8} - \frac{129}{8} = \frac{47}{8} \\ = 5\frac{7}{8} &= 5\frac{7}{8} \end{aligned}$$

or other valid process

Answer 5 $\frac{7}{8}$ miles

GUIDE PAPER 1

Additional

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$4\frac{3}{4} + 5\frac{1}{8} + 0 + 6\frac{1}{4} = 16\frac{1}{8}$$

$$22 - 16\frac{1}{8} = 5\frac{7}{8}$$

Answer

Jen ran $5\frac{7}{8}$ miles on Friday

miles

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The distance Jen must run on Friday is determined correctly using sound procedures.

GUIDE PAPER 2

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$\begin{array}{r} 4 \frac{3}{4} \\ + 6 \frac{1}{4} \\ \hline 11 \end{array} \quad \begin{array}{r} 22 \\ - 16 \frac{1}{8} \\ \hline 5 \frac{7}{8} \end{array}$$

Answer $5\frac{7}{8}$ miles

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The distance Jen must run on Friday is determined correctly using sound procedures. The addition of $11 + 5\frac{1}{8} = 16\frac{1}{8}$ is performed mentally; its omission from the written work does not detract from the response.

GUIDE PAPER 3

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$\begin{aligned}4 \frac{6}{8} + 5 \frac{1}{8} + 0 + 6 \frac{2}{8} &= 16 \frac{1}{8} \\22 - 16 \frac{1}{8} &= 5 \frac{7}{8} \\3/4 = 6/8 \\1/4 = 2/8 \\ \text{answer: } &5 \frac{7}{8} \text{ miles}\end{aligned}$$

Answer

5 7/8

miles

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The distance Jen must run on Friday is determined correctly using sound procedures.

GUIDE PAPER 4

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$4\frac{3}{4} + 5\frac{1}{8} + 0 + 6\frac{1}{4} = 16\frac{1}{8}$$

Jen must run on Friday to reach her goal
are $6\frac{1}{2}$ miles

Answer 6 $\frac{1}{2}$ miles

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The total distance Jen already ran is calculated correctly; however, the distance she must run on Friday is incorrect. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$4\frac{6}{8} + 5\frac{1}{8} + 0 + 6\frac{2}{8} = 16\frac{1}{8}$$

$$22 - 16\frac{1}{8} = 5\frac{9}{18} \div \frac{9}{9} = 5\frac{1}{2}$$

Answer

5.5

miles

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The total distance Jen already ran is calculated correctly; however, the distance she must run on Friday is incorrect due to a calculation error. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work. $4\frac{3}{4} + 5\frac{2}{8} = 10\frac{1}{4}$

$$5\frac{1}{8} = 5\frac{2}{4}$$

$$10\frac{1}{4} + 6\frac{1}{4} = 16\frac{2}{4}$$

$$16\frac{2}{4} + \cancel{(5\frac{2}{4})} = 22 \quad \textcircled{5\frac{2}{4}}$$

Answer 5 $\frac{2}{4}$ miles

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The total distance Jen already ran is calculated incorrectly ($5\frac{1}{8}$ is converted to $5\frac{2}{4}$); however, the error is followed through and the difference between the calculated value and the goal of 22 is provided as the solution. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 7

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

$$\begin{array}{r} + \frac{6\frac{1}{4}}{\frac{3}{4}} \\ \hline 7 \frac{1}{4} \end{array}$$

Answer

7 and 1 forth
miles

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The work and solution are irrelevant to the task.

GUIDE PAPER 8

Additional

45

Jen's goal is to run a total of 22 miles in five days. The table below shows her log for the number of miles she ran on Monday, Tuesday, Wednesday, and Thursday.

JEN'S RUNNING LOG

Day	Distance (miles)
Monday	$4\frac{3}{4}$
Tuesday	$5\frac{1}{8}$
Wednesday	0
Thursday	$6\frac{1}{4}$
Friday	?

How many miles must Jen run on Friday to reach her goal?

Show your work.

Answer 5.875 miles

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. Per Scoring Policy #3, a correct answer with no work shown receives no credit.

EXEMPLARY RESPONSE

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$8.25x = (7 \times 12) - 34.5 \text{ or equivalent}$$

$$8.25x = 84 - 34.5$$

$$8.25x = 49.5$$

$$x = 6$$

or other valid process

Answer 6 sections of rope

GUIDE PAPER 1

Additional

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$\begin{array}{r} \cancel{34.5} + 8.25x = 84 \\ - \cancel{34.5} \qquad \qquad \qquad - 34.5 \\ \hline 8.25x = 49.5 \\ \hline 8.25 \qquad 8.25 \\ x = 6 \end{array}$$

Answer 6 sections

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The equation is correct and is solved correctly using sound procedures.

GUIDE PAPER 2

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

84 inches total

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$
$$8\frac{1}{4}n + 34.5 = 84.0$$
$$\begin{array}{r} 7.13 \\ - 34.5 \\ \hline 50.5 \end{array}$$
$$\begin{array}{r} 8\frac{1}{4}n \\ - 34.5 \\ \hline 49.5 \end{array}$$
$$\begin{array}{r} 49.5 \\ \div 8\frac{1}{4} \\ \downarrow \\ 33 \end{array} = \frac{49.5 \times 4}{33} = \frac{198}{33}$$
$$\frac{198}{33} = \boxed{6}$$

Answer 6 $8\frac{1}{4}$ inch ropes

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The equation is correct and is solved correctly using sound procedures. A transcription error from $\frac{198}{33}$ to $\frac{198}{3}$ is considered inconsequential and does not detract from the response.

GUIDE PAPER 3

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$\begin{aligned} S &= (84 - 34.5) \div 8\frac{1}{4} \\ S &= 49.5 \div 8.25 \\ S &= 6 \end{aligned}$$

Answer 6 sections of rope
 $S = (84 - 34.5) \div 8.25$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The equation is correct and is solved correctly using sound procedures.

GUIDE PAPER 4

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$\begin{array}{r} 7 \\ \times 12 \\ \hline 84 \end{array}$$

$$84 - 34.5 = 49.5$$

$$49.5 \div 8.25 = 6$$

Answer 6 Sections

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of rope sections is calculated correctly; however, the equations in the work do not contain a variable to be solved for. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

7 feet = 84 in. Equation: $(84 - 34.5) \div 8.25$

① $(84 - 34.5) \div 8.25$

② $84 - 34.5 = 49.5$

③ $49.5 \div 8.25 = 6$

$(84 - 34.5) \div 8.25 = 6$

Answer 6 sections

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of rope sections is calculated correctly; however, the equation does not include a variable to be solved for and is only an expression being evaluated. The response correctly addresses only some elements of the task.

GUIDE PAPER 6

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$\begin{array}{r} 84 \text{ in} \\ - 34.5 \\ \hline 49.5 \end{array} \div 8.25$$

Answer

6

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of rope sections is calculated correctly; however, no equation is provided. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use $\underline{34.5}$ inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $\underline{8\frac{1}{4}}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $\underline{8\frac{1}{4}}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$\begin{array}{r} 34 \frac{1}{2} \\ \div 8 \frac{1}{4} \\ \hline 4 \frac{2}{11} \end{array}$$

9 pieces of rope

Answer

4

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The work is incorrect and does not contain an equation. The solution is incorrect.

GUIDE PAPER 8

Additional

46

Mario is setting up a new tent during a camping trip. The tent came with 7 feet of rope. The instructions are to use 34.5 inches of the rope to tie a tarp on top of the tent. Then, the remaining rope should be cut into $8\frac{1}{4}$ -inch sections to tie the tent to stakes in the ground. Mario will use all of the rope as instructed. Write and solve an equation to determine the number of $8\frac{1}{4}$ -inch sections of rope Mario can cut from the rope.

Show your work.

$$\begin{array}{r} 7 \times 10 = 70 \text{ inch} \\ \cancel{70.0} \\ - 34.5 \\ \hline \cancel{35.5} \end{array}$$
$$8.25 \cancel{|} 35.5 = 4\frac{10}{33}$$

$$Y = 8\frac{1}{4}x - 34.5$$

Answer 4 Sections

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The equation and the solution are incorrect. Per Scoring Policy #6, only the work that has not been crossed out is scored.

EXEMPLARY RESPONSE

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$725 + 579 + 696 = 2000 \\ 2000 \times 1.12 = 2240$$

OR

$$\frac{112}{100} = \frac{x}{2000} \quad x = \frac{224000}{100} \\ 224000 = 100x \quad x = 2240$$

or other valid process

Answer 2240 scooters

GUIDE PAPER 1

Additional

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

$725 + 579 + 696$

Show your work.

$$725 + 579 + 696 = 2000$$

$$0.12 \times 2000 = 240 \leftarrow 12\%$$

$$\begin{array}{r} 100\% \quad 12\% \quad 112\% \\ 2000 + 240 = 2240 \end{array}$$

Answer 2240 scooters

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of scooters sold in Year 4 is calculated correctly using sound procedures.

GUIDE PAPER 2

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$725 + 579 + 696 = 2000$$

$$\frac{x}{2000} = \frac{112}{100}$$

$$2000 \times 112 = 224000$$

$$224000/100=2240$$

Answer

2240

scooters

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of scooters sold in Year 4 is calculated correctly using sound procedures.

GUIDE PAPER 3

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$725 + 579 + 696 = 2000$$
$$112\% \div 100 = 1.12$$
$$2000(1.12) = 2240$$

Answer

2240

scooters

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The number of scooters sold in Year 4 is calculated correctly using sound procedures.

GUIDE PAPER 4

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$\begin{array}{r} 112 \\ \hline 1000 \\ 725 + 579 + 696 = 2000 \\ 112 = x \\ \hline 1000 = 2000 \\ 1000 \times 2 = 2000 \\ 112 \times 2 = 224 \\ x = 224 \end{array}$$

Answer

224

scooters

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. A proportion is used to solve the problem; however, the percentage is incorrectly given a denominator of 1000 rather than 100 on the left-hand side of the equation. The response correctly addresses only some elements of the task.

GUIDE PAPER 5

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$\text{Year 1 } 725 \times 112\% = 812\%$$

$$\text{Year 2 } 579 \times 112\% = 648.48\%$$

$$\text{Year 3 } 696 \times 112\% = 779.02\%$$

2239.89

During the previous three years combined
the determination of these three years is
that they made 2239.89 sales.

Answer 2239.89 scooters

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The calculations to determine 112% of each individual year are correct; however, they are written with percent signs and a calculation error occurs when adding them to find the combined total. The response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

47

The table below shows the number of scooters sold at a store during a three-year period.

$$\begin{array}{r} 1304 \\ \times 112 \\ \hline 2608 \\ 13040 \\ + 130400 \\ \hline 146,048 \end{array}$$

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$\begin{array}{r} 146,048 \approx 1460 \\ + 725 \\ \hline 1532 \end{array}$$

$$\frac{112}{100} = \frac{x}{1532} = \frac{100x}{100} = \frac{146,048}{100}$$

Answer 1460 scooters

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. Year 3 is not included in the calculations, although the process is otherwise correct. The response correctly addresses only some elements of the task.

GUIDE PAPER 7

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

2000
2000

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

1785

$$\frac{112}{100} = \frac{2000}{x}$$

2000.00

$$\begin{array}{r} 2000 \\ - 1785 \\ \hline 215 \end{array}$$

$$\begin{array}{r} 696 \\ + 215 \\ \hline 911 \end{array}$$

Answer 911 scooters

Score Point 0 (out of 2 points)

Although some elements may contain correct procedures, holistically this response is not sufficient to demonstrate even a limited understanding of the task. The proportion written is incorrect, and the subsequent subtraction and addition show no understanding of what the solution, x , represents.

GUIDE PAPER 8

Additional

47

The table below shows the number of scooters sold at a store during a three-year period.

SCOOTER SALES

Year	Number Sold
Year 1	725
Year 2	579
Year 3	696

In Year 4, the store sold 112% of the total number of scooters sold during the previous three years combined. Determine the number of scooters sold in Year 4.

Show your work.

$$696 \times .112 = 77.952 + 696 = 54254$$

Answer

54254

scooters

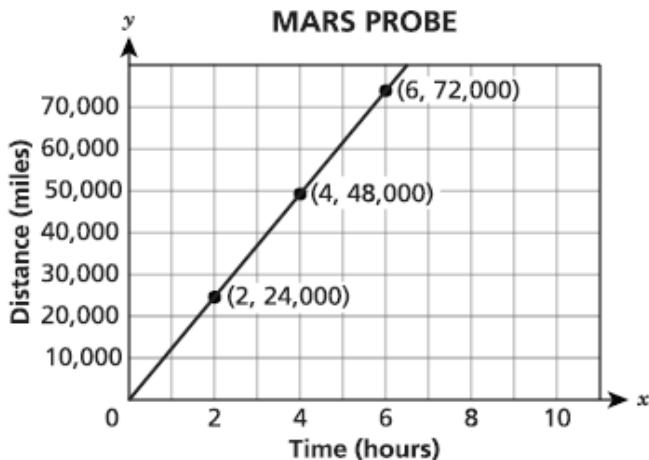
Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The work is incoherent and the solution is incorrect.

EXEMPLARY RESPONSE

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes, the graph is proportional because it is a straight line that goes through the origin.

OR

Yes, the graph is proportional because for any point on the line, the y -coordinate divided by the x -coordinate always gives you the same number.

or other valid explanation

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$\frac{24,000}{2} = 12,000$$

or other valid process

$$12,000 \times 5.5 = 66,000$$

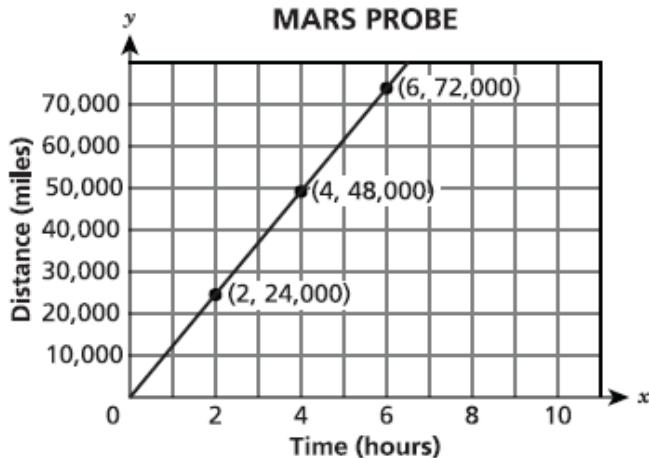
Answer 66,000 miles

GUIDE PAPER 1

Additional

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes, because it is a straight line and it goes through the origin.

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$\begin{aligned}72000 \div 6 &= 12000 \\48000 \div 4 &= 12000 \\24000 \div 2 &= 12000\end{aligned}$$

$$5.5 \times 12000 = 66000$$

Answer

66000

miles

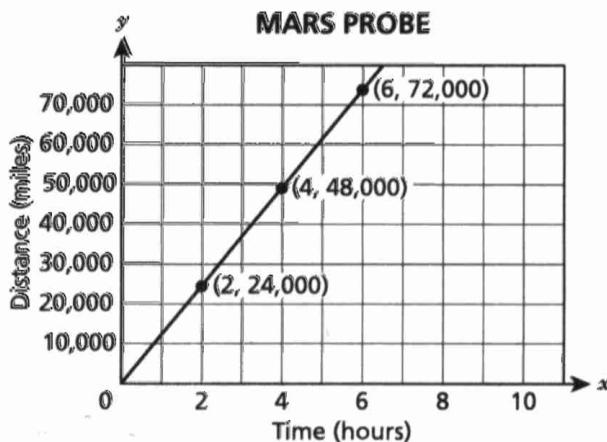
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. The explanation is correct and the number of miles the probe travels is calculated correctly using sound procedures.

GUIDE PAPER 2

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



$x = \text{hours}$

$y = \text{miles}$

$$24,000 \div 2 =$$

$$12,000$$

$$\underline{48,000 \div 4 =}$$

$$\underline{12,000}$$

$$\underline{72,000 \div 6 =}$$

$$12,000$$

Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes, because if divided the time and miles that is shown on the graph.

You will get 12,000

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$12,000 \times 5.5 = 66,000$$

Answer 66,000 miles

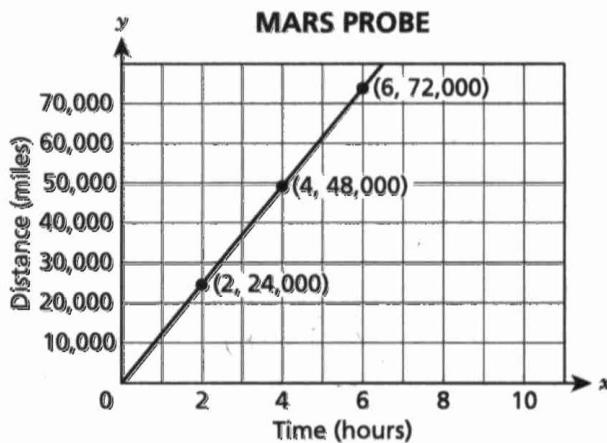
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. The explanation is correct and the number of miles the probe travels is calculated correctly using sound procedures.

GUIDE PAPER 3

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes the graph represents a proportional relationship. The line is straight and it goes to the origin.

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

Answer 66000 miles

$$k = \frac{24,000}{2} = 12,000$$

$$12000 \times 5.5 = 66000$$

$$k = 66000$$

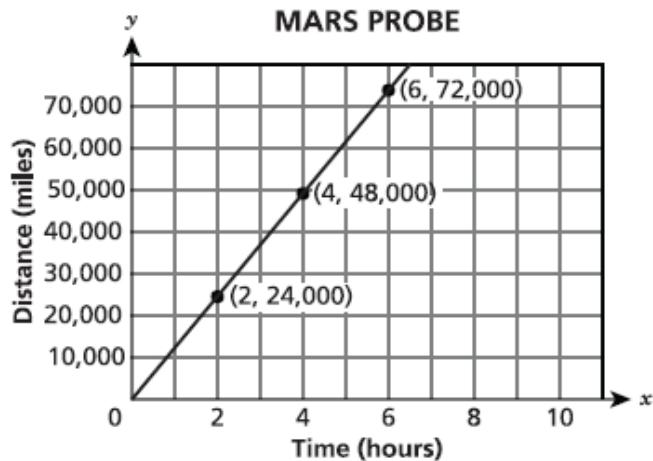
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. The explanation is correct and the number of miles the probe travels is calculated correctly using sound procedures. Although the incorrect statement “ $k = 66000$ ” appears in the work, the value of k is also stated correctly twice and the mathematical operations are correct: the error is considered inconsequential and does not detract from the response.

GUIDE PAPER 4

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes, because the Mars probe starts at (0,0)

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$48,000 \div 4 = 12,000 \text{ mph}$$
$$12000 \times 5.5 = 66,000$$

Answer

66,000

miles

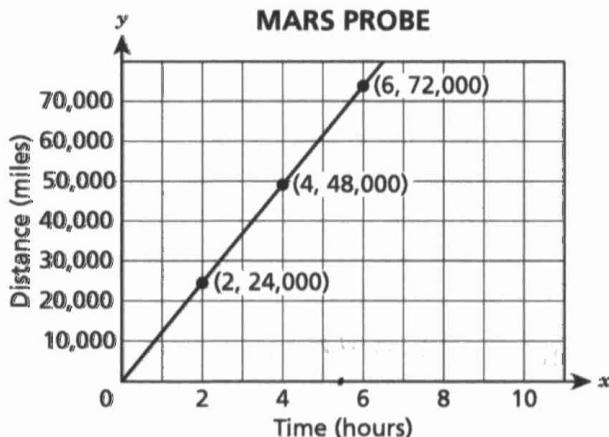
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the concepts in the task. The number of miles the probe travels is calculated correctly; however, the explanation is incomplete. It does not mention the necessary criterion of having a constant rate. The response appropriately addresses most, but not all aspects of the task.

GUIDE PAPER 5

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes because the line showing the data is straight.

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$\begin{array}{r} 12000 \\ \times 5.5 \\ \hline 60000 \\ +60000 \\ \hline 66000.0 \end{array}$$

Answer 66,000 miles

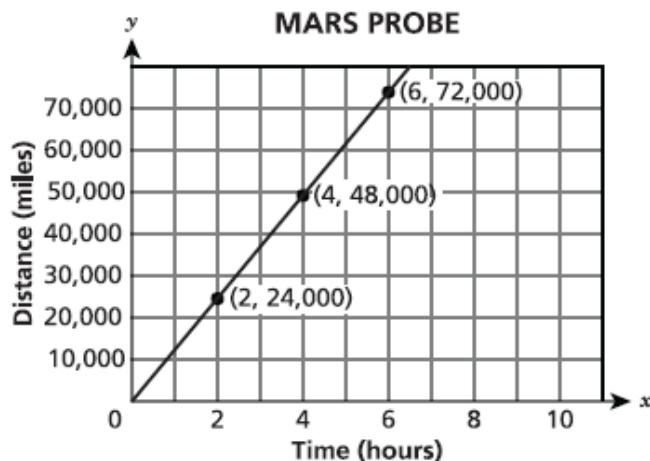
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the concepts in the task. The number of miles the probe travels is calculated correctly; however, the explanation is incomplete. It does not mention the necessary criterion of passing through the origin. The response appropriately addresses most, but not all aspects of the task.

GUIDE PAPER 6

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes the line starts at the origin and stays straight.

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$25000 \div 2 = 12500 \times 5.5 = 68750$$

Answer

68750

miles

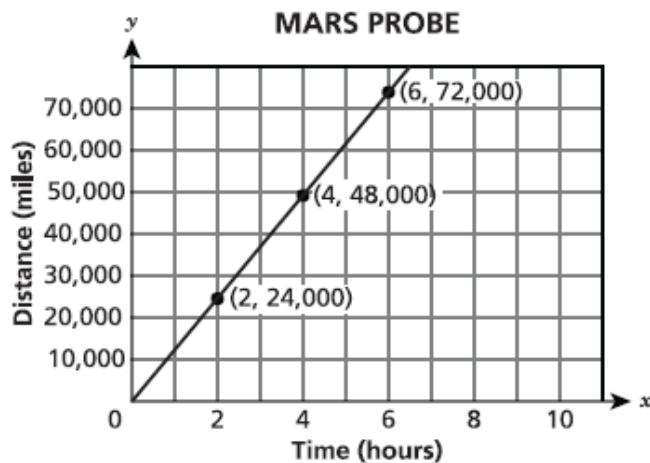
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the concepts in the task. The explanation is correct; however, the solution for the number of miles the probe travels is incorrect due to a transcription error using the value 25000 instead of 24000. The response contains an incorrect solution but provides sound procedures and explanations.

GUIDE PAPER 7

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

yes because the proportion goes up by 24,000 every time

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$48000 + 18000 = 66000$$

Answer

66,000

miles

Score Point 1 (out of 3 points)

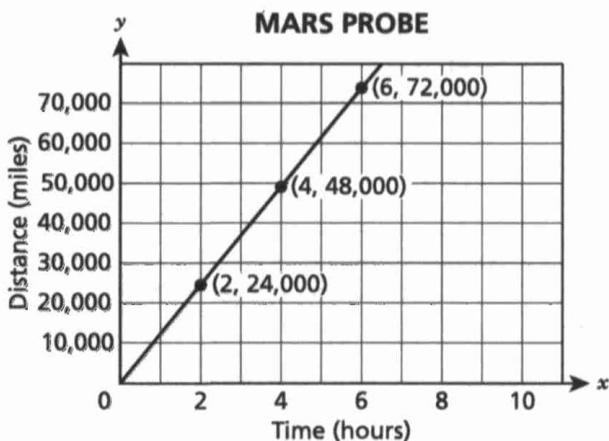
This response demonstrates only a limited understanding of the concepts in the task. The number of miles the probe travels is calculated correctly; however, the required work is limited and the explanation is vague. It is not clear how the value 18000 is obtained and while the phrase “24,000 every time” may indicate a constant rate, the wording is imprecise and it is not the correct value of the unit rate.

GUIDE PAPER 8

Additional

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

yes because the line goes through the origin.

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

Answer 55,000 miles

$$\begin{array}{r} 5.5 \\ \times 10000 \\ \hline 55000 \end{array}$$

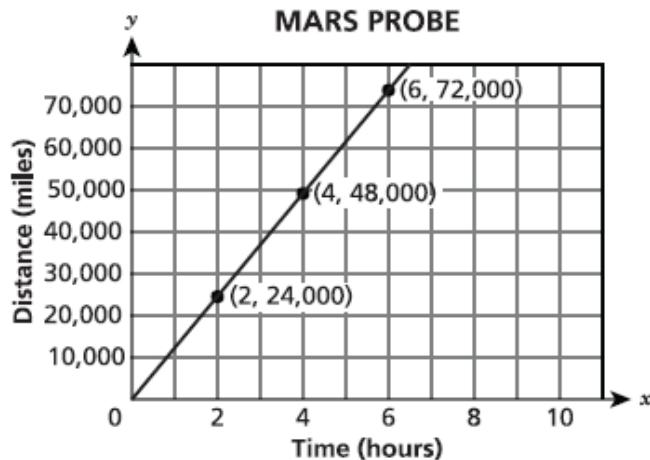
Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the concepts in the task. The explanation correctly identifies passing through the origin as a criterion for proportionality; however, a constant rate is not mentioned and the solution for the number of miles the probe travels is incorrect. The unit rate used is incorrect and the work does not show how the value 10000 was obtained. The response addresses some elements of the task correctly but reaches an inadequate solution.

GUIDE PAPER 9

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

$$1 = 12,000 \times 2 = 24,000$$

$$4 = 48,000$$

$$6 = 72,000$$

Each set of numbers are equal to each other

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

For every even number the miles are increased by 24,000 so half of that is 12,000

Answer

60,000

miles

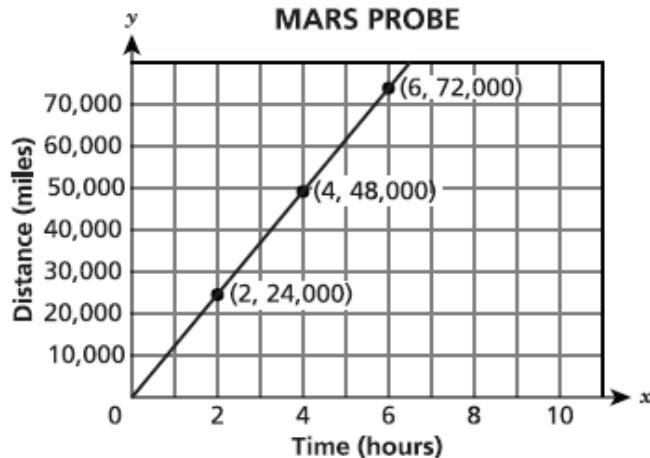
Score Point 1 (out of 3 points)

This response demonstrates only a limited understanding of the concepts in the task. Although the explanation is insufficient and the solution for the miles the probe travels is incorrect, holistically the work shows some understanding of the unit rate and correctly calculates its value. The response addresses some elements of the task correctly, but reaches an inadequate solution.

GUIDE PAPER 10

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

$$48,000 \div 24,000 = 2$$
$$72,000 \div 48,000 = 1.5$$

i dont think this will be a proportional relationship because one answer equals 2 and the other equals 1.5

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

$$2 + 1.5 = 3.5$$
$$5.5 \times 3.5 = 19.25$$

Answer

19.25

miles

Score Point 0 (out of 3 points)

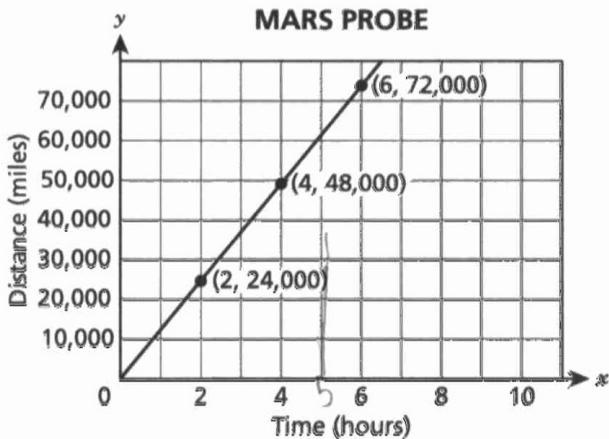
Holistically, this response is not sufficient to demonstrate even a limited understanding of the task. Although there is some indication that proportionality requires equal ratios, the comparison is made on incorrect ratios. The work and solution for the distance the probe travels are incorrect.

GUIDE PAPER 11

Additional

48

The graph shows the relationship between x , the amount of time in hours, and y , the distance traveled in miles, by a probe before it reaches Mars.



Does the graph represent a proportional relationship? Why or why not?

Justify your answer.

Yes because the numbers keep rising
and improving

Determine the number of miles the probe travels in 5.5 hours.

Show your work.

Answer 3, 54,006 miles

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the task. The explanation and the answer are incorrect, with no work shown.