

New York NYSTP 2019 Grade 4 Math

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Name: _____



New York State *Testing Program*

2019 Mathematics Test Session 1

Grade **4**

May 1–3, 2019

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 and a protractor) to use during the test. It is up to you to decide when each tool will be helpful. You should use mathematics tools whenever you think they will help you to answer the question.

- 1** Tatum walks her dog $\frac{2}{3}$ mile every day after school. How many miles does she walk her dog in 5 days?

- A $\frac{7}{3}$
- B $\frac{10}{3}$
- C $\frac{2}{15}$
- D $\frac{10}{15}$

- 2** The number of points Jaden scored in a game is less than 45, and is also a multiple of 7. How many points could Jaden have scored?

- A 17
- B 35
- C 52
- D 70

- 3** Which comparison is true?

- A $\frac{2}{3} = \frac{8}{12}$
- B $\frac{4}{9} = \frac{8}{9}$
- C $\frac{3}{4} > \frac{9}{10}$
- D $\frac{2}{4} > \frac{2}{3}$

GO ON

4

There are three different sections to sit in at a baseball park. The number of people who can sit in each section is described below.

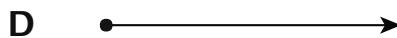
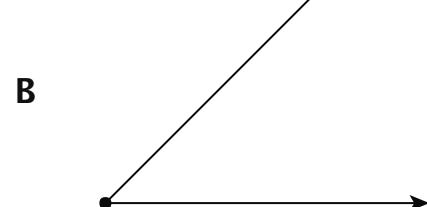
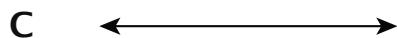
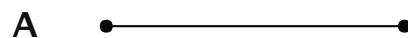
- red section seats 200 people
- blue section seats 20 fewer people than the red section
- green section seats 2 times as many people as the blue section

What is the total number of people who can sit in the baseball park?

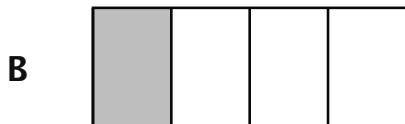
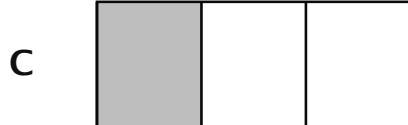
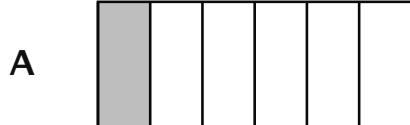
- A 260
B 380
C 640
D 740

5

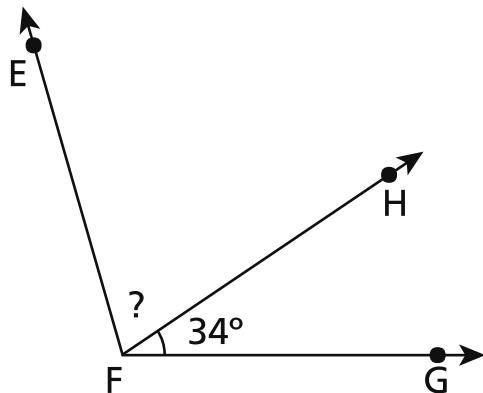
Which figure is an example of a line segment?

**GO ON**

- 8** Which fraction model has a shaded area equivalent to $\frac{3}{12}$?



- 9** The measure of angle EFG shown below is 106 degrees.



What is the measure, in degrees, of angle EFH?

- A 34
- B 56
- C 72
- D 140

15

What is the value of the expression below?

$$2,816 \times 7$$

- A 14,572
- B 14,672
- C 19,612
- D 19,712

16

What is the quotient for the expression $2,314 \div 4$?

- A 508
- B 508 r2
- C 578
- D 578 r2

17

A teacher buys the folders listed below.

- 5 boxes of red folders with 36 folders in each box
- 6 boxes of blue folders with 32 folders in each box

Which number is **closest** to the total number of red and blue folders that the teacher buys?

- A 275
- B 380
- C 440
- D 550

GO ON

20 Which two numbers both round to 1,500 when rounded to the nearest hundred?

- A 1,399 and 1,599
- B 1,449 and 1,549
- C 1,457 and 1,547
- D 1,489 and 1,589

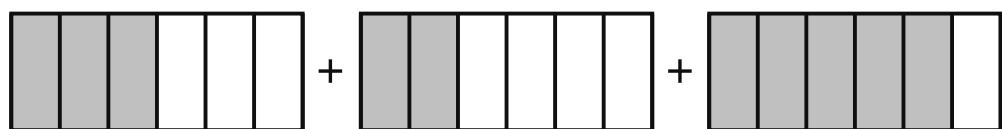
21 Mr. Fuller wants to put fencing around his rectangular-shaped yard. The width of the yard is 55 feet and the length is 75 feet. How many feet of fencing does Mr. Fuller need?

- A 130
- B 260
- C 3,905
- D 4,125

GO ON

27

The three models below are each shaded to represent a different fraction.

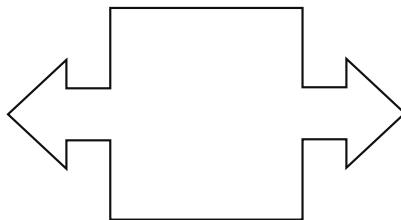


What is the sum of the fractions represented by the shaded parts of the models?

- A $\frac{10}{18}$
- B $\frac{8}{10}$
- C $\frac{10}{8}$
- D $\frac{10}{6}$

28

What is the greatest number of lines of symmetry that can be drawn on the figure shown below?



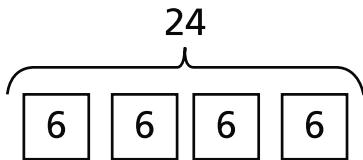
- A 0
- B 1
- C 2
- D 4

GO ON

29 What is the measure, in degrees, of an angle that is equivalent to $\frac{1}{360}$ of a circle?

- A 1
- B 90
- C 180
- D 360

30 Which comparison statement describes the model below?



- A 6 is 24 times as many as 4
- B 24 is 4 times as many as 6
- C 4 times as many as 24 is 6
- D 6 times as many as 6 is 24

STOP

Session 2

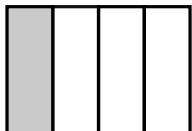


TIPS FOR TAKING THE TEST

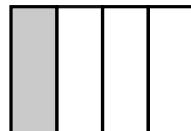
Here are some suggestions to help you do your best:

- 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 and a protractor) to use during the test. It is up to you to decide when each tool will be helpful. You should use mathematics tools whenever you think they will help you to answer the question.
- Be sure to show your work when asked.

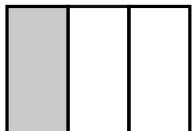
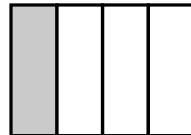
- 31** In which model could the shaded parts represent $4 \times \frac{1}{3}$?



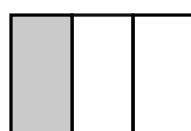
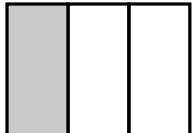
A



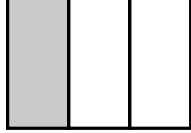
C



B



D



- 32** A truck is parked next to a tree. The height of the truck is 6 feet. The height of the tree is 3 times the height of the truck. Which equation can be used to find the height of the tree?

A $6 + 3 = \underline{\hspace{1cm}}$

B $6 \times 3 = \underline{\hspace{1cm}}$

C $(6 \times 3) + 3 = \underline{\hspace{1cm}}$

D $(6 \times 3) + 6 = \underline{\hspace{1cm}}$

GO ON

33

Which expression can be used to solve the equation below?

$$4,600 \div 5 = \underline{?}$$

- A $(46 \div 5) + (100 \div 5)$
- B $(400 \div 5) - (600 \div 5)$
- C $(4,000 \div 5) - (60 \div 5)$
- D $(4,000 \div 5) + (600 \div 5)$

34

Which statement about an object turning 90 degrees around in a circle is true?

- A It turns $\frac{1}{4}$ of the way around in a circle.
- B It turns $\frac{2}{4}$ of the way around in a circle.
- C It turns $\frac{3}{4}$ of the way around in a circle.
- D It turns $\frac{4}{4}$ of the way around in a circle.

35

Which statement represents the number sentence below?

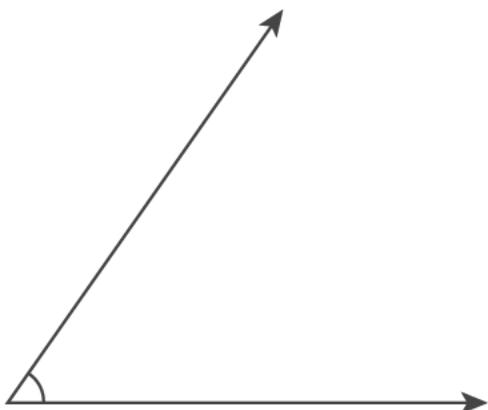
$$8 = 4 \times 2$$

- A 4 is 8 times as many as 2
- B 4 is 2 times as many as 8
- C 8 is 2 times as many as 2
- D 8 is 4 times as many as 2

GO ON

36

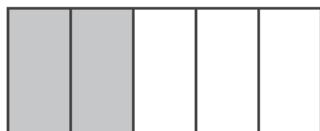
What is the measure, in degrees, of the angle shown below?



- A 55
- B 65
- C 125
- D 135

37

The model below is shaded to represent a fraction.



Which fraction model is shaded to represent an equivalent fraction?

A



C



B



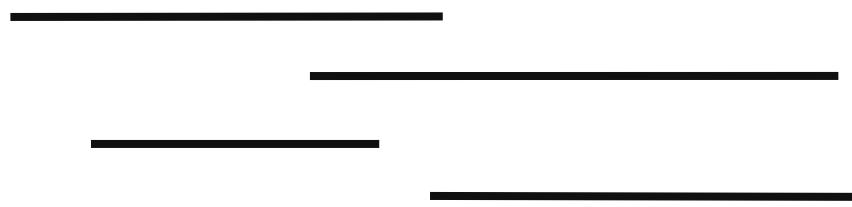
D



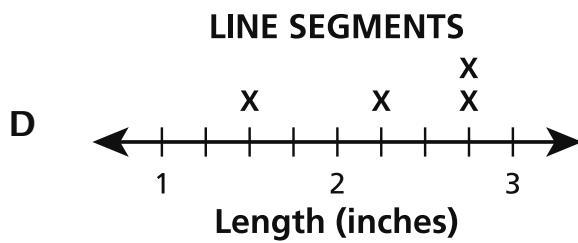
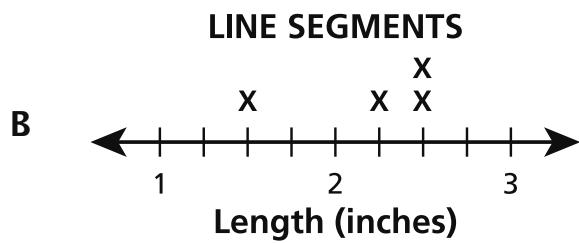
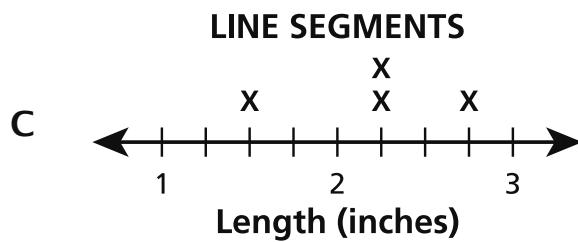
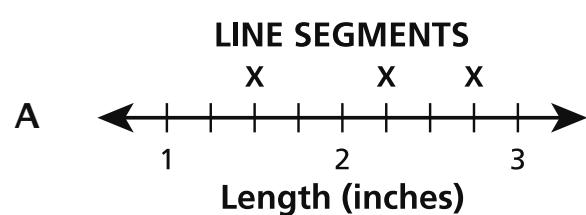
GO ON

38

The picture below shows line segments of different lengths, in inches.



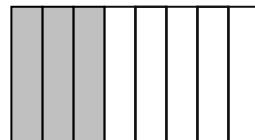
Measure each line segment. Which line plot correctly shows the lengths of the line segments?



GO ON

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

Answer _____ of the candy bar

GO ON

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

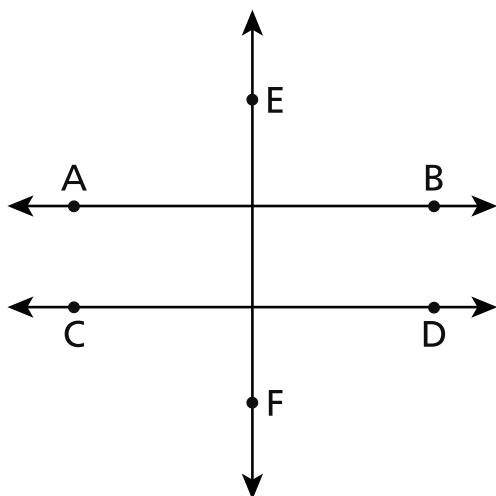
2, 9, 1, 3, 8

Show your work.

GO ON

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

GO ON

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich.

How much of the sandwich is remaining?

Show your work.

Answer _____ of the sandwich

GO ON

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

GO ON

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

Answer _____ more tiles

GO ON

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.

	1,000	B	6
4	A	320	C

What are the missing values for A, B, and C in the area model?

Show your work.

Answer A _____, B _____, and C _____

What is the height, in feet, of Mountain Q?

Show your work.

Answer _____ feet

STOP

THE STATE EDUCATION DEPARTMENT
THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234
2019 Mathematics Tests Map to the Standards
Grade 4 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.4.NF.B.4c	Number and Operations - Fractions	0.79		
2	Multiple Choice	B	1	CCSS.Math.Content.4.OA.B.4	Operations and Algebraic Thinking	0.84		
3	Multiple Choice	A	1	CCSS.Math.Content.4.NF.A.2	Number and Operations - Fractions	0.68		
4	Multiple Choice	D	1	CCSS.Math.Content.4.OA.A.2	Operations and Algebraic Thinking	0.55		
5	Multiple Choice	A	1	CCSS.Math.Content.4.G.A.1	Geometry	0.67		
8	Multiple Choice	B	1	CCSS.Math.Content.4.NF.A.1	Number and Operations - Fractions	0.6		
9	Multiple Choice	C	1	CCSS.Math.Content.4.MD.C.7	Measurement and Data	0.74		
15	Multiple Choice	D	1	CCSS.Math.Content.4.NBT.B.5	Number and Operations in Base Ten	0.71		
16	Multiple Choice	D	1	CCSS.Math.Content.4.NBT.B.6	Number and Operations in Base Ten	0.7		
17	Multiple Choice	B	1	CCSS.Math.Content.4.OA.A.3	Operations and Algebraic Thinking	0.68		
20	Multiple Choice	C	1	CCSS.Math.Content.4.NBT.A.3	Number and Operations in Base Ten	0.64		
21	Multiple Choice	B	1	CCSS.Math.Content.4.MD.A.3	Measurement and Data	0.48		
27	Multiple Choice	D	1	CCSS.Math.Content.4.NF.B.3a	Number and Operations - Fractions	0.68		
28	Multiple Choice	C	1	CCSS.Math.Content.4.G.A.3	Geometry	0.59		
29	Multiple Choice	A	1	CCSS.Math.Content.4.MD.C.5a	Measurement and Data	0.41		
30	Multiple Choice	B	1	CCSS.Math.Content.4.OA.A.1	Operations and Algebraic Thinking	0.63		
Session 2								
31	Multiple Choice	B	1	CCSS.Math.Content.4.NF.B.4a	Number and Operations - Fractions	0.83		
32	Multiple Choice	B	1	CCSS.Math.Content.4.OA.A.2	Operations and Algebraic Thinking	0.92		
33	Multiple Choice	D	1	CCSS.Math.Content.4.NBT.B.6	Number and Operations in Base Ten	0.76		

34	Multiple Choice	A	1	CCSS.Math.Content.4.MD.C.5b	Measurement and Data	0.63		
35	Multiple Choice	D	1	CCSS.Math.Content.4.OA.A.1	Operations and Algebraic Thinking	0.58		
36	Multiple Choice	A	1	CCSS.Math.Content.4.MD.C.6	Measurement and Data	0.59		
37	Multiple Choice	D	1	CCSS.Math.Content.4.NF.A.1	Number and Operations - Fractions	0.74		
38	Multiple Choice	C	1	CCSS.Math.Content.3.MD.B.4	Measurement and Data	0.58		
39	Constructed Response		2	CCSS.Math.Content.4.NF.B.4b	Number and Operations - Fractions		1.46	0.73
40	Constructed Response		2	CCSS.Math.Content.4.NBT.A.2	Number and Operations in Base Ten		1.04	0.52
41	Constructed Response		2	CCSS.Math.Content.4.G.A.2	Geometry		0.97	0.49
42	Constructed Response		2	CCSS.Math.Content.4.NF.B.3d	Number and Operations - Fractions		1.22	0.61
43	Constructed Response		2	CCSS.Math.Content.4.NBT.A.1	Number and Operations in Base Ten		1.04	0.52
44	Constructed Response		2	CCSS.Math.Content.4.MD.A.3	Measurement and Data		1.13	0.57
45	Constructed Response		3	CCSS.Math.Content.4.NBT.B.5	Number and Operations in Base Ten		1.32	0.44

*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	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. 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(s) and the demonstration of a thorough understanding
2 Point	A two-point response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task. This response <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	A one-point response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task. This response <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*	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).

2019 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 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 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

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$\frac{3}{8} \times 2 = \frac{6}{8}$$

or

$$\frac{3}{8} + \frac{3}{8} = \frac{6}{8}$$

or other valid process

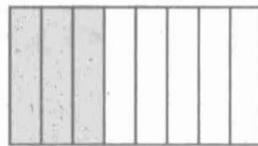
Answer $\frac{6}{8}$ or $\frac{3}{4}$ of the candy bar

GUIDE PAPER 1

Additional

39

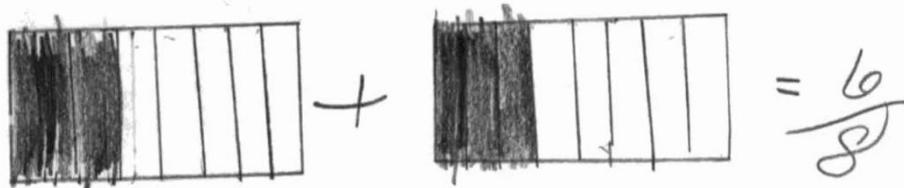
The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$\frac{3}{8} \times 2 = \frac{6}{8}$$



Answer 6/8 of the candy bar

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The fraction of the candy bar that Tom eats is calculated correctly using both multiplication and addition. The response is complete and correct.

GUIDE PAPER 2

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$3/8 \times 2 = 6/8$$

Answer 3/4 of the candy bar

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. The fraction of the candy bar that Tom eats is calculated correctly using multiplication. Although the fraction does not need to be reduced, it is simplified correctly.

GUIDE PAPER 3

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$\frac{3}{8} + \frac{3}{8} = \frac{6}{8}$$

Answer

$$\frac{6}{8}$$

of the candy bar

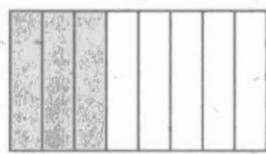
Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The fraction of the candy bar that Tom eats is calculated correctly using addition. The response is complete and correct.

GUIDE PAPER 4

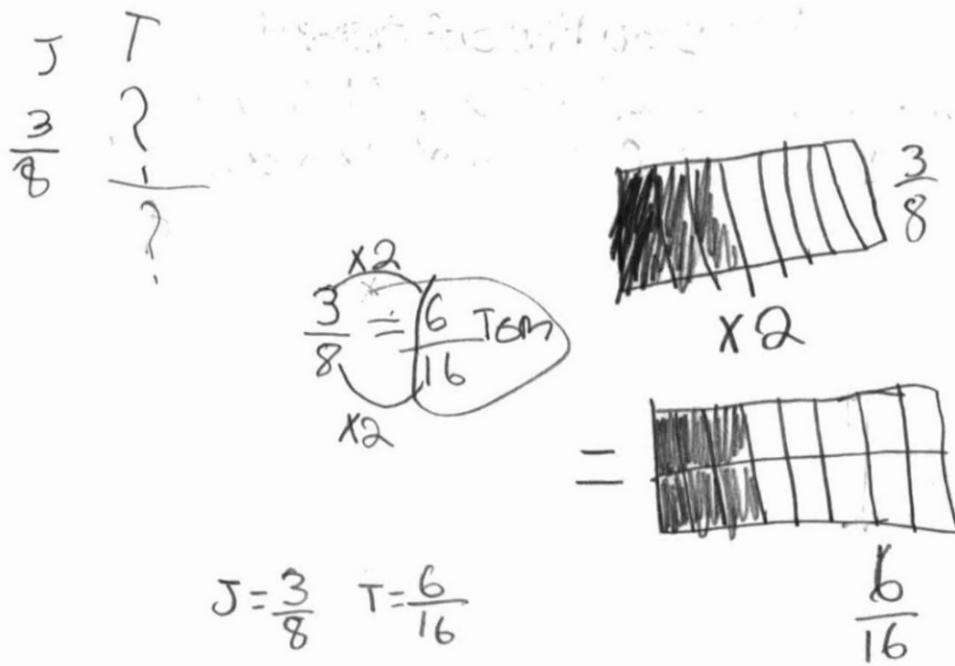
39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.



Answer $\frac{6}{16}$ of the candy bar

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the concepts in the task. The number of pieces that Tom eats is correct. The process is shown correctly in the artwork to be multiplied by 2, but in the fraction multiplication the denominator as well as the numerator are multiplied by 2. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$\frac{3}{8} \times 2 = \frac{7}{8}$$

Answer

Tom ate $\frac{7}{8}$

of the candy bar

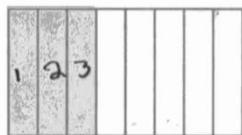
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. An appropriate multiplication is performed, but the product is incorrect due to a calculation error. This response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 6

39

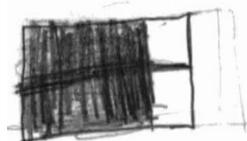
The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$3 \times 2 = 6$$



he ate

$\frac{6}{6}$ or 1 candy
bar

Answer 6 of the candy bar

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The multiplication $3 \times 2 = 6$ correctly determines an appropriate numerator, but the denominator is incorrect in the work and missing from the answer space. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$\frac{3}{4}$
Answer 4 of the candy bar

Score Point 0 (out of 2 points)

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

GUIDE PAPER 8

Additional

39

The shaded part of the model below represents the fraction of a candy bar that Jill ate.



Tom has the same size candy bar. He eats 2 times the amount that Jill ate. What fraction of the candy bar does Tom eat?

Show your work.

$$\frac{3}{8} + 2 = \frac{5}{8}$$

Answer

$$\frac{5}{8}$$

of the candy bar

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. An incorrect solution is obtained by an incorrect procedure.

EXEMPLARY RESPONSE

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

The greatest number that can be created is 98,321 and the smallest number is 12,389.

$$98,321 > 12,389$$

or

$$12,389 < 98,321$$

GUIDE PAPER 1

Additional

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

greatest # -98,321
least # -12,389
98,321 is greater than 12,389.
 $98,321 > 12,389$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. Two correct, 5-digit numbers are created and compared. The dash sign in front of both numbers is taken as a dash, and not a negative sign. The response is complete and correct.

GUIDE PAPER 2

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

12389 $\textcircled{<}$ 98321
98321 $\textcircled{>}$ 12389

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. Two correct comparisons are provided with the acceptable 5-digit numbers. The response is complete and correct.

GUIDE PAPER 3

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

98,321 $>$ 12,389

I know this because 9 is greater than 1 and 8 is greater than 2 and so on.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. Two correct, 5-digit numbers are created and compared. The explanation describes the comparison digit by digit. The response is complete and correct.

GUIDE PAPER 4

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

greatest		least
92,183		13,283

92,183 \gtreqless 13,283

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The two written 5-digit numbers are correctly compared; however, the created numbers are not those with the greatest and least values. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

GREATEST number - 98,321
LEAST GREATEST number -12,389

98,321 < 12,389

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. Two correct numbers with the greatest and least values are created; however, they are incorrectly compared. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

98321 $>$ 98312

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The two written numbers are correctly compared. The number with the greatest value is correctly identified. The number with the least value is incorrect. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

29 > 13

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the two numbers are correctly compared, neither number has the required 5 digits.

GUIDE PAPER 8

Additional

40

Use each digit shown below to create a 5-digit number with the greatest value and a 5-digit number with the least value. Each digit can only be used once in each number. Then write a number sentence using $>$, $<$, or $=$ to compare the two numbers you created.

2, 9, 1, 3, 8

Show your work.

2 < 9 > 1 < 3 < 8

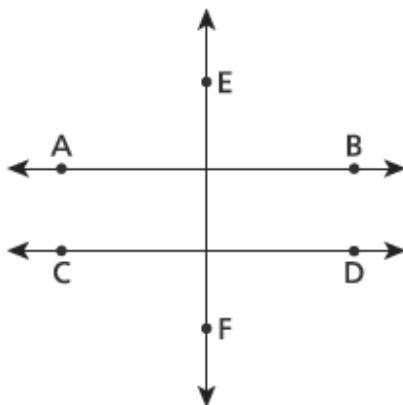
Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Only numbers with single digits, not 5 digits, are compared.

EXEMPLARY RESPONSE

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

Line AB is perpendicular to line EF because they intersect at a 90° or right angle.

or

Line CD is perpendicular to line EF because they intersect at a 90° or right angle.

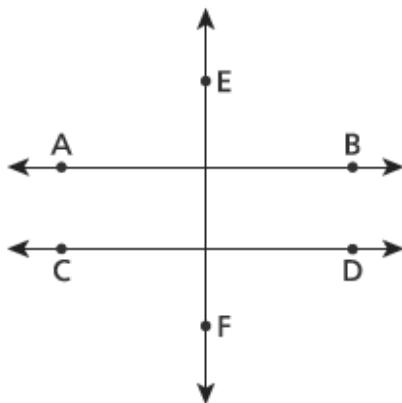
or other valid explanation

GUIDE PAPER 1

Additional

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

AB and EF because they make a 90 degrees

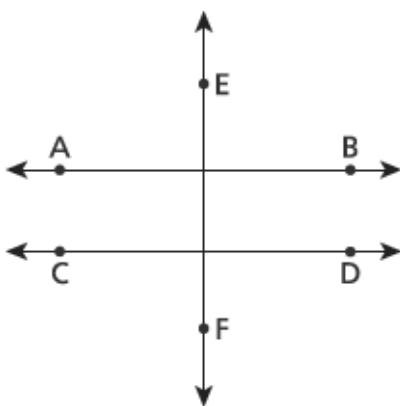
Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Two correct perpendicular lines are identified and a correct explanation is provided. AB and EF are not labeled as lines, but this is inconsequential as it is understood they are lines. The response is complete and correct.

GUIDE PAPER 2

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

CD and EF are perpendicular to each other because a perpendicular have a right angle that is 90 and CD and EF show.

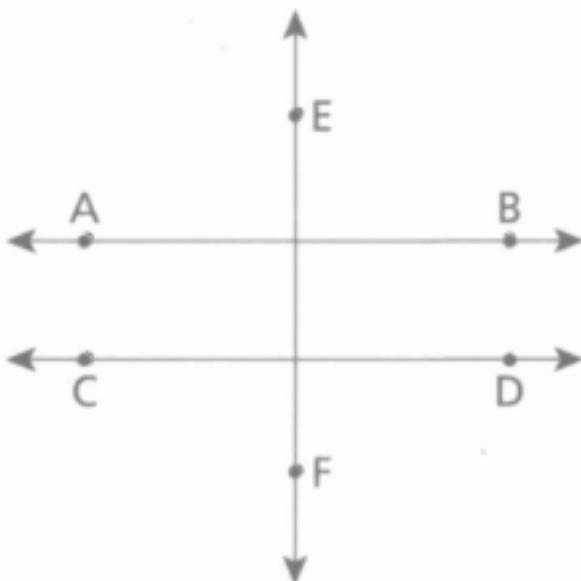
Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Two correct perpendicular lines are identified and a correct explanation is provided. The response is complete and correct.

GUIDE PAPER 3

41

The diagram below shows line AB, line CD, and line EF.



Identify two lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

CD ⊥ EF because they intersect at exactly

90° but so does AB

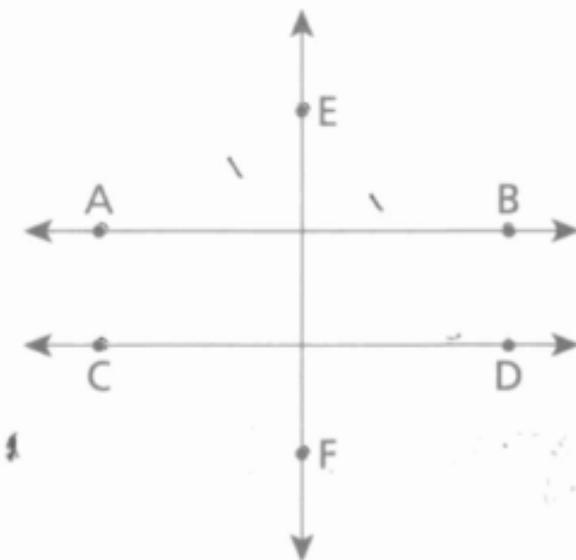
Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. Two correct perpendicular lines are identified and a correct explanation is provided. The response is complete and correct.

GUIDE PAPER 4

41

The diagram below shows line AB, line CD, and line EF.



Identify two lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

AB are perpendicular because they form right angles and measure 90° .

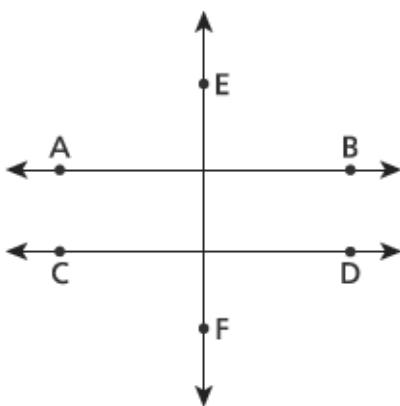
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The explanation that perpendicular lines form a 90° angle is correct; however, only one line is identified. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

I determined my answer by saying EF line went straight down the middle because perpendicular lines have up and down lines and AB they both have across lines

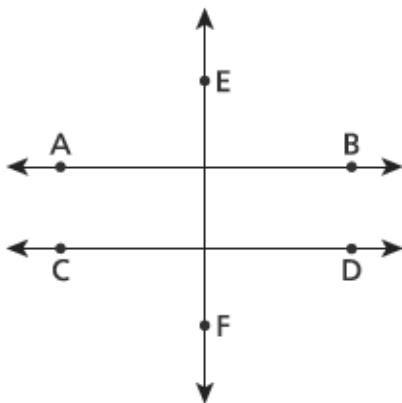
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The perpendicular lines AB and EF are correctly identified, but the explanation is incomplete: the angle measure is not addressed. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

Lines \overleftrightarrow{ab} and \overleftrightarrow{ef} , because perpendicular lines are lines that form a cross or plus sign, and these lines form a cross and a plus sign.

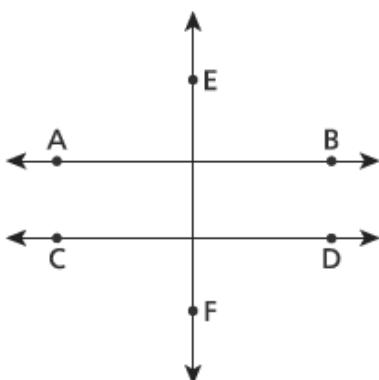
Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The perpendicular lines AB and EF are correctly identified, but the explanation of the lines forming “*a cross and a plus sign*” is not sufficient to mean right angles. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

41

The diagram below shows line AB, line CD, and line EF.



Identify **two** lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

I KNOW THEY ARE
PERPENDICULAR BECAUSE THEY LOOK THE SAME.

Score Point 0 (out of 2 points)

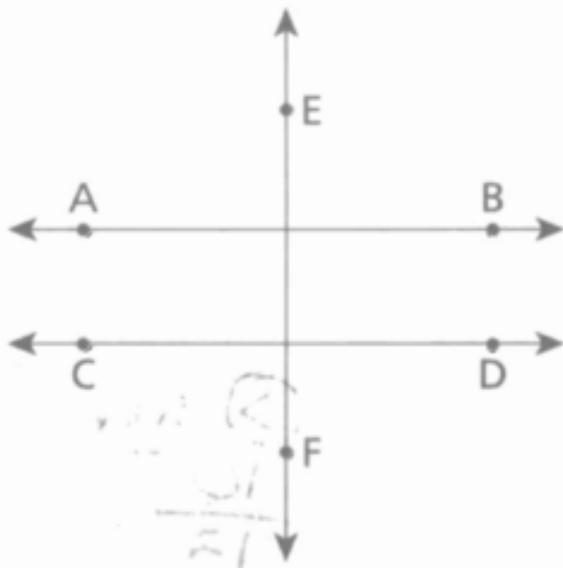
This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Two perpendicular lines are not identified and the explanation is insufficient to show understanding.

GUIDE PAPER 8

Additional

41

The diagram below shows line AB, line CD, and line EF.



Identify two lines on the diagram that appear to be perpendicular to each other.

Explain how you determined your answer.

A and C are perpendicular because they are across each other.

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Two points instead of two perpendicular lines are identified and the explanation “*because they are across each other*” is not sufficient.

EXEMPLARY RESPONSE

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich.

How much of the sandwich is remaining?

Show your work.

$$\frac{2}{5} \times 2 = \frac{4}{5}$$

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

or

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

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

or other valid process

Answer $\frac{1}{5}$ of the sandwich

GUIDE PAPER 1

Additional

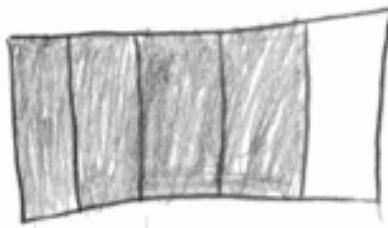
42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich. How much of the sandwich is remaining?

Show your work.

$$\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

$$\frac{4}{5} \quad \frac{2}{5} \quad \frac{2}{5}$$



Answer $\frac{1}{5}$ of the sandwich

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The fraction of the sandwich that Mick and Jackie ate is calculated correctly using addition. The remaining portion of the sandwich is shown as a model. The response is complete and correct.

GUIDE PAPER 2

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich. How much of the sandwich is remaining?

Show your work.

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

$$\frac{5}{5} - \frac{4}{5} = \frac{\cancel{1}}{\cancel{5}}$$

Answer $\frac{1}{5}$ of the sandwich

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The fraction of the sandwich that Mick and Jackie ate is calculated correctly using multiplication. This response demonstrates correctly that the whole sandwich is equivalent to $\frac{5}{5}$ and the portion eaten is correctly subtracted to determine the solution.

GUIDE PAPER 3

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich.

How much of the sandwich is remaining?

Show your work.

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

Answer of the sandwich

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The fraction of the sandwich remaining is correctly calculated using repeated subtraction from the whole.

GUIDE PAPER 4

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich.

How much of the sandwich is remaining?

Show your work.

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

Answer

there is $\frac{1}{5}$
left of the
sandwich

of the sandwich

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The fraction of the remaining sandwich is correctly calculated; however, the first subtraction is written in an incorrect order. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich. How much of the sandwich is remaining?

Show your work.

$$\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

Answer $\frac{4}{5}$ of the sandwich

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The portion of the sandwich that Mick and Jackie ate is correctly calculated but the result is inappropriately provided as the solution. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich.

How much of the sandwich is remaining?

Show your work.

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

Answer

$$\frac{3}{5}$$

of the sandwich

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The correct process is applied to determine the remaining amount of the sandwich; however, the work accounts for only one person eating the sandwich instead of two. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich. How much of the sandwich is remaining?

Show your work.

$$\frac{2}{5} - \frac{2}{5} = \frac{0}{5}$$

Answer  of the sandwich

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the subtraction of the fractions is correct, it is irrelevant to the task.

GUIDE PAPER 8

Additional

42

Mick and Jackie buy a large sandwich to share. They each eat $\frac{2}{5}$ of the sandwich. How much of the sandwich is remaining?

Show your work.

$$\frac{2}{5} + \frac{3}{5} = \frac{5}{5}$$

Answer $\frac{5}{5}$ of the sandwich

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the addition of the fractions is carried out correctly, to supply $\frac{5}{5}$ as the answer demonstrates a lack of understanding; holistically this is not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task. An incorrect solution is obtained by an incorrect procedure.

EXEMPLARY RESPONSE

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

The digit 3 in the number 63,297 is in the thousands place, and the digit 3 in the number 60,325 is in the hundreds place and $3,000 > 300$.

or

The value of the digit 3 in the number 63,297 is 10 times greater than the value of the digit 3 in 60,325 because a number in the thousands place is 10 times greater than that same number in the hundreds place.

or other valid explanation

GUIDE PAPER 1

Additional

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

*The value of 3 in 63,297 is 10 times the value of
3 in the number 60,325.*

$$\begin{array}{r} \times 10 \\ 6\overbrace{0}^3,325 \\ 63,297 \end{array}$$

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. A correct explanation is provided with a good comparison using place value. The work below the lines of “ $\times 10$ ” emphasizes this understanding. The response is complete and correct.

GUIDE PAPER 2

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

I know the value of the 3 in 63,297 is greater than the value of the 3 in 60,325 because the 3 in 63,297 is in the thousands but the 3 in 60,325 is in the hundreds and $3,000 > 300$.

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. A correct explanation is provided with a good comparison using place value. The response is complete and correct.

GUIDE PAPER 3

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

The value of the digit 3 in 63,297 is compare to the value of the digit in the number 60,325 because 3,000 is 10 times as much as 300

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. A correct explanation is provided with a good comparison using place value. The response is complete and correct.

GUIDE PAPER 4

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

3,000 > 300

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The comparison is correct, but the response is insufficient to explain the value of the digit 3 in the two given numbers. This response correctly addresses only some elements of the task.

GUIDE PAPER 5

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

- Explain your answer.

$$\begin{array}{r} 3,000 \\ - 300 \\ \hline 2,700 \end{array}$$

3,000 is a greater number than 300 and if you minus the numbers you get 2,700, and if you add both numbers you get 3,300.

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The comparison is correct, but the response is insufficient to explain the value of the digit 3 in the two given numbers. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

the 3 in 63,297 > than the 3 in the 6,0325 because it's in the thousands

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The comparison is correct, but the place value of the digit 3 in 60,325 is not mentioned. This response correctly addresses only some elements of the task.

GUIDE PAPER 7

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

*I know that place value has the amount like ones, tens, hundreds or even more.
Example: 63,297 is greater than 60,325.*



$$\underline{63,297} \textcircled{>} \underline{60,325}$$

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The numbers themselves are compared rather than the values of the digit 3 in the given numbers. The explanation only defines generic place value and does not show how place value is related to the given numbers.

GUIDE PAPER 8

Additional

43

How does the value of the digit 3 in the number 63,297 compare to the value of the digit 3 in the number 60,325? Be sure to include what you know about place value in your answer.

Explain your answer.

10

Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although the number 10 is the relative factor between the values of the digit 3 in both numbers, it is not clear this is the intent of the response. Per Scoring Policy #3, if no explanation is provided to support the answer, the student receives no credit.

EXEMPLARY RESPONSE

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

$$12 \times 7 = 84 \text{ square feet}$$

$$84 - 45 = 39 \text{ more tiles}$$

or other valid process

Answer 39 more tiles

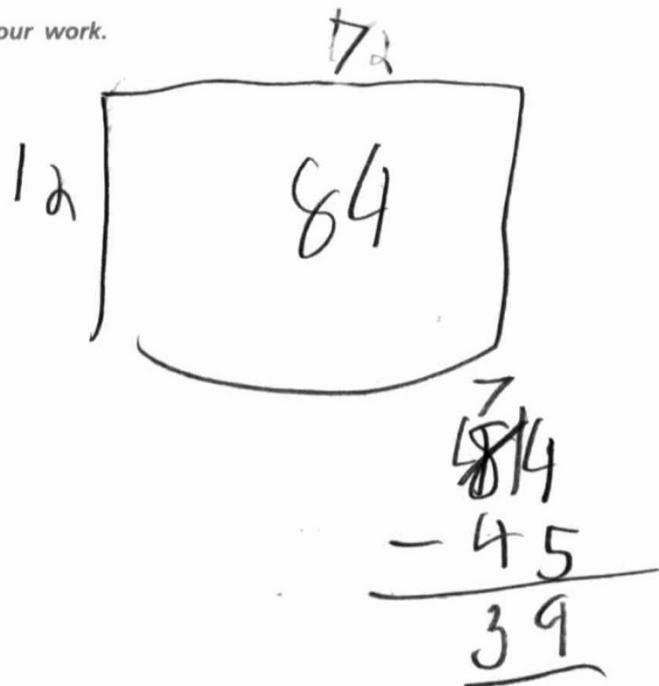
GUIDE PAPER 1

Additional

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.



39

Answer 39 more tiles

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total area of the floor and the number of additional tiles are calculated correctly. The response is complete and correct.

GUIDE PAPER 2

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

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

$$\begin{array}{r} 784 \\ - 45 \\ \hline 39 \end{array}$$

39 more one-foot square tiles

check

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

$$\begin{array}{r} 784 \\ - 45 \\ \hline 39 \end{array}$$

$$\begin{array}{r} 39 \\ + 45 \\ \hline 84 \end{array} \checkmark$$

Answer 39 more tiles

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total area of the floor and the number of additional tiles are calculated correctly. The response is complete and correct.

GUIDE PAPER 3

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

$$7 \times 12 = 84$$
$$\begin{array}{r} 84 \\ - 45 \\ \hline 39 \end{array}$$

Answer

39 more tiles

more tiles

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The total area of the floor and the number of additional tiles are calculated correctly. The response is complete and correct.

GUIDE PAPER 4

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$
$$\begin{array}{r} 78419 \\ - 45 \\ \hline 38 \end{array}$$

$$\begin{array}{r} 12 \\ 12 \\ 12 \\ + 12 \\ \hline 84 \end{array}$$

Answer 38 more tiles

Score Point 1 (out of 2 points)

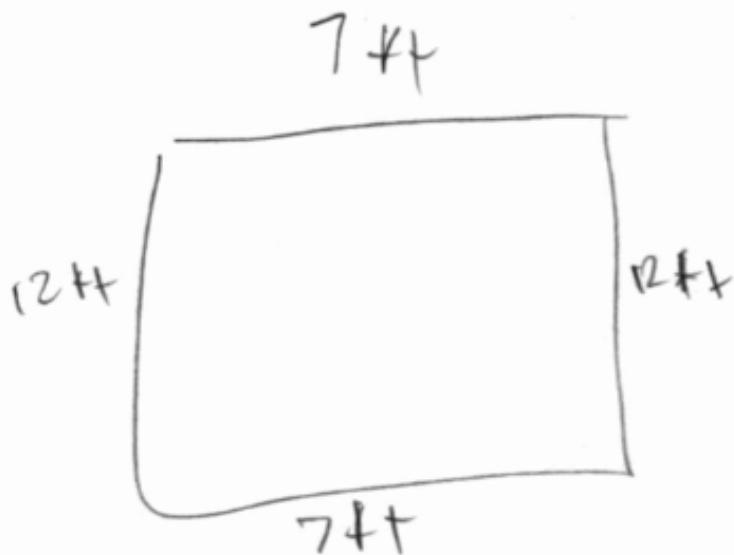
This response demonstrates only a partial understanding of the mathematical concepts in the task. The total area of the floor is calculated correctly using repeated addition; however, an incorrect number of additional tiles is determined due to a subtraction error. This response contains an incorrect solution but applies an appropriate process.

GUIDE PAPER 5

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.



$$7 \times 10 = 70$$

$$\begin{array}{r} 7 \times 2 \\ \hline 14 \\ 64 \end{array}$$

Answer 189 more tiles

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total area of the floor is calculated correctly, but the number of additional tiles is not addressed. This response correctly addresses only some elements of the task.

GUIDE PAPER 6

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

$$\begin{array}{r} \times 12 \\ 7 \\ \hline 84 \end{array} \quad \begin{array}{r} - 84 \\ 54 \\ \hline 30 \end{array}$$

Answer

30

more tiles

Score Point 1 (out of 2 points)

This response demonstrates only a partial understanding of the mathematical concepts in the task. The total area of the floor is calculated correctly; however, the number of additional tiles needed is incorrect as the subtraction is set up incorrectly because the 45 existing tiles is transposed as 54. This response correctly addresses only some elements of the task.

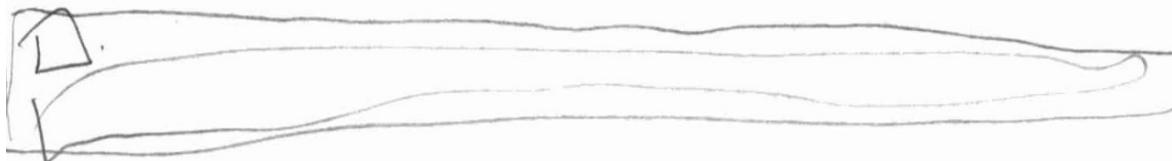
GUIDE PAPER 7

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

$$\begin{array}{r} 7 \times 4 = 28 \\ 5 \times 10 = 50 \\ \hline 35 \quad 40 \end{array}$$
$$12 \times 7 = 84 \quad 5 \times 8 = 40$$
$$84 - 40 = 44$$



Answer 46 more tiles

Score Point 0 (out of 2 points)

Although a correct process is used to determine the total area, the answer is incorrect due to a calculation error, and the work involving the 45 existing tiles is irrelevant. Holistically, this response is not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.

GUIDE PAPER 8

Additional

44

Ms. Peterson wants to replace all the floor tiles in her kitchen. The kitchen floor is 12 feet long and 7 feet wide. If Ms. Peterson already has 45 one-foot square tiles, how many more one-foot square tiles does she need to completely cover the kitchen floor?

Show your work.

she would need 82 more one foot square tiles
1 foot=12 inches

Answer

82

more tiles

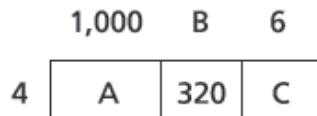
Score Point 0 (out of 2 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. The answer is incorrect and the work is irrelevant.

EXEMPLARY RESPONSE

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

A: $4 \times 1,000 = 4,000$

B: $320 \div 4 = 80$ or $1,086 - (1,000 + 6) = 80$

C: $4 \times 6 = 24$

Answer A 4,000, B 80, and C 24

What is the height, in feet, of Mountain Q?

Show your work.

$4,000 + 320 + 24 = 4,344$

or

$1,086 \times 4 = 4,344$

or other valid process

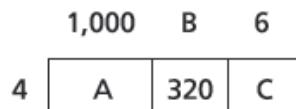
Answer 4,344 feet

GUIDE PAPER 1

Additional

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

$$b = 80 \quad 320 \div 4 = 80$$

$$c = 24 \quad 6 \times 4 = 24$$

$$a = 4000 \quad 1000 \times 4 = 4000$$

Answer A , B , and C

What is the height, in feet, of Mountain Q?

Show your work.

$$1000 \times 4 = 4000 \text{ feet}$$

$$80 \times 4 = 320 \text{ feet}$$

$$6 \times 4 = 24 \text{ feet}$$

$$(4000 + 320) + 24 = 4344 \text{ feet}$$

Answer feet

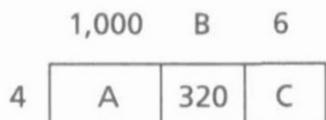
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The missing values for the area model and the height of Mountain Q are calculated correctly. The response is complete and correct.

GUIDE PAPER 2

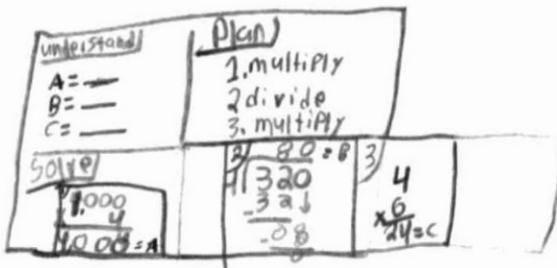
45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

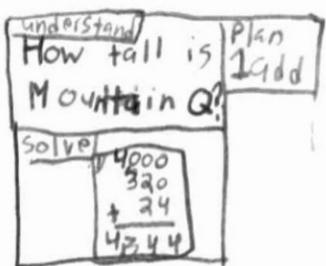
Show your work.



Answer A 4000, B 80, and C 24

What is the height, in feet, of Mountain Q?

Show your work.



Answer 4,344 feet

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The missing values for the area model and the height of Mountain Q are calculated correctly. The response is complete and correct.

GUIDE PAPER 3

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.

1,000	B	6
4	A	320

What are the missing values for A, B, and C in the area model?

Show your work.

$$\begin{array}{r} 1,000 \\ \times 4 \\ \hline 4,000 \end{array} \quad \begin{array}{r} 80 \\ 4 \cancel{5} 20 \\ -320 \\ \hline 0 \end{array} \quad \begin{array}{r} 6 \\ \times 4 \\ \hline 24 \end{array}$$

Answer A 4,000, B 80, and C 24

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} 4,000 \\ + 320 \\ \hline 4,320 \\ + 24 \\ \hline 4,344 \end{array} \quad \begin{array}{r} +3+2 \\ 1,086 \\ \times 4 \\ \hline 4,344 \end{array}$$

Answer 4,344 feet

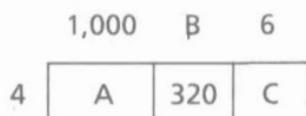
Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the mathematical concepts in the task. The missing values for the area model are calculated correctly and two distinct methods are correctly used to solve for the height of Mountain Q. The response is complete and correct.

GUIDE PAPER 4

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

$$\begin{array}{r} 1000 \\ \times 4 \\ \hline 4000 \end{array}$$

$$\begin{array}{r} 4 \\ \times 6 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 128d \\ 4132c \\ \hline 1000 \\ 800 \\ 0 \\ \hline 1800 \end{array}$$

Answer A 4000, B 1800, and c 24

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} 1086 \\ \times 4 \\ \hline 4344 \end{array}$$

Answer 4,344 feet

$$\begin{array}{r} 1000 \quad 0 \quad 800 \quad 6 \\ 4 \quad 000 \quad 0 \quad 320 \quad 24 \\ \hline 4000 \\ 320 \\ 24 \\ \hline 4344 \end{array}$$

STOP

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The missing values A and C are correctly calculated, but B is incorrectly calculated. The height of Mountain Q is correctly calculated using $A + 320 + C$ and $1,086 \times 4$. This response reflects a minor misunderstanding of the underlying procedures.

GUIDE PAPER 5

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.

1,000	B	6
4	A	320

What are the missing values for A, B, and C in the area model?

Show your work.

$$\begin{array}{r} 1,000 \ 80 \ 6 \\ \hline 4,000 | 320 | 24 \ 4 \end{array}$$

Answer A 4,000, B 320, and C 24

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} 4,000 \\ 320 \\ + 24 \\ \hline 4,344 \text{ ft} \end{array}$$

$$\begin{array}{r} 1,086 \\ \times 4 \\ \hline 4,344 \end{array}$$

Answer 4,344 feet

Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The missing values for the area model are calculated correctly, but the incorrect value for B is written. The height of Mountain Q is calculated correctly using the area model. This response contains an incorrect solution but applies sound procedures.

GUIDE PAPER 6

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.

$$\begin{array}{r} 1,000 \quad B \quad 6 \\ \times \quad 4 \quad \boxed{A} \quad 320 \quad C \end{array}$$

What are the missing values for A, B, and C in the area model?

Show your work.

$$a = 4000$$

$$b = 80$$

$$c =$$

$$\begin{array}{r} \times \frac{1000}{4} \quad \times \frac{80}{4} \quad \times \frac{6}{4} \\ \hline 4000 \quad 320 \quad 24 \end{array}$$

Answer A , B , and C

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} + \frac{4000}{80} \quad + \frac{24}{4080} \\ \hline 4080 \quad 4104 \end{array}$$

Answer feet

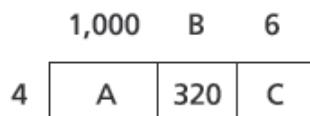
Score Point 2 (out of 3 points)

This response demonstrates a partial understanding of the mathematical concepts in the task. The missing values of A, B, and C are calculated correctly; however, the height of Mountain Q is determined incorrectly. The height should be found using $A + 320 + C$, not $A + B + C$. This response reflects a minor misunderstanding of the underlying procedures.

GUIDE PAPER 7

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

A: stands for 4,000 B: stands for 80 and C: stands for 24.

Answer A , B , and C

What is the height, in feet, of Mountain Q?

Show your work.

so my head is saying that i have to add so im gonna say that $4,000 + 80 + 24 = 4,184$

the answer i got
was 4,184 feet.

Answer feet

Score Point 1 (out of 3 points)

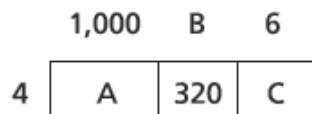
This response demonstrates a limited understanding of the mathematical concepts in this task. Although the values of A, B, and C are correct, there is no work to show how they were calculated. The height of Mountain Q should be found using $A + 320 + C$, not $A + B + C$, but holistically this does demonstrate some limited understanding that three values from the area model must be added to determine the height.

GUIDE PAPER 8

Additional

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

Answer A 4000, B 320, and C 24

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} + 4000 \\ + 320 \\ \hline 4320 \end{array}$$
$$\begin{array}{r} + 4320 \\ + 24 \\ \hline 4344 \end{array}$$

Answer 4344 feet

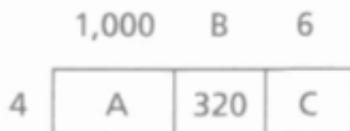
Score Point 1 (out of 3 points)

This response demonstrates a limited understanding of the mathematical concepts in this task. Although the values of A and C are correct, there is no work to show how they were calculated. The height of Mountain Q is found correctly using $A + 320 + C$. This response contains the correct solution but the required work is limited.

GUIDE PAPER 9

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

$$A = 1,000 + 4 = 1,004$$

$$B = 320 + 4 = 324$$

$$C = 6 + 4 = 10$$

Answer A 1,004, B 324, and C 10

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} 1,004 \\ + 324 \\ \hline 1,328 \end{array}$$

$$\begin{array}{r} 1,328 \\ + 10 \\ \hline 1,338 \end{array}$$

Answer 1,338 feet

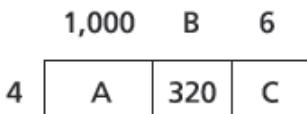
Score Point 1 (out of 3 points)

This response demonstrates a limited understanding of the mathematical concepts in this task. Invalid procedures are used to find the incorrect values of A, B, and C. The height of Mountain Q should be found using $A + 320 + C$, not $A + B + C$, but holistically this does demonstrate some limited understanding that three values from the area model must be added to determine the height.

GUIDE PAPER 10

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

A = 4,000	B = 320	C = 24
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Answer A , B , and C

What is the height, in feet, of Mountain Q?

Show your work.

160,200,96

Answer feet

Score Point 0 (out of 3 points)

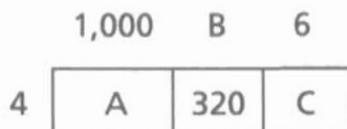
This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although answers A and C are correct, per Scoring Policy #3, when students are directed to show work, a correct answer with no work receives no credit.

GUIDE PAPER 11

Additional

45

The height of Mountain P is 1,086 feet. The height of Mountain Q is 4 times the height of Mountain P. The area model shown below represents one way to find the height of Mountain Q.



What are the missing values for A, B, and C in the area model?

Show your work.

Answer A 4,000, B 800, and C 24

What is the height, in feet, of Mountain Q?

Show your work.

$$\begin{array}{r} 1,086 \\ \times 4 \\ \hline 21144 \end{array}$$

Answer 2,172 feet

Score Point 0 (out of 3 points)

This response is not sufficient to demonstrate even a limited understanding of the mathematical concepts in the task. Although answers A and C are correct, there is no work to show how they were calculated. The work and solution for the height of Mountain Q are incorrect.