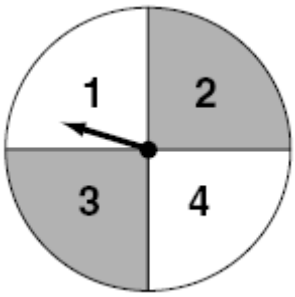
Mathematics Assessment
Quick Guide

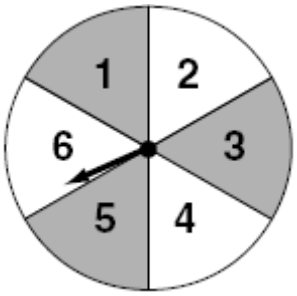
End-of-Course Exams
Year 2

Table of Contents

This document may be reproduced for educational purposes by permission of the Washington State Office of Superintendent of Public Instruction

5 In a certain carnival game a player gets to spin each of the spinners once.





What is the probability of getting two numbers that have a sum of 7?

○ A. $\frac{1}{4}$

○ B. $\frac{1}{6}$

○ C. $\frac{5}{12}$

○ D. $\frac{7}{24}$

Key: B

8 Study the pattern shown in the table.

What is the value of *s* when *r* equals 10?

r	0	2	4	6	8	
s	7	11	23	43	71	

Support your answer using words, numbers, and/or diagrams.

What is the value of *s* when *r* equals 10? _____

Scoring Rubric

High School Mathematics WASL Practice Test Item 8	
Strand: Algebraic Sense	
AS01	Learning Target: (Patterns and Functions) Recognize, extend or create a pattern or sequence of pairs of numbers representing a linear function; identify or write a rule to describe a pattern, sequence, and/or a linear function (1.5.1, 1.5.2)

A **2-point response** shows clear understanding of how to determine and extend the pattern. The student clearly indicates that the value of s would equal 107 and provides a reasonable explanation and/or supporting work to justify this answer.

For example, the student may

- Show or explain that $s = r^2 + 7$.
- Shows first differences are 4, 12, 20, 28, and the next difference should be 36.

A **1-point response** shows some understanding of how to determine and extend the pattern.

For example, the student may do one of the following:

- Indicate that the value of s would equal 107, but does not provide a valid explanation to support the answer
- Indicate clear understanding of the pattern (e.g., sets up the equation $s = r^2 + 7$), but makes a computation or substitution error, so that the value obtained for $s \neq 107$.

A **0-point response** shows little or no mathematical understanding of the problem.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	0	2	4	6	8	10
s	7	11	23	43	71	107

Show your work.

$S = r^2 + 7$

What is the value of s when r equals 10? 107

Score:

2

Annotation:

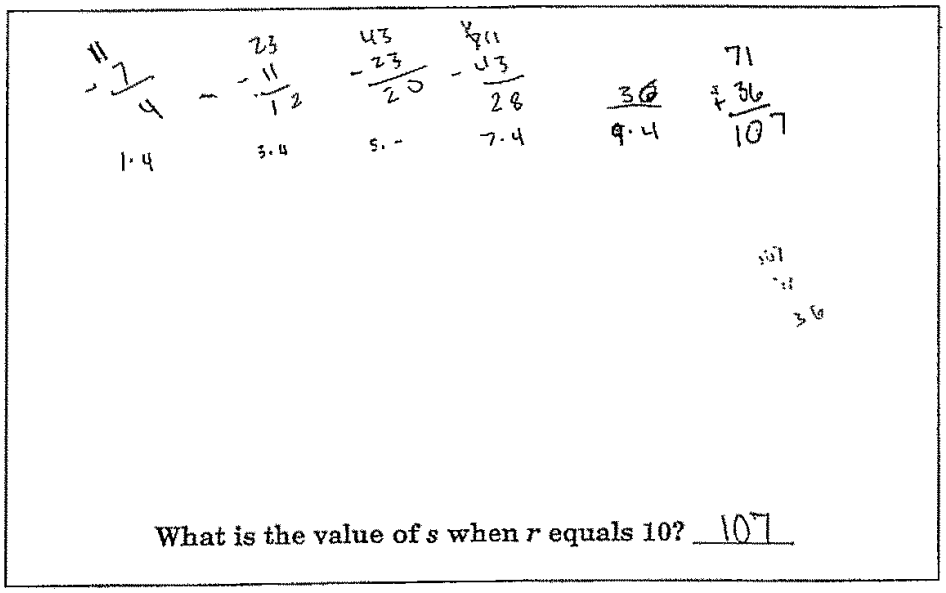
The student shows understanding of how to determine and extend the pattern, indicates the value of s equals 107, and justifies the answer by providing the appropriate algebraic equation. This response earns two points.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	[illegible]	0	2	4	6	8	10
s	[illegible]	7	11	23	43	71	107

Show your work.



Score:
2

Annotation:

The student shows understanding of how to determine and extend the pattern, indicates the value of s equals 107, and provides supporting work to justify the answer. This response earns two points.

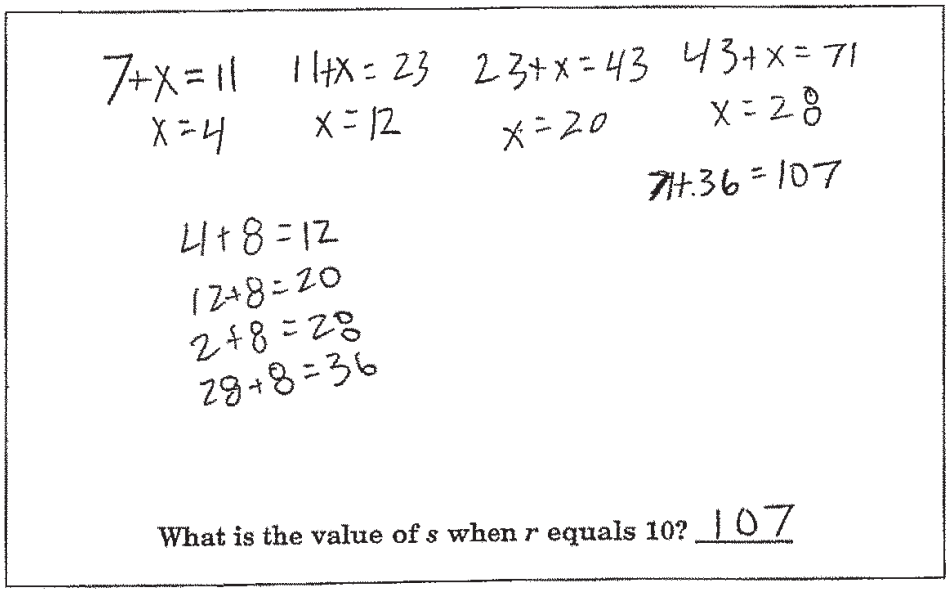
8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	0	2	4	6	8	10
s	7	11	23	43	71	107

4 12 20 25 36

Show your work.



Score:

2

Annotation:

The student shows understanding of how to determine and extend the pattern, indicates the value of s equals 107, and provides supporting work to justify the answer. This response earns two points.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	0	2	4	6	8	
s	7	11	23	43	71	

Show your work.

What is the value of s when r equals 10? 107

Score:

1

Annotation:

The student shows partial understanding of how to determine and extend the pattern by indicating that the value of s equals 107 but provides no supporting work. This response earns one point.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

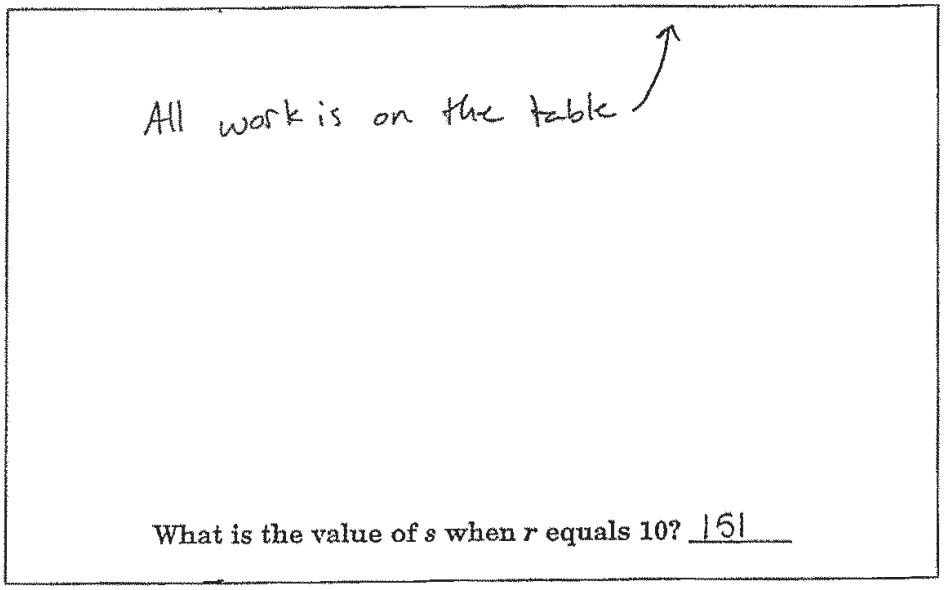
r	0	2	4	6	8	9	10
s	7	11	23	43	71	107	151

+2 +2 +2 +2 +2 +2

+4 +12 +20 +28 +36 +44

+8 +8 +8 +8 +8

Show your work.



Score:
1

Annotation:

The student shows partial understanding of how to determine and extend the pattern. Gives supporting work that has a computation error that extends the pattern to 151. This response earns one point.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	0	2	4	6	8	10
s	7	11	23	43	71	107

Show your work.

What is the value of s when r equals 10? 107

Score:

1

Annotation:

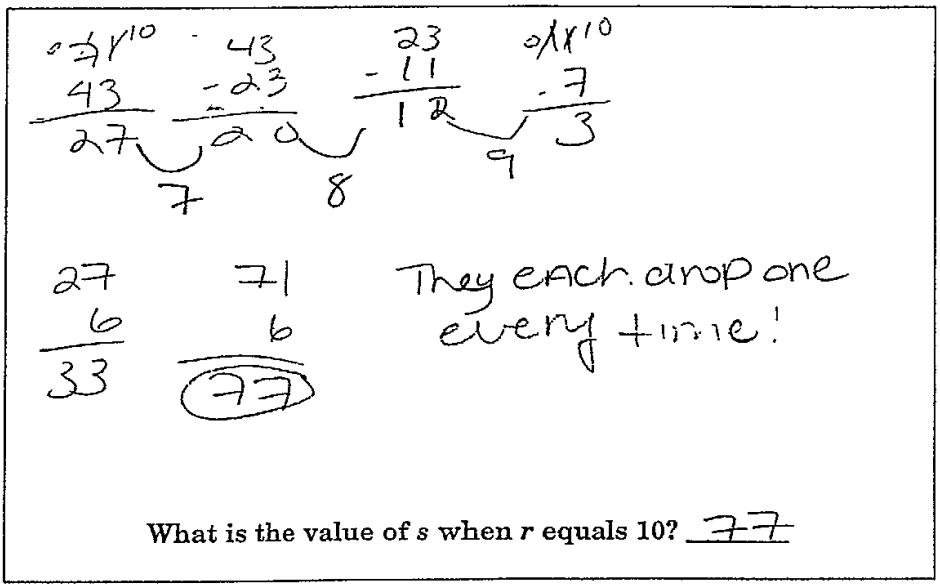
The student shows partial understanding of how to determine and extend the pattern by indicating that the value of s equals 107 but provides no supporting work. This response earns one point.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	0	2	4	6	8	10
s	7	11	23	43	71	77

Show your work.



Score:

0

Annotation:

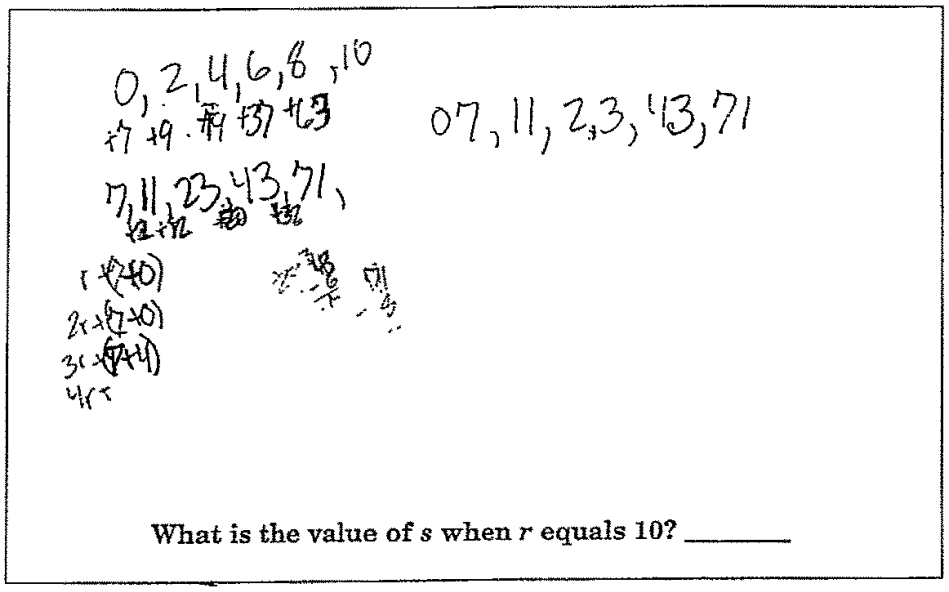
The student shows little or no understanding of how to determine and extend a pattern by incorrectly indicating that s equals 77 and giving inappropriate supporting work. This response earns zero points.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	r	0	2	4	6	8	
s	s	7	11	23	43	71	

Show your work.



Score:
0

Annotation:

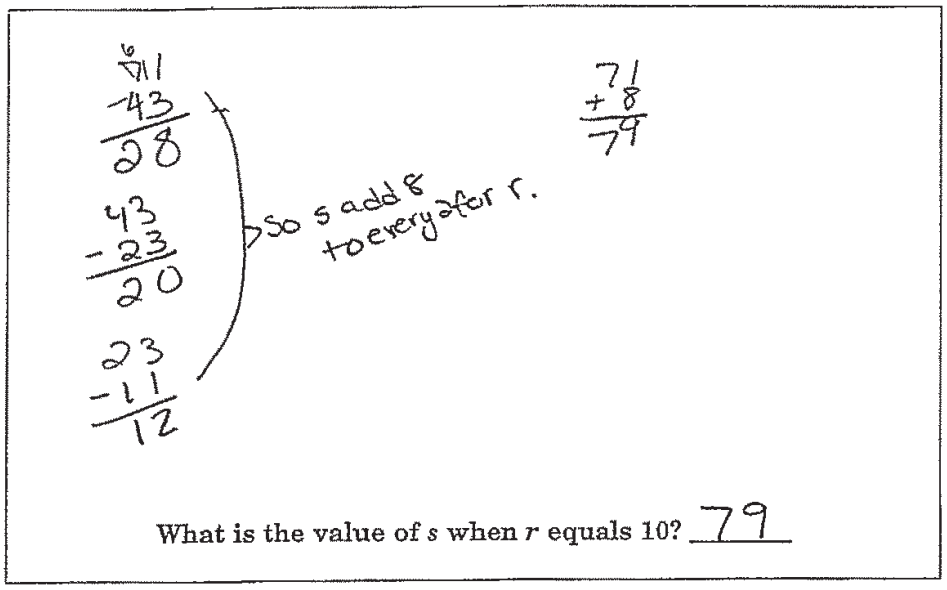
The student shows little or no understanding of how to determine and extend a pattern by giving inappropriate work and not indicating a value for s. This response earns zero points.

8. Study the pattern shown in the table.

What is the value of s when r equals 10?

r	0	2	4	6	8	10
s	7	11	23	43	71	79

Show your work.



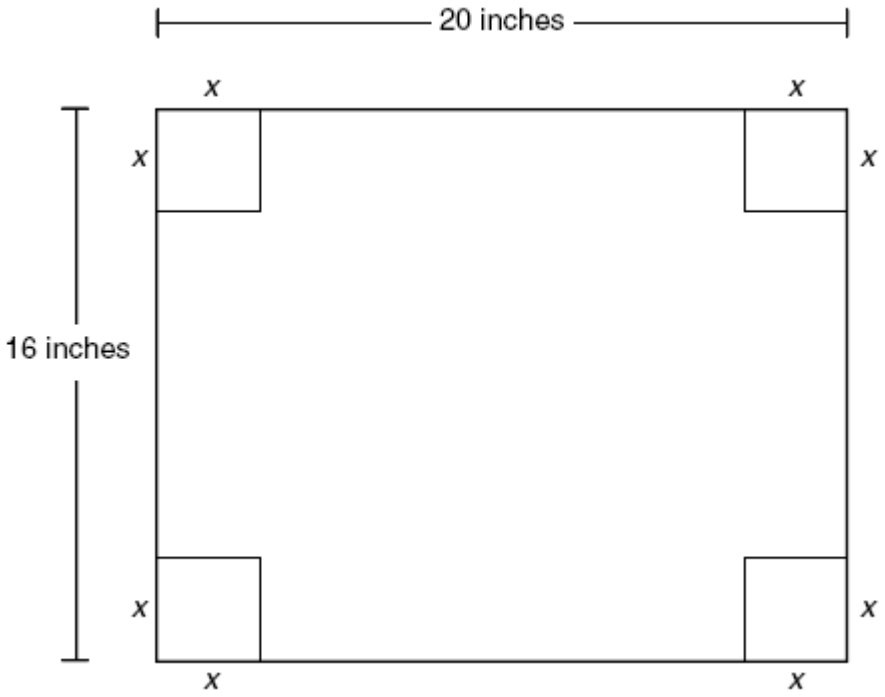
Score:

0

Annotation:

The student shows little or no understanding of how to determine and extend a pattern by incorrectly indicating that s equals 79 and giving inappropriate supporting work. This response earns zero points.

9 A company is making shoe boxes from cardboard. The cardboard is 20 inches in length and 16 inches in width. The company is going to cut square pieces off each corner as shown in the diagram below and fold the sides up.



What would be the formula for the **volume** of the box in terms of x?

○ A. $V = 4x^3 - 72x^2 + 320x$

○ B. $V = x^3 - 36x^2 + 320x$

○ C. $V = 4x^2 - 72x + 320$

○ D. $V = 320x$

Key: A

18 The parents' library committee printed 350 books of 24 raffle tickets. After all the tickets are sold they plan to draw 30 winning tickets. Phil bought 5 tickets. Which of these is closest to the probability that he will win?

○ A. $\frac{1}{6}$

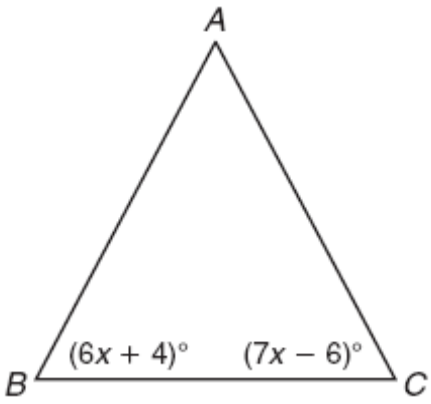
○ B. $\frac{1}{56}$

○ C. $\frac{1}{70}$

○ D. $\frac{1}{280}$

Key: B

20 In the isosceles triangle shown, AB = AC.



What is the value of *x*?

Support your answer using words, numbers, and/or diagrams.

What is the value of *x*?_____

Scoring Rubric

High School Mathematics WASL Practice Test Item 20	
Strand: Making Connections	
MC01	Learning Target: (Connections within Mathematics) Use concepts and procedures from multiple mathematics content strands in a given problem or situation; relate and use different mathematical models and representations of the same situation. (5.1.1, 5.1.2)

A **2-point response**: The student applies conceptual and procedural understanding between the geometric sense and algebraic sense content strands by relating the equal sides of the triangle to their corresponding equal angles and writing and solving an equation or showing another valid method to find the value of x, which is 10.

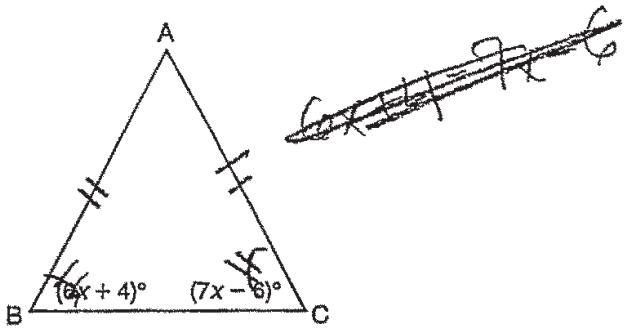
Example:
$6x + 4 = 7x - 6$
$6x + 10 = 7x$
$10 = x$

Allow for one notation error.

A **1-point response**: The student does <u>one</u> of the following:
- shows algebraic work but never writes an equation, and the solution is correct
- writes a correct or mostly correct equation, but the solution is incorrect or missing
- implies a correct equation, but the solution is incorrect
- gives a correct answer with no work or incorrect work shown

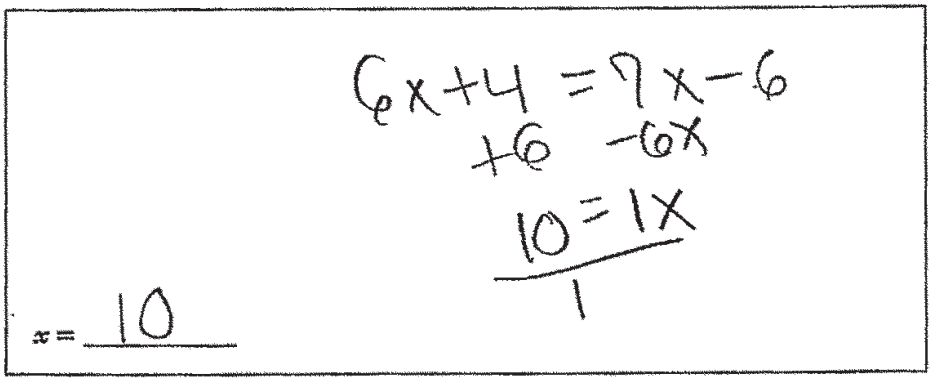
A **0-point response**: The student shows very little or no conceptual or procedural understanding between the geometric sense and algebraic sense content strands.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.



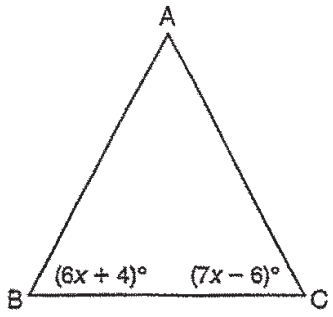
Score:

2

Annotation:

The student makes connections between geometric sense and algebraic sense by relating the equal sides of the triangle to their corresponding equal angles and writing and solving an equation to find the value of x, which is 10. This response earns two points.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$6x + 4 = 7x - 6$
$+6 \quad +6$
$6x + 10 = 7x$
$-6x \quad -6x$
$10 = x$

$x = 10$

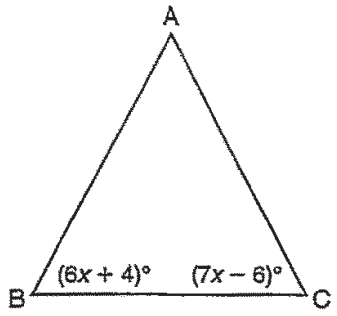
Score:

2

Annotation:

The student makes connections between geometric sense and algebraic sense by relating the equal sides of the triangle to their corresponding equal angles and writing and solving an equation to find the value of x, which is 10. This response earns two points.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$6x + 4 = 7x - 6$

$4 = x - 6$

$x = 10$

$x =$ 10

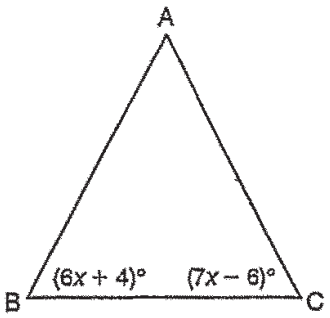
Score:

2

Annotation:

The student makes connections between geometric sense and algebraic sense by relating the equal sides of the triangle to their corresponding equal angles and writing and solving an equation to find the value of x, which is 10. This response earns two points.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$(6x+4)\ (7x-6)$
$-6x \qquad -6x$
$+4 \quad 1x-6$
$+6 \qquad +6$
$10 = 1x$
$\frac{10}{1x} = \frac{1x}{1x}$

$x = 10$

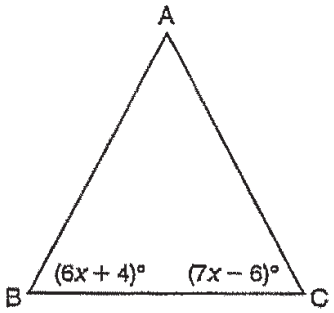
Score:

2

Annotation:

The student makes connections between geometric sense and algebraic sense by showing algebraic work, in an implied equation: "*10/1 x = 1x/1x,*" and giving a correct solution. This response earns two points.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$x = 10$

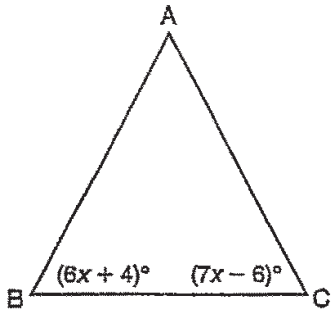
Score:

1

Annotation:

The student makes partial connections between geometric sense and algebraic sense by giving a correct value of x with no work shown. This response earns one point.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$(6x+4)(7x-6)$

$-6x-4=-7x+6$

$+7x$

$13x+10$

$y=\frac{15}{1}$ $x=5$

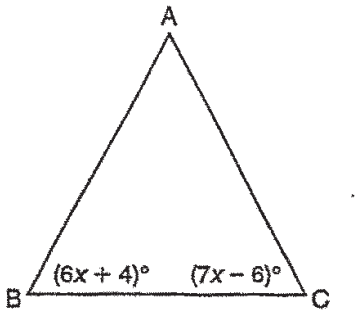
$x=$ 5

Score:
1

Annotation:

The student makes partial connections between geometric sense and algebraic sense by writing a correct equation, but giving an incorrect solution. This response earns one point.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$(6x+4)^\circ$ $(7x-6)^\circ$

10 1

$X = 11^\circ$

$x =$ _____

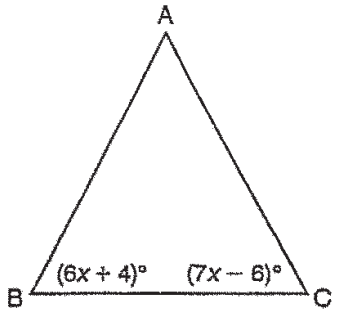
Score:

0

Annotation:

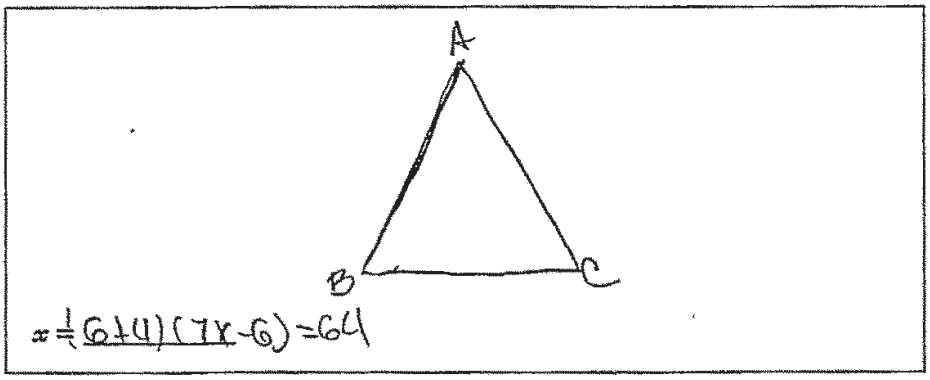
The student makes little or no connection between geometric sense and algebraic sense by writing an expression rather than an equation and giving an incorrect solution. This response earns zero points.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.



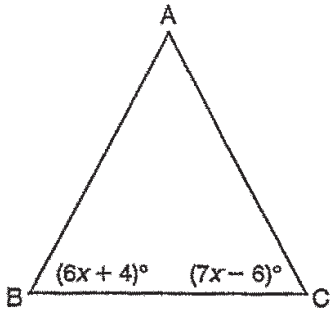
Score:

0

Annotation:

The student makes little or no connection between geometric sense and algebraic sense by writing an incorrect equation and giving an incorrect solution. This response earns zero points.

20. In the isosceles triangle shown, AB = AC.



What is the value of x?

Show your work.

$120 = 6x + 4 + 7x - 6$

$120 = 13x - 2$

$+2 \quad +2$

$\frac{122}{13} = \frac{13x}{13}$ $x =$

$x = 9.38$

Score:

0

Annotation:

The student makes little or no connection between geometric sense and algebraic sense by writing an incorrect equation and giving an incorrect value for x. This response earns zero points.

23 In parallelogram ***PQRS*** the measures of angle ***P*** and angle ***R*** are each 146°.

What is the measure of angle ***Q***?

- ○ **A.** 146°
- ○ **B.** 112°
- ○ **C.** 68°
- ○ **D.** 34°

Key: D

24 Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.

The total length of the new fence will be _____ ft.

The area of the new garden will be _____ sq. ft.

Scoring Rubric

High School Mathematics WASL Practice Test Item 24
Strand: Measurement
ME01 Learning Target: (Attributes and Dimensions) Demonstrate understanding of how a change in one linear dimension affects surface area and volume or how changes in two linear dimensions affect perimeter, area, and volume (1.2.1)

A **2-point response**: The student shows an understanding of how changes in dimensions can impact other measurable attributes by doing the following:

- indicates 160 ft for length of the new fences
- shows work and/or explanation supporting the new fence length
- indicates 1600 sq. ft for area of the new garden
- shows work and/or explanation supporting the new area.

Example:

Old Garden	New Garden
80 4 = 20 ft per side	Area = 400 4 = 1,600 sq. ft
Area = 20 20 = 400 sq. ft	Side = = 40 ft
	Perimeter = 40 4 = 160 ft

Note: Allow one computation error as long as conceptual understanding is clear.

A **1-point response**: The student does <u>two</u> or <u>three</u> of the following:

- indicates 160 ft for length of the new fences
- shows work and/or explanation supporting the new fence length
- indicates 1600 sq. ft for area of new garden
- shows work and/or explanation supporting the new area.

A **0-point response**: The student shows very little or no understanding of how changes in dimensions can impact other measurable attributes.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.

$80 \div 4 = 20^2 = 400 ft^2$

$400 \times 4 = 1600$

$\sqrt{1600} = 40$

$40 \times 4 = 160$

The old fence is 80ft and around a square garden, this means all sides are the same. If you divide 80 by 4 you will get the length of one side, or 20ft. $20 \times 20 (20^2)$ will give you the total area of the original garden, $400 ft^2$. The new garden will have an area 4 times that of the original, or $400 \cdot 4$. Therefor, the new garden will have an area of $1600 ft^2$. Since the new garden is also square you can take the square root of the total area to find the length of each side, $\sqrt{1600}$ or 40. Multiply the length of each side by the number of side to find the length of the new fence. $(40 \times 4 = 160)$

The total <u>length</u> of the new fence will be 160 ft.

The <u>area</u> of the new garden will be 1600 sq ft.

Score:
2

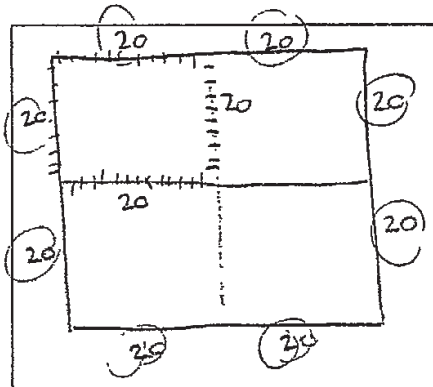
Annotation:

The student shows understanding of how changes in dimensions affect area and perimeter by showing accurate computations of the fence length and garden area. An explanation and calculations support the answers given. This response earns two points.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.



= 160 ft

First, I found out the length of each side by dividing 80 by 4. Then I drew 3 other boxes that were 20 feet on each side also. Next, I added each side of the new sides together which got me 40 feet on each side now I multiplied by 4 because there are 4 sides and to get the area I multiplied l x w and that got me 1600. sq ft.

The total length of the new fence will be 160 ft.

The area of the new garden will be 1600 sq ft.

Score:

2

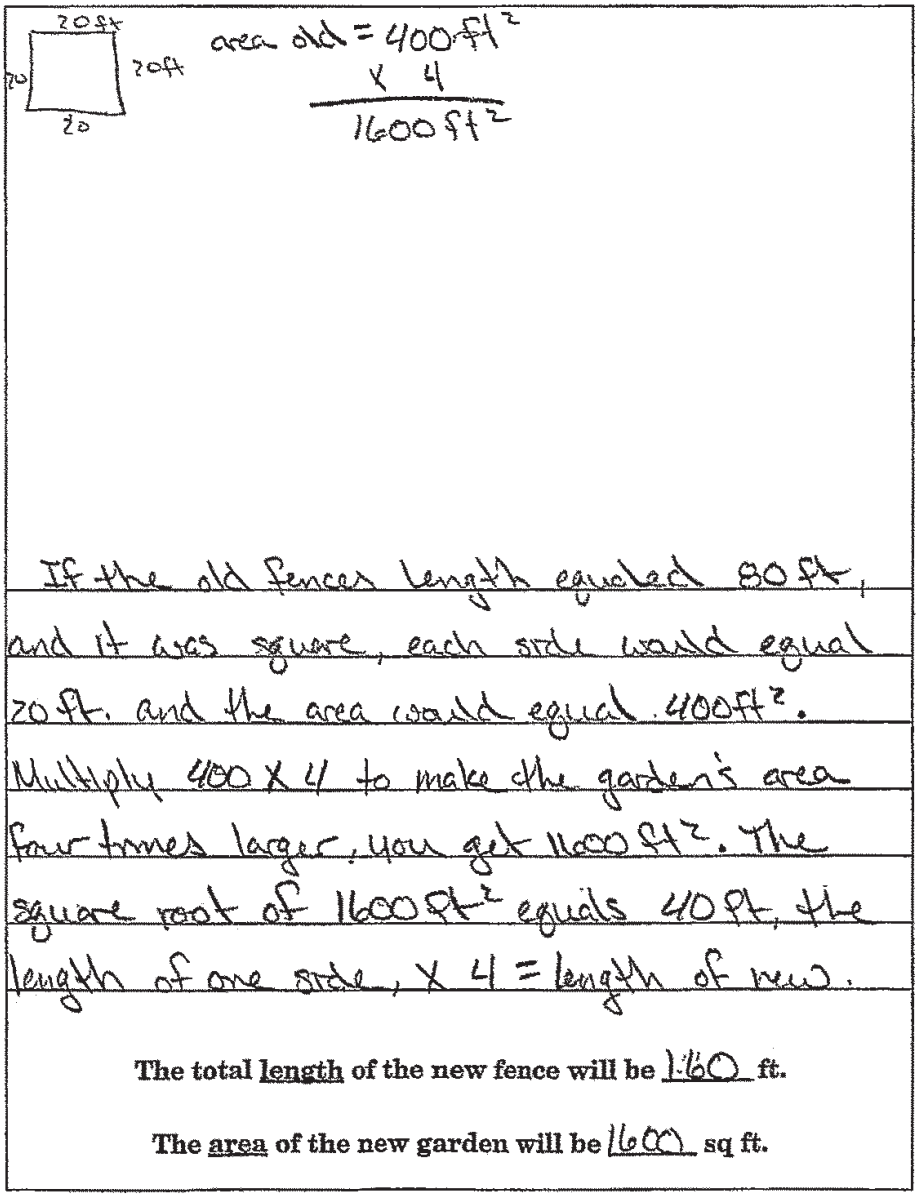
Annotation:

The student shows understanding of how changes in dimensions affect area and perimeter by showing accurate computations of the fence length and garden area. An explanation and calculations support the answers given. This response earns two points.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.



Score:

2

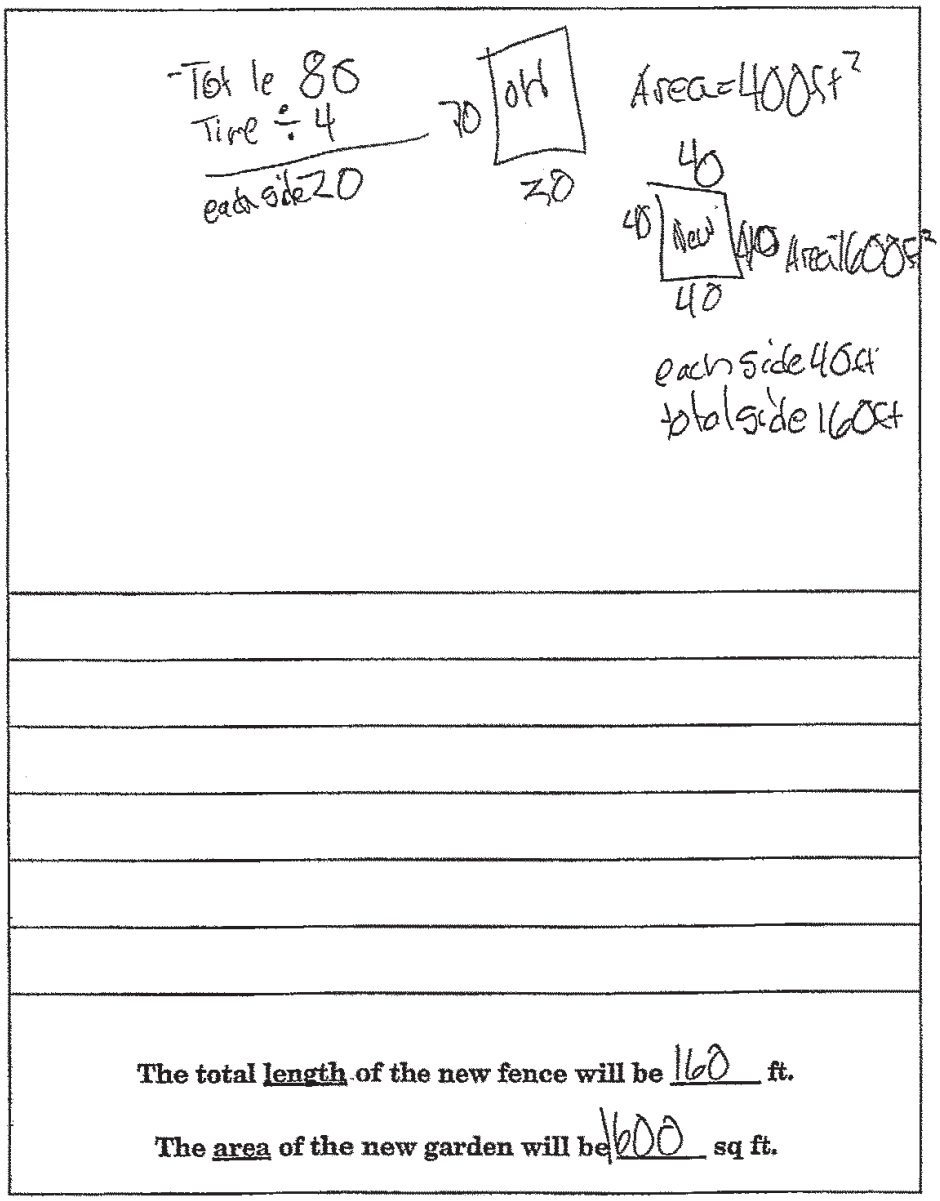
Annotation:

The student shows understanding of how changes in dimensions affect area and perimeter by showing accurate computations of the fence length and garden area. An explanation and calculations support the answers given. This response earns two points.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.



Score:

2

Annotation:

The student shows understanding of how changes in dimensions affect area and perimeter by showing accurate computations of the fence length and garden area. Calculations support the answers given. This response earns two points.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.

The total length of the new fence will be 160 ft.

The area of the new garden will be 1600 sq ft.

Score:

1

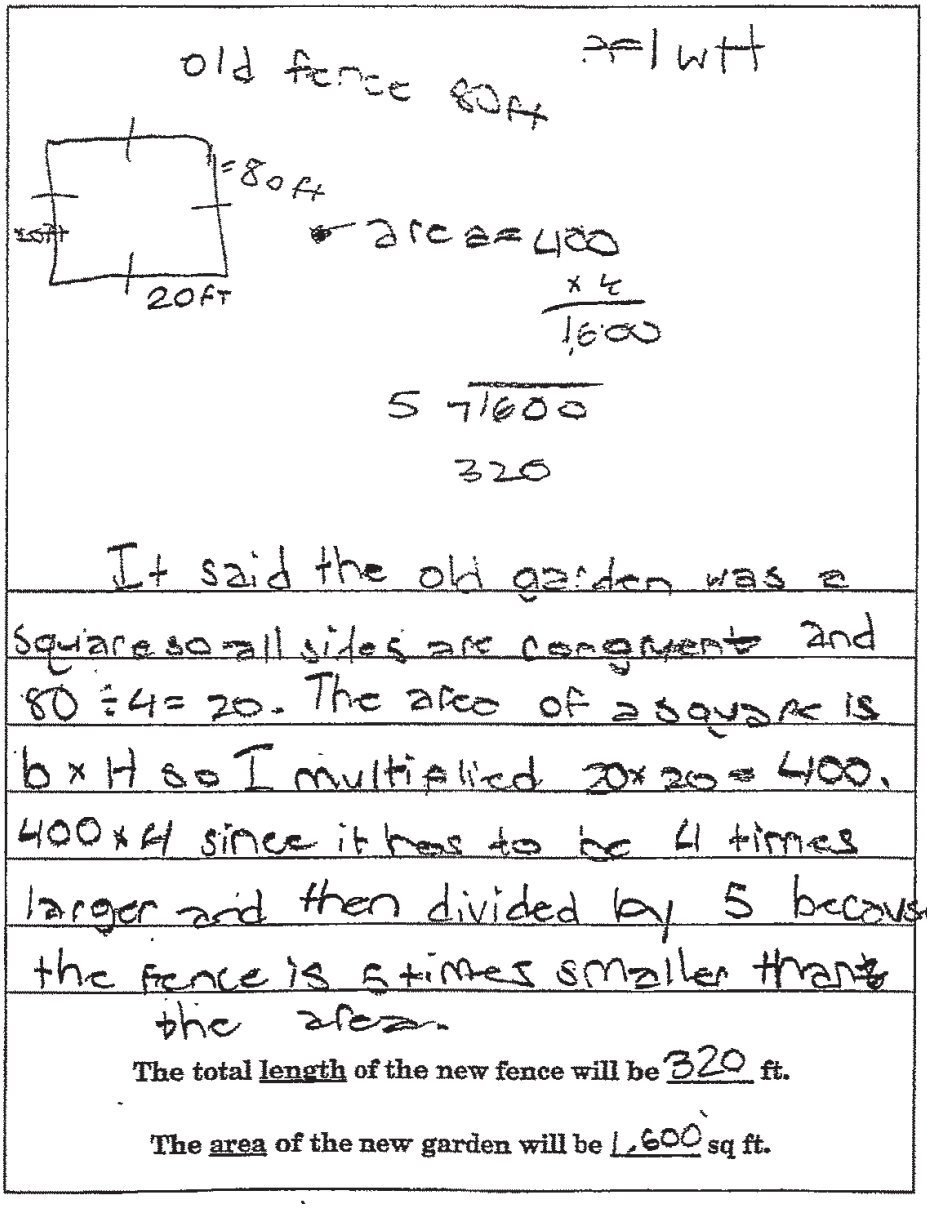
Annotation:

The student shows partial understanding of how changes in dimensions affect area and perimeter by showing the correct fence length and garden area. No explanation or calculations support the answers given. This response earns one point.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.



Score:
1

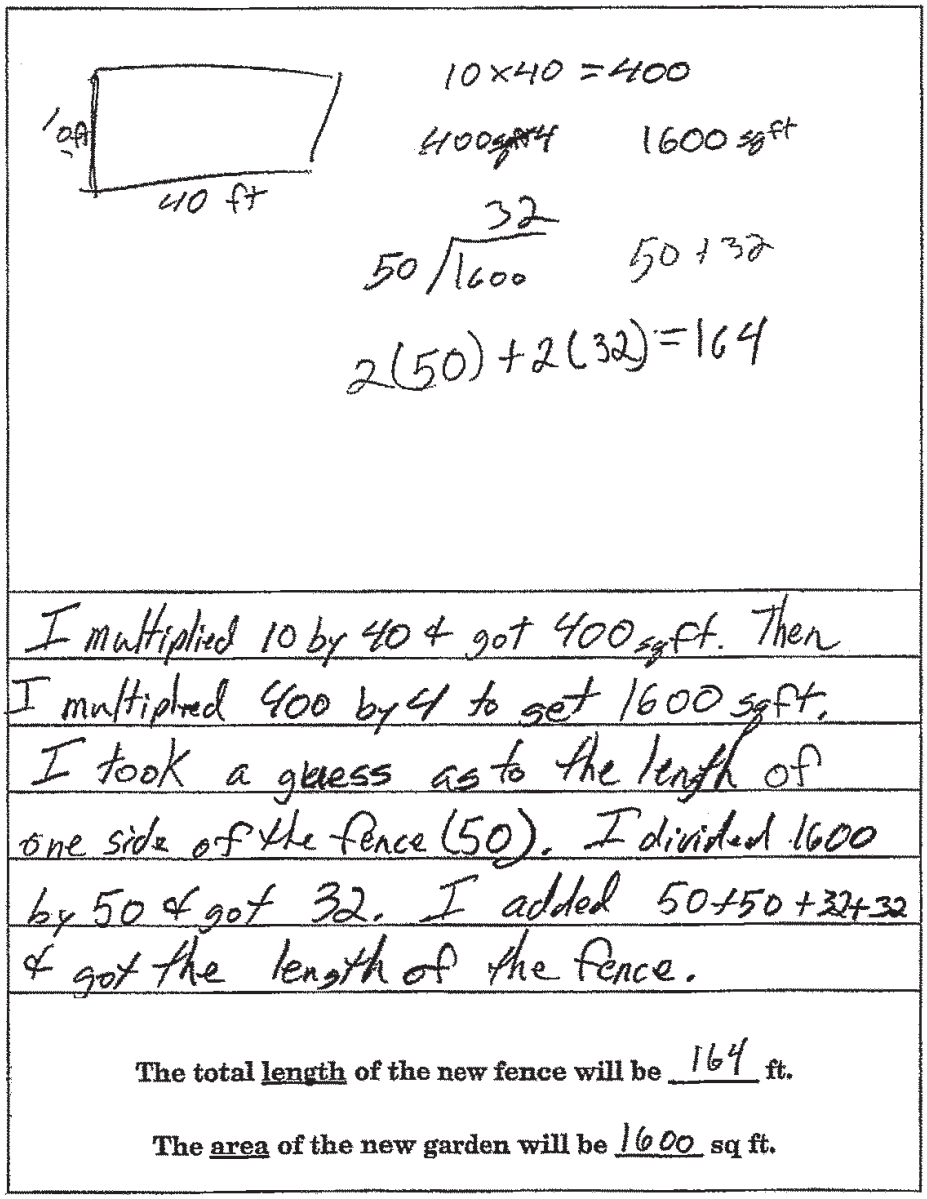
Annotation:

The student shows partial understanding of how changes in dimensions affect area and perimeter by showing computations of the garden area with a supporting explanation and calculations. The fence length is inaccurately calculated. This response earns one point.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.



Score:
1

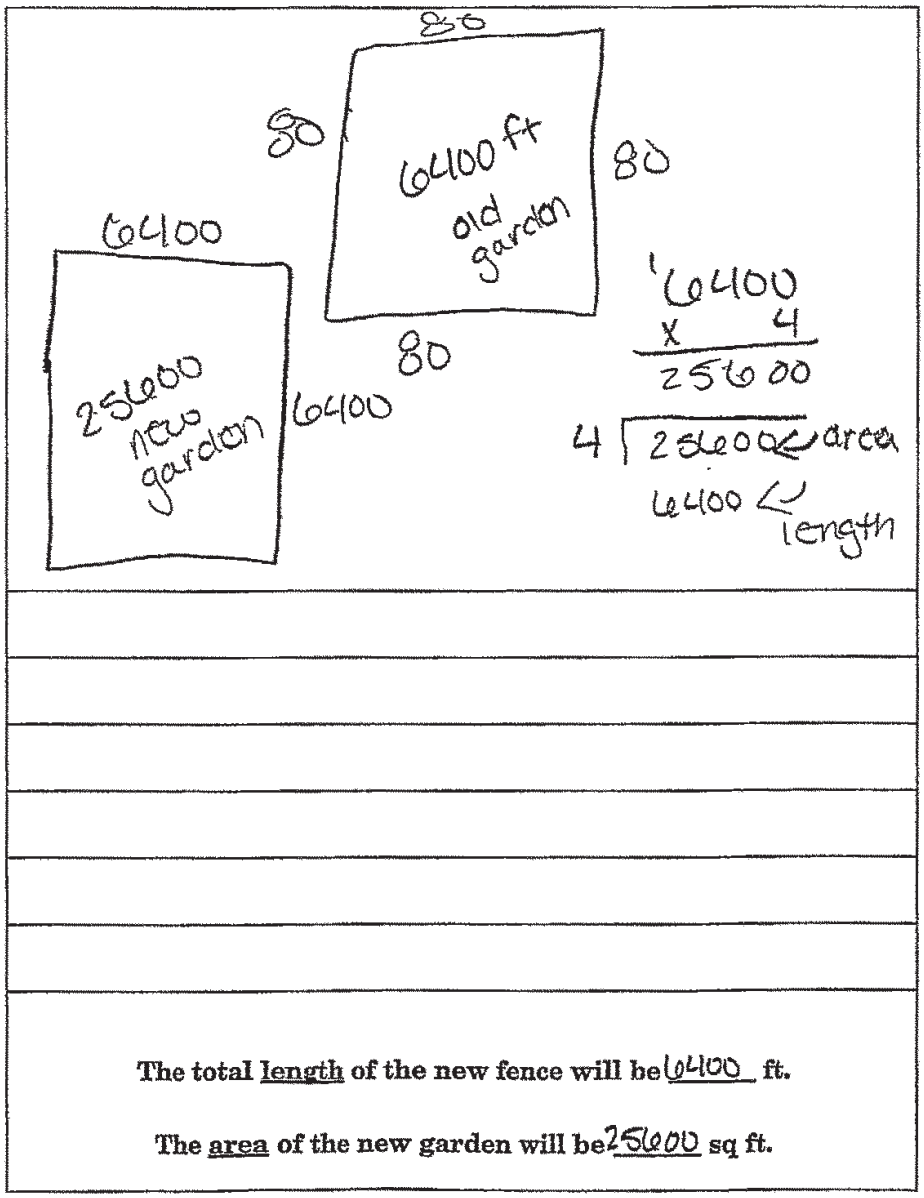
Annotation:

The student shows partial understanding of how changes in dimensions affect area and perimeter by showing computations of the garden area with a supporting explanation. The fence length was computed for a rectangle rather than a square. This response earns one point.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.



The total length of the new fence will be 64100 ft.

The area of the new garden will be 25600 sq ft.

Score:
0

Annotation:

The student shows little or no understanding of how changes in dimensions affect area and perimeter. The dimensions for the old garden were incorrect leading to inaccurate computations for the new garden. The correct strategy for finding the new area was used but an inaccurate answer resulted. This response earns zero points.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.

The total length of the new fence will be 320 ft.

The area of the new garden will be 320 sq ft.

Score:

0

Annotation:

The student shows little or no understanding of how changes in dimensions affect area and perimeter. The response has two incorrect answers with no supporting work. This response earns zero points.

24. Mr. Lansing has a square garden that is completely surrounded by an old, rickety fence. He plans to tear down the old fence and make his new square garden 4 times the area of his old garden. If the old fence has a total length of 80 ft, how long will the new fence be?

Determine the total length of the new fence and the area of the new garden.

Show your work using words, numbers and/or diagrams.

Score:

0

Annotation:

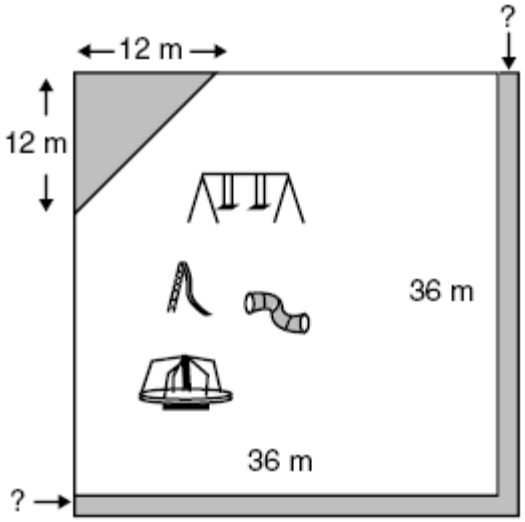
The student shows little or no understanding of how changes in dimensions affect area and perimeter. The dimensions of the "old fence" are given but with no additional work or answers given. This response earns zero points.

25 Which term is a factor of $3a^2 + 12a$?

- ○ **A.** $3a$
- ○ **B.** $4a$
- ○ **C.** $3a^2$
- ○ **D.** $4a^2$

Key: A

34 The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers, and/or diagrams.

Approximate width of the strip is _____

Scoring Rubric

High School Mathematics Practice Test Item 34	
Strand: Measurement	
ME03	Learning Target: (Procedures) Use formulas, including the Pythagorean Theorem, to determine measurements of triangles, prisms, or cylinders (1.2.5)

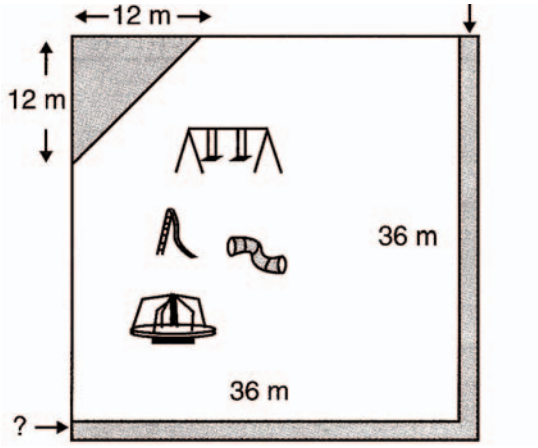
A **2-point response**: The student demonstrates an understanding of measurement by showing how to compute the area of a triangle (72 square meters) and find the width (approximately 1 meter) of two rectangles that are 36 meters long and have an area approximately equal to the area of the triangle.

A **1-point response**: The student does one of the following:

- Shows the computation of the area of the triangle (72 square meters)
- Finds the approximate dimension of the width of the rectangle, which is 1 meter
- Uses the area of a square rather than a triangle and arrives at an incorrect width of 2 meters.

A **0-point response**: The student shows no understanding of how to compute the area of a triangle or how to find the width of the rectangular piece of land with a given length and area.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

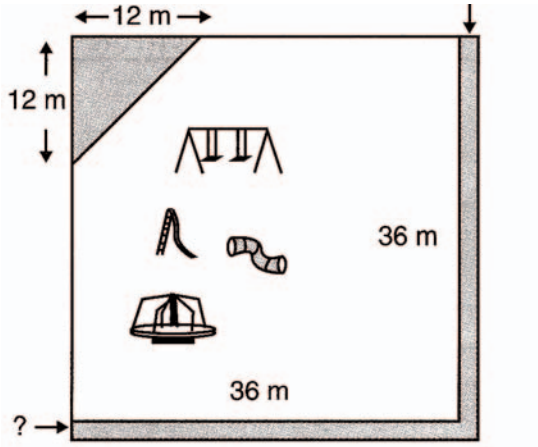
12 x 12 = 144 ÷ 2 = 72
36 x 2 = 72
w of strip ≈ 1 m

The area they're losing is 72 m^2. The approximate length of the strip is 72 m, therefore the width only needs to be 1 m.

Approximate width of the strip is 1 m

Score:	**Annotation:**
2	The student shows understanding of determining the area of a triangle and finding the width of two rectangles whose total area is approximately the same as the triangle. The run-on equation cannot be used as support but the student recovers in the written work. The response shows a width of 1 m. This response earns two points.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

$\frac{12 \times 12}{2} = 72$

$\frac{72}{2} = \frac{36x}{1}$

$\frac{72}{72} = \frac{72x}{72}$

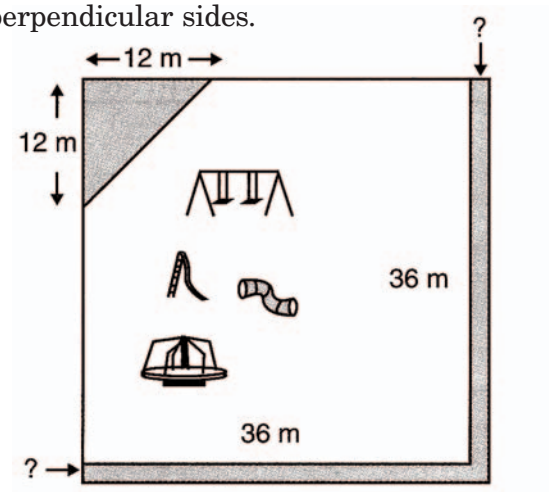
$1 = x$

First you find the area of the triangle to know what the area sides is going to be. Then you devide it by 2 and make it equal to 36 • x, which is one of the added sides. After multiplying and deviding you get 1, but because of that little extra square, it is actually slightly below one

Approximate width of the strip is 1 or .9

Score:	**Annotation:**
2	The student shows understanding of determining the area of a triangle and finding the width of two rectangles whose total area is approximately the same as the triangle. The response shows width of "*1 or .9.*" This response earns two points.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



$2\overline{)144}$ 72

The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

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

$A=72m^2$

$2\overline{)72}$ 36

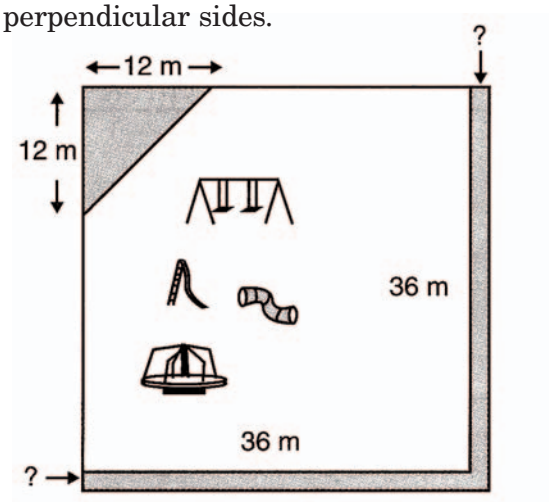
$\frac{6}{12}$

The area of the Missing Triangle is 72, divide by 2 is 36 so the width of the strip is 4

Approximate width of the strip is 4

Score:	**Annotation:**
1	The student shows partial understanding of determining the area of a triangle and finding the width of two rectangles whose total area is approximately the same as the triangle. The response shows an incorrect width of 4. This response earns one point.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

Approximate width of the strip is 1 m

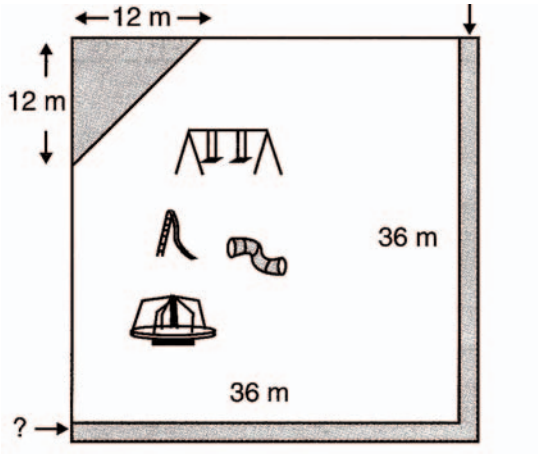
Score:

1

Annotation:

The student shows partial understanding of determining the area of a triangle and finding the width of two rectangles whose total area is approximately the same as the triangle. The response shows a correct width of 1 m but does not provide supporting work. This response earns one point.

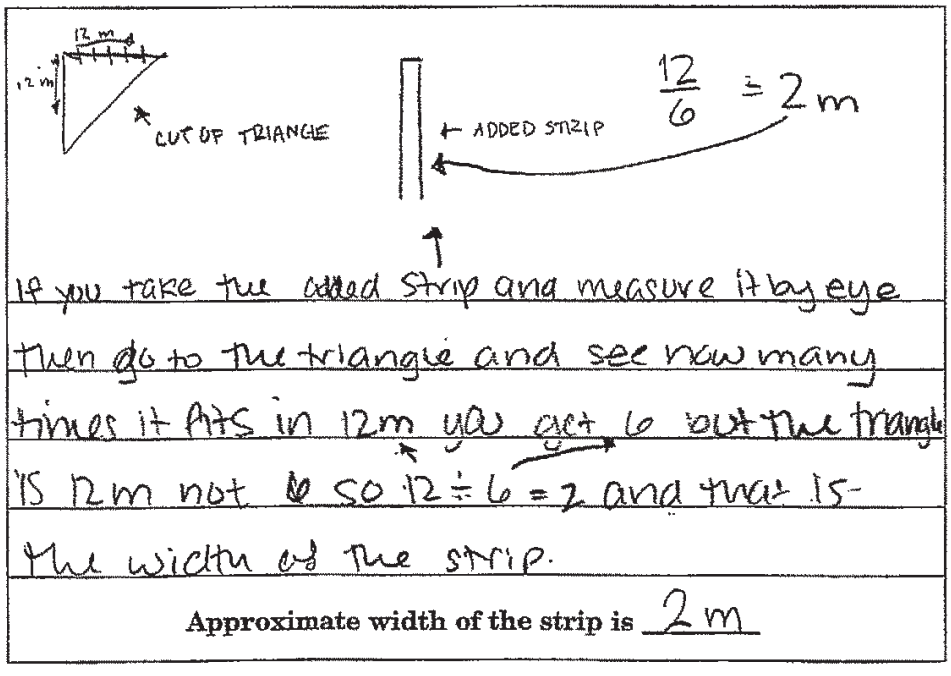
34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers, and/or diagrams.

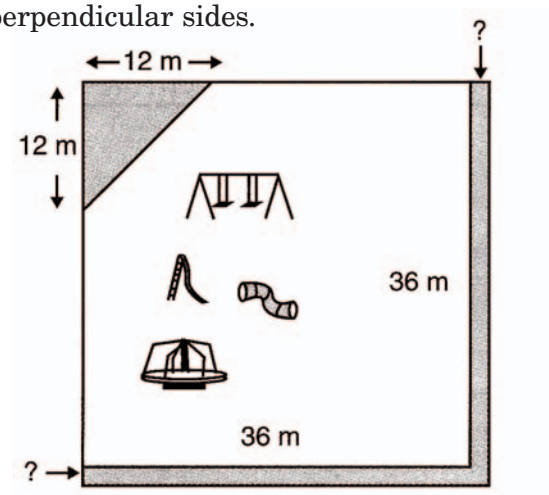


Score:
0

Annotation:

The student shows little or no understanding of determining the area of a triangle and finding the width of two rectangles whose total area approximately is the same as the triangle. The response shows an incorrect width of 2 m and no relevant supporting work. This response earns zero points.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

3
12 | 36

Approximate width of the strip is 3 m

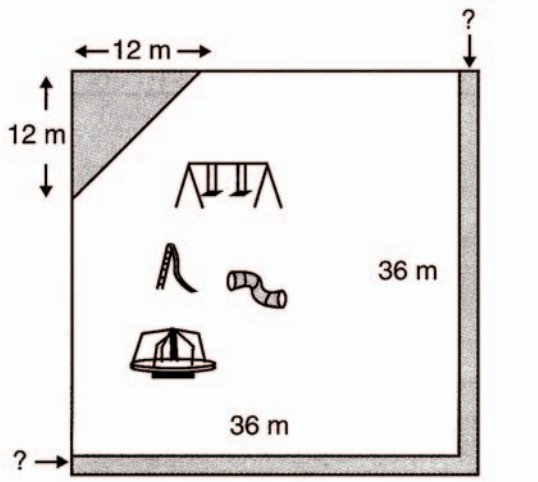
Score:

0

Annotation:

The student shows little or no understanding of determining the area of a triangle and finding the width of two rectangles whose total area approximately is the same as the triangle. The response shows an incorrect width of 3 m and no relevant supporting work. This response earns zero points.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

36
+12
48

36 + 12 =

48 m

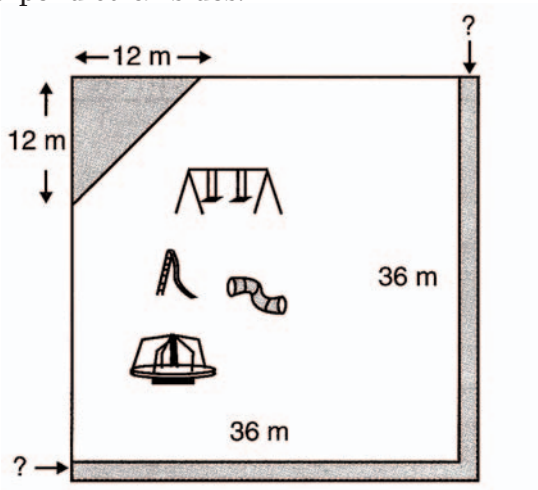
Approximate width of the strip is 12 m

Score:
0

Annotation:

The student shows little or no understanding of determining the area of a triangle and finding the width of two rectangles whose total area approximately is the same as the triangle. The response shows an incorrect width of 3 m and no relevant supporting work. This response earns zero points.

34. The school playground, a 36 m square, is going to lose part of one corner due to construction. The city will take a triangular section that measures 12 m and 12 m on the perpendicular sides.



The city has agreed to allow the school to expand the playground on the remaining two sides to replace the lost area.

Find the approximate width of the strip that will be added to each of the two sides.

Show your work using words, numbers and/or diagrams.

36 by 36 taking off 12 by 12 will leave them with 24 by 24 you can add 6 by 6 to make it 30 by 30

Approximate width of the strip is 6 m

Score:
0

Annotation:

The student shows little or no understanding of determining the area of a triangle and finding the width of two rectangles whose total area approximately is the same as the triangle. The response shows an incorrect width of 3 m and no relevant supporting work. This response earns zero points.

5 Triangle JKE is an obtuse isosceles triangle with $m\angle E = 10°$ and $KE > JK$.

What is the measure of $\angle J$?

○ **A.** 170°

○ **B.** 160°

○ **C.** 85°

○ **D.** 10°

Item Information

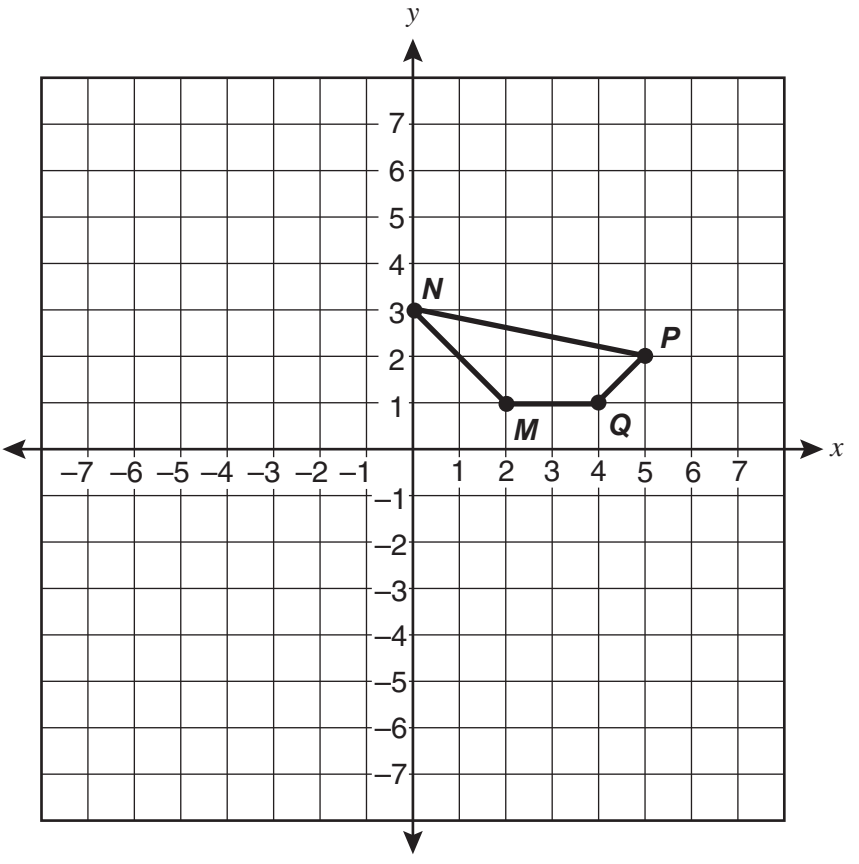
Score Points: 1

Key: B

Tools: X

Strand and Target GS01 (Properties and Relationships): Demonstrate understanding of the characteristics of cylinders, cones, and pyramids and the relationships among 1-dimensional, 2-dimensional, and 3-dimensional figures; draw, describe, and/or compare 1-dimensional, 2-dimensional, and 3-dimensional shapes and figures, including prisms, cylinders, cones, and pyramids; use the Pythagorean Theorem to determine if a triangle is a right triangle (1.3.1, 1.3.2)

6 Dorine drew a quadrilateral on a coordinate grid.



Dorine reflected the quadrilateral over the line $y = -2$ and then translated it left 4 units.

What are the coordinates of the image of point *M*?

○ **A.** (2, –5)

○ **B.** (–2, –5)

○ **C.** (–6, 1)

○ **D.** (–2, 1)

Item Information

Score Points: 1

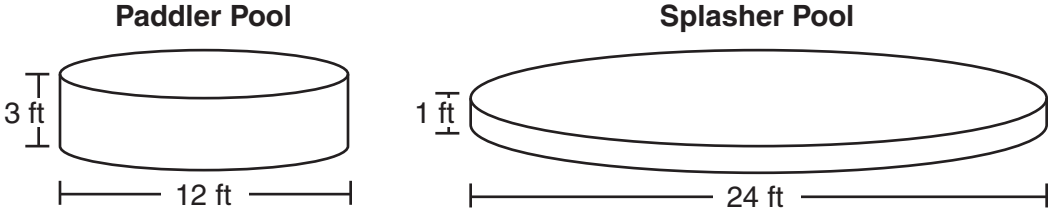
Key: B

Tools: X

Strand and Target GS02 (Locations and Transformations): Use geometric properties to describe or identify the location of points on coordinate grids; use multiple transformations including translations, reflections, and/or rotations to create congruent figures (1.3.3, 1.3.4)

12 Silvia worked in a store that sold cylinder-shaped children's pools. She made a sign relating the volumes of these two pools.

The Splasher Pool holds
__?__ percent of the water
the Paddler Pool holds.



The volume of the Paddler Pool is 108π cubic feet.

The Splasher Pool holds which percent of the water the Paddler Pool holds?

○ **A.** 33%

○ **B.** 75%

○ **C.** 133%

○ **D.** 300%

Item Information

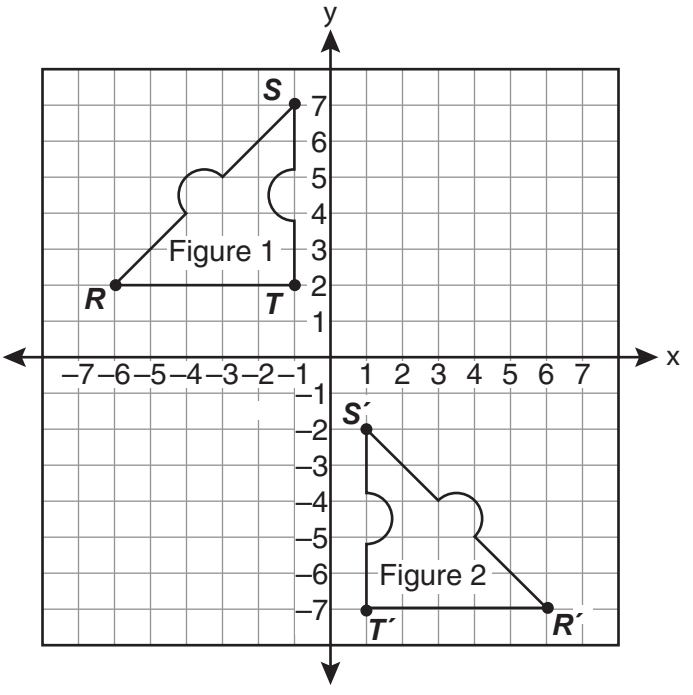
Score Points: 1

Key: C

Tools: X

Strand and Target MC01 (Connections within Mathematics): Use concepts and procedures from multiple mathematics content strands in a given problem or situation; relate and use different mathematical models and representations of the same situation (5.1.1, 5.1.2)

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

Use the words rotation, reflection, and/or translation to describe the two-step transformation.

2007 Mathematics Sample Items

Item Information

Score Points: 2

Tools: X

Strand and Target GS02 (Locations and Transformations): Use geometric properties to describe or identify the location of points on coordinate grids; use multiple transformations including translations, reflections, and/or rotations to create congruent figures (1.3.3, 1.3.4)

Scoring Guide for item number 16

A 2-point response: The student shows understanding of describing the combination of two translations and reflections to transform one figure to another figure on a coordinate grid by doing the following:

- writes to translate down 9, or equivalent
- writes to reflect over the *y*-axis

A 1-point response: The student does one of the following:

- writes or shows to translate (slide) down 9, or equivalent
- writes or shows to reflect (flip) over the *y*-axis
- writes a combination of more than two transformations to transform Figure 1 to Figure 2.

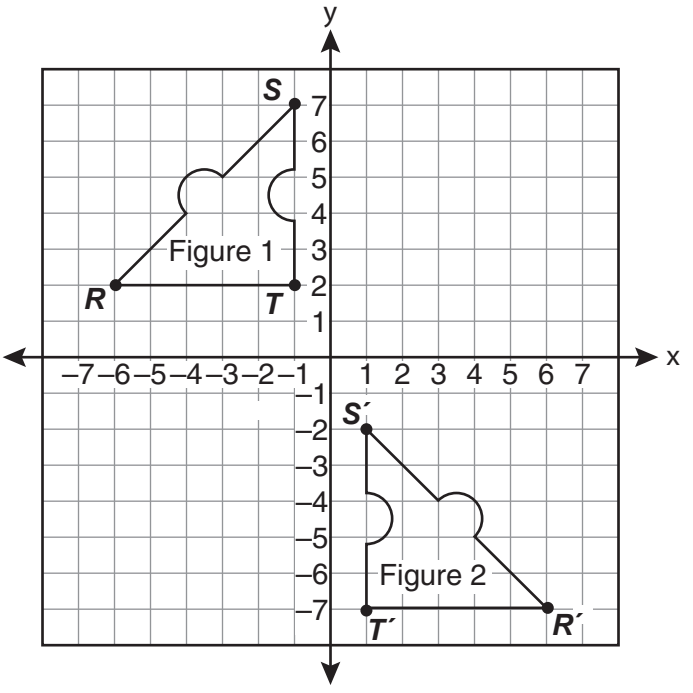
A 0-point response: The student shows very little or no understanding of describing the combination of two translations and reflections to transform one figure to another figure on a coordinate grid.

NOTE: A description of a translation must include the direction and the distance.

NOTE: A description of a reflection must include a line of a reflection.

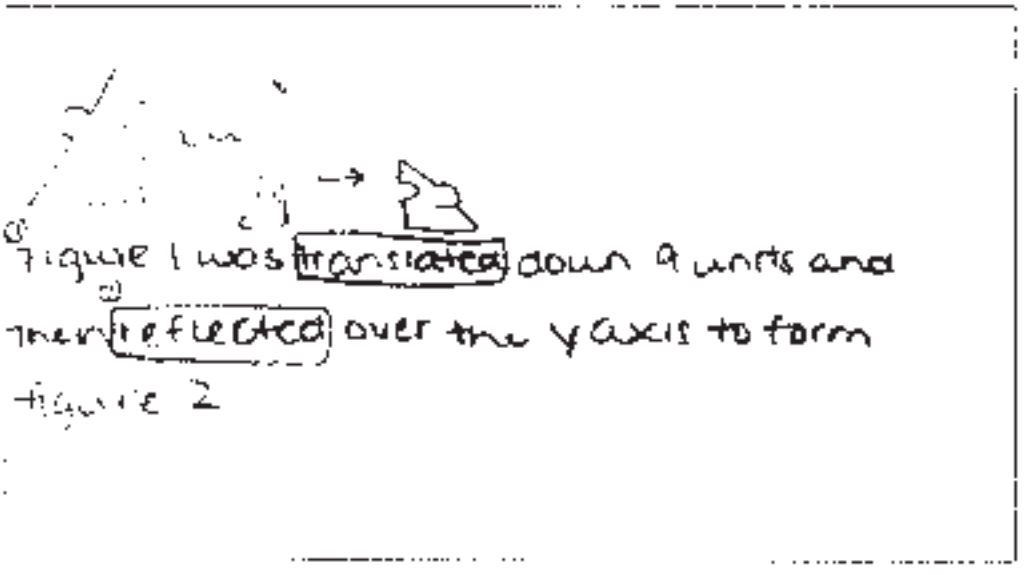
NOTE: A description of a rotation must include the point of rotation and the amount of rotation.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

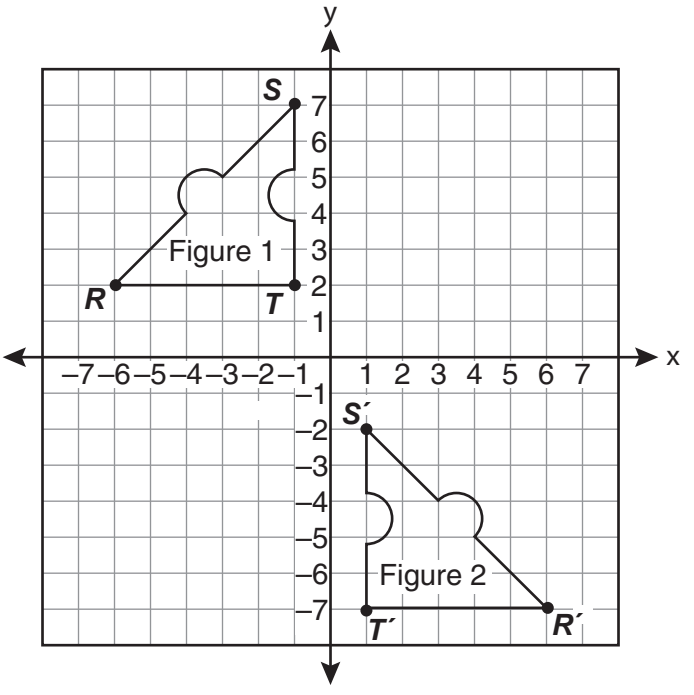
Use the words rotation, reflection, and/or translation to describe the two-step transformation.



Annotation for example 2-point response:

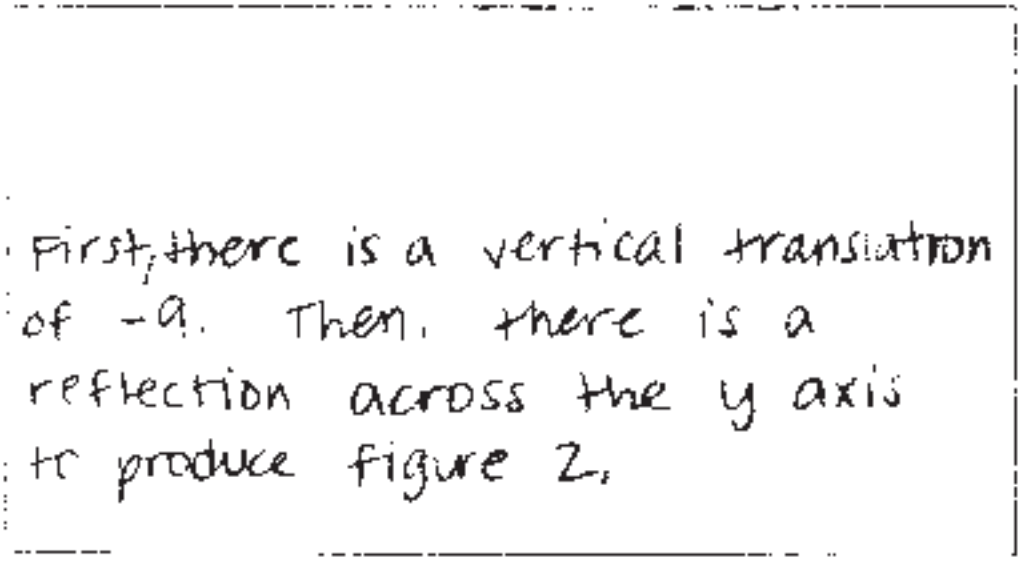
The student shows understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. The student describes a translation "...*down 9 units*..." followed by a reflection "...*over the y axis*..." This response earns two points.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

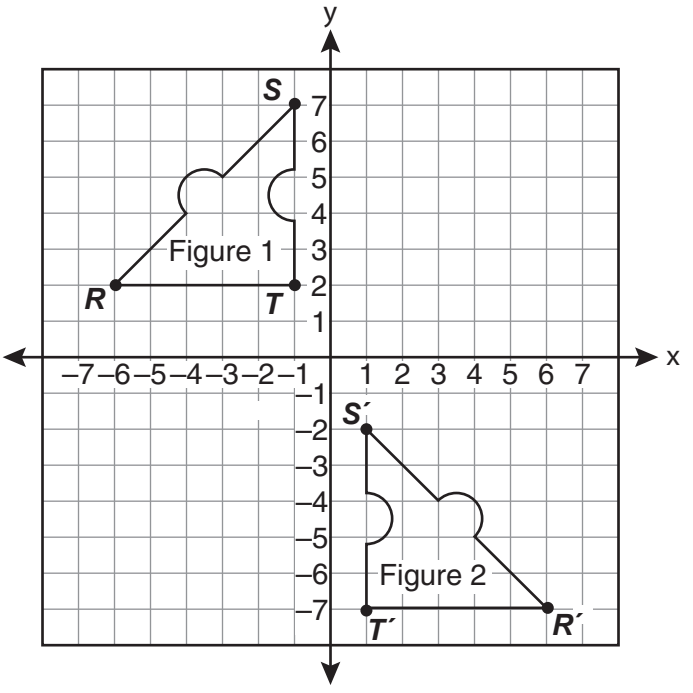
Use the words rotation, reflection, and/or translation to describe the two-step transformation.



Annotation for example 2-point response:

The student shows understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. The student describes a "*...vertical translation of -9,"* followed by a reflection "*...across the y axis...*" This response earns two points.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

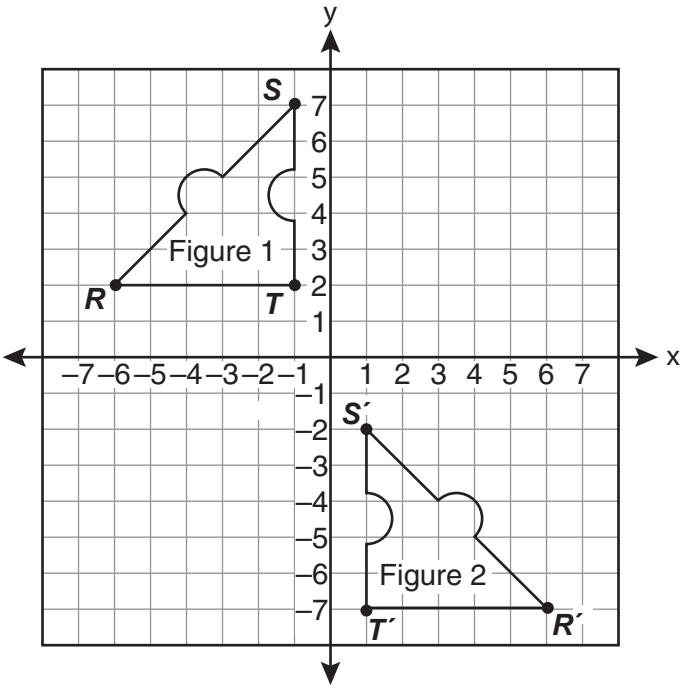
Use the words rotation, reflection, and/or translation to describe the two-step transformation.

1. First translate 9 units down. Then reflect over the y axis.
2. First reflect over y-axis. Then translate 9 units down

Annotation for example 2-point response:

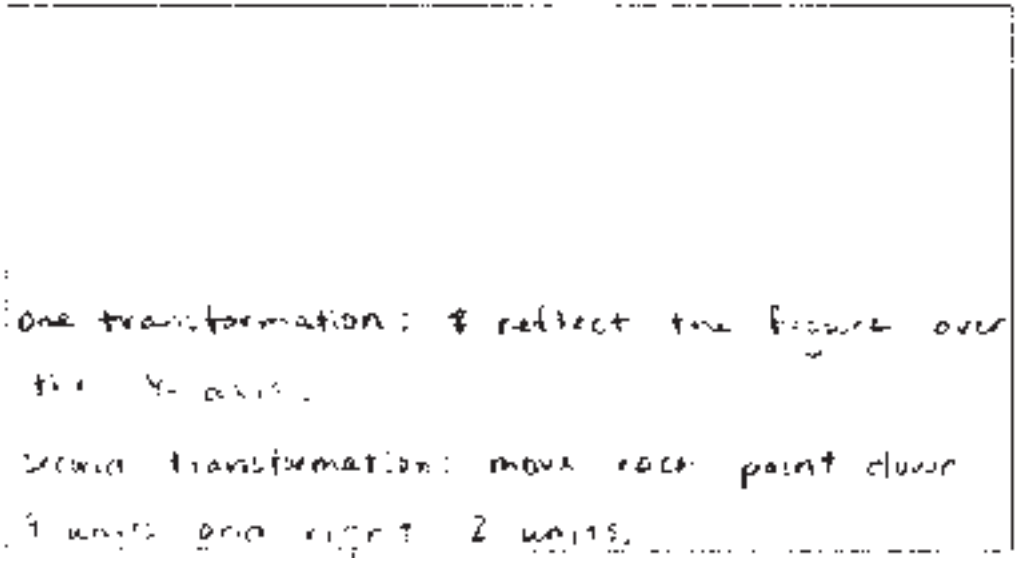
The student shows understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. The student describes two different ways to transform Figure 1 to Figure 2. Fortunately they are both correct. This response earns two points.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

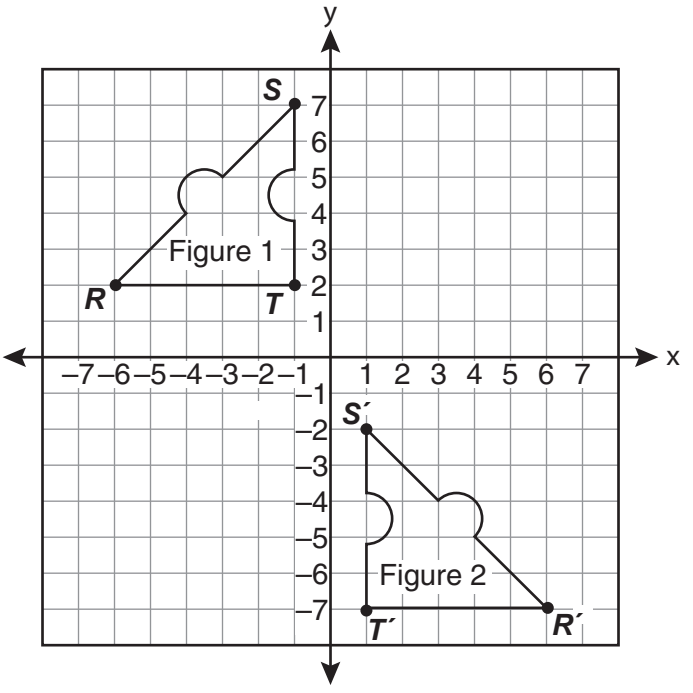
Use the words rotation, reflection, and/or translation to describe the two-step transformation.



Annotation for example 1-point response:

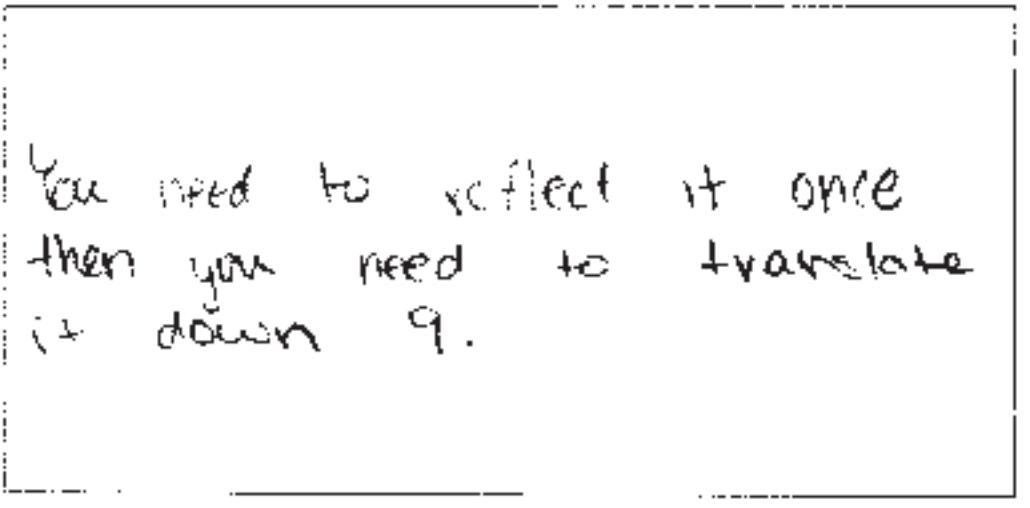
The student shows partial understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. The student describes a reflection "...*over the y-axis,*" followed by an incorrect transformation. The transformation does not result in Figure 2. This response earns one point.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

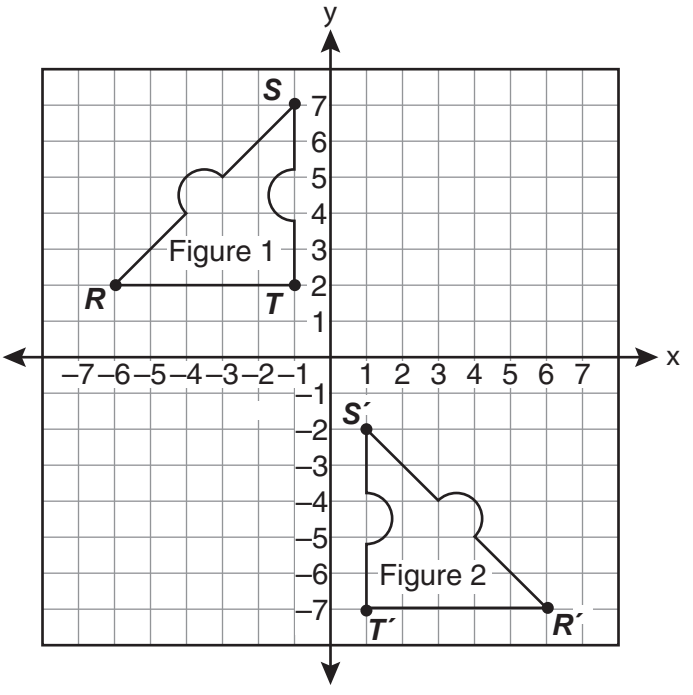
Use the words rotation, reflection, and/or translation to describe the two-step transformation.



Annotation for example 1-point response:

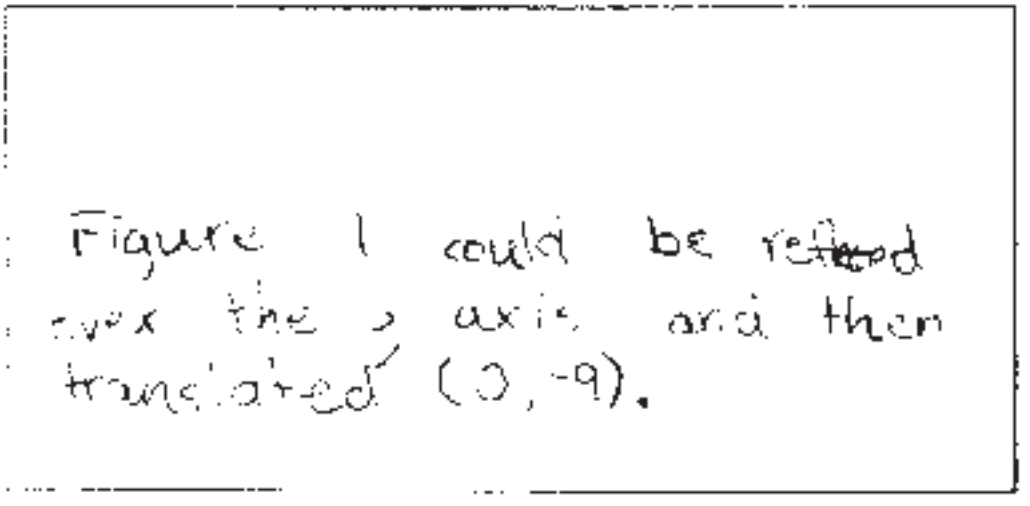
The student shows partial understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. The student describes "...*reflect it once*..." but fails to name the line of reflection. "...*translate it down 9,"* is one of the possible correct transformations. The transformation does not result in Figure 2. This response earns one point.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

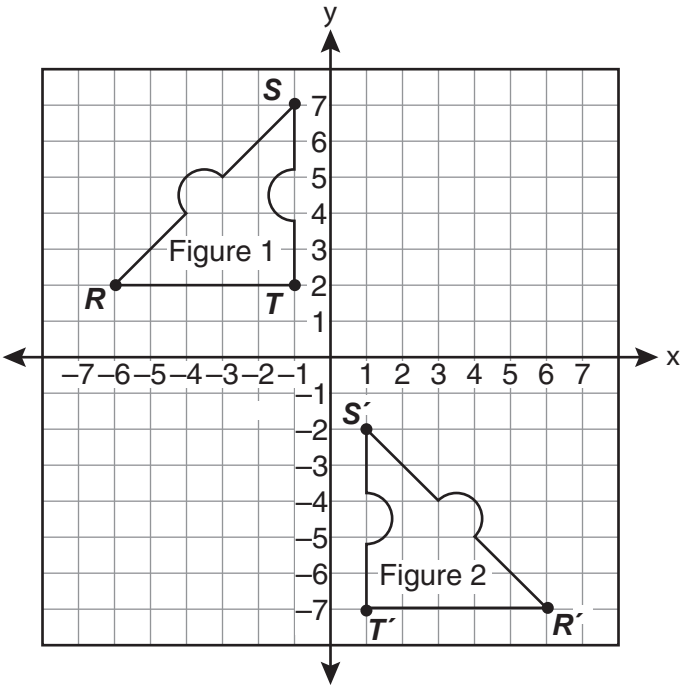
Use the words rotation, reflection, and/or translation to describe the two-step transformation.



Annotation for example 1-point response:

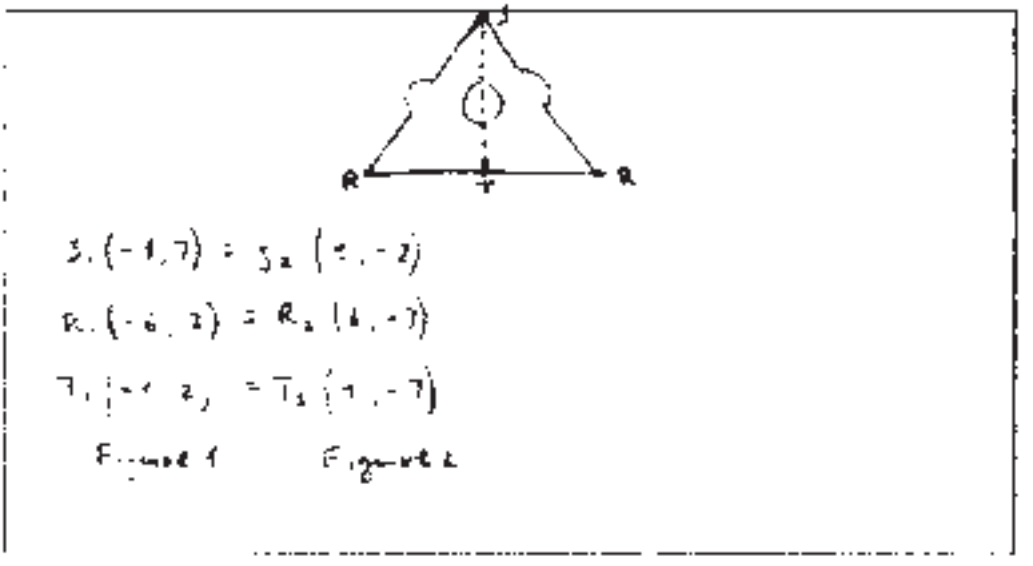
The student shows partial understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. When the student writes *"Figure 1 could be reflected over the y axis and then translated (0,-9),"* it is a description of a correct reflection, but (0,-9) is a point, not a description, of a translation down 9 units. This response earns one point.

16 Livia saw this drawing at a museum:



Name **two** transformations that could be used to move Figure 1 to Figure 2.

Use the words rotation, reflection, and/or translation to describe the two-step transformation.



Annotation for example 0-point response:

The student shows little or no understanding of describing a combination of two translations, reflections, and/or rotations to transform Figure 1 to Figure 2. The student writes the vertices for Figure 1 and Figure 2, but does not describe a transformation. This response earns zero points.