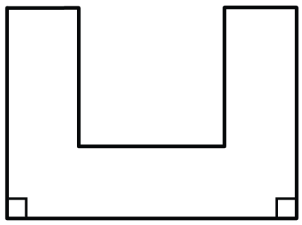
Unit: Geometry
Student Handout 3

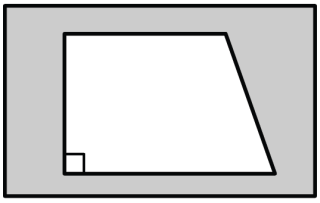
Name _____

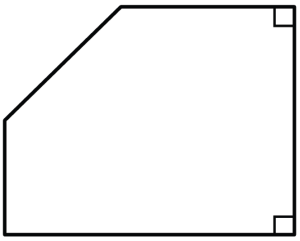
Date _____ Pd _____

AREA OF COMPOSITE FIGURES

In art class, Mrs. Price is discussing how figures can be decomposed into different shapes. She projects the images below on a screen. Discuss and label the different ways you could decompose these figures into familiar shapes.



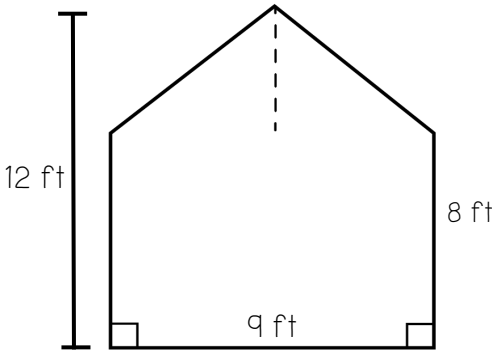




COMPOSITE FIGURES

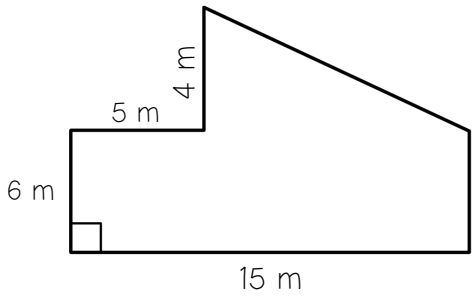
- A _____ figure is made up of two or more shapes.
- We can find the _____ of a composite figure by decomposing the figure into familiar shapes. Then _____ or _____ the area of each shape.

Decompose the figures below. Then, use the graphic organizer to find the area of each shape.



TOTAL AREA: _____

	SHAPE 1	SHAPE 2
NAME		
FORMULA		
PLUG IN VALUES		
AREA		

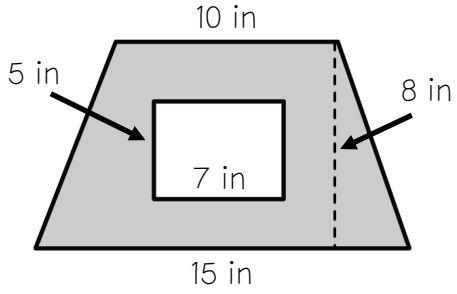


TOTAL AREA: _____

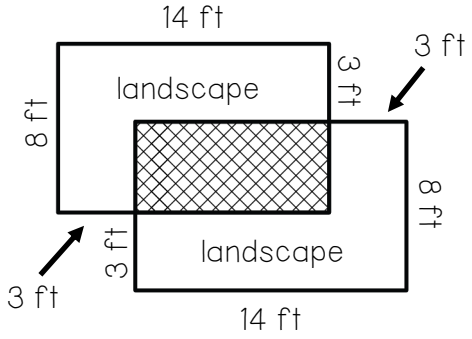
	SHAPE 1	SHAPE 2
NAME		
FORMULA		
PLUG IN VALUES		
AREA		

Use your understanding of composite figures to answer the questions below.

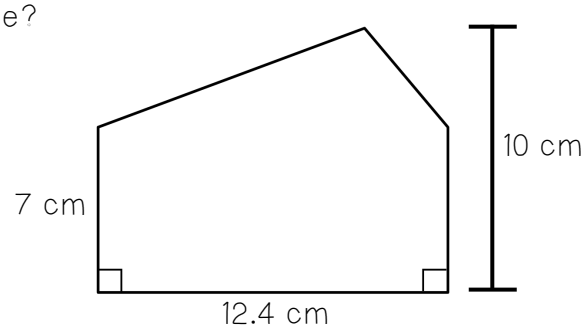
1. A rectangle is inscribed in a trapezoid. Determine the area of the shaded region.



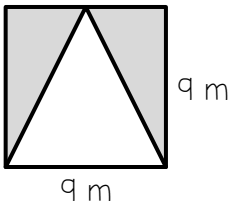
2. A patio is being landscaped with trees and shrubs. How many square feet of landscaping will be around the patio?



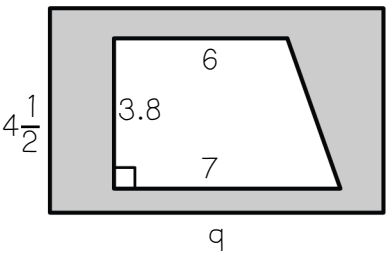
3. A composite figure is created using a rectangle and triangle. What is the area of the figure?



4. Find the area of the shaded region.



5. A trapezoid is inscribed in a rectangle. Amar and Gabby both found the area of the shaded region. Circle the name of student who correctly calculated the area. Explain the other student's mistake.



AMAR

$(9)(4\frac{1}{2}) + (\frac{1}{2})(6+7)(3.8)$

$40.5 + 24.7$

65.2 units^2

GABBY

$(9)(4\frac{1}{2}) - (\frac{1}{2})(6+7)(3.8)$

$40.5 - 24.7$

15.8 units^2

Summarize today's lesson:

Unit: Geometry
Homework 3

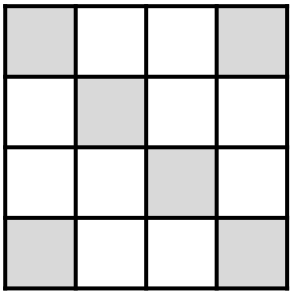
Name _____

Date _____ Pd _____

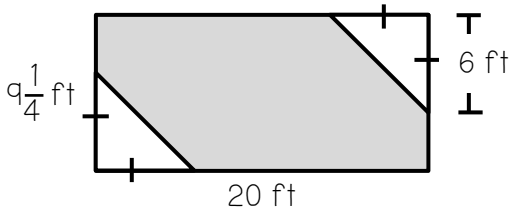
AREA OF COMPOSITE FIGURES

Answer the questions below. Be sure to show your thinking.

1. A 2 ft by 2 ft square is divided into smaller squares and portions are shaded. What is the area of the shaded portion?



2. A garden is sodded in the shaded portion below. How many square feet were covered with sod?



Use the composite figures below to mark each statement as true or false. Justify your choices.

3.

FIGURE A

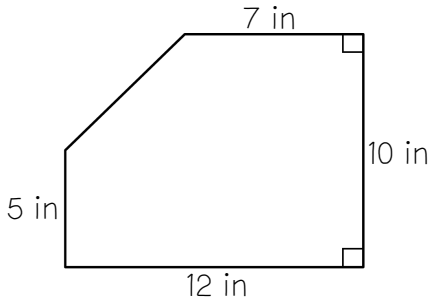
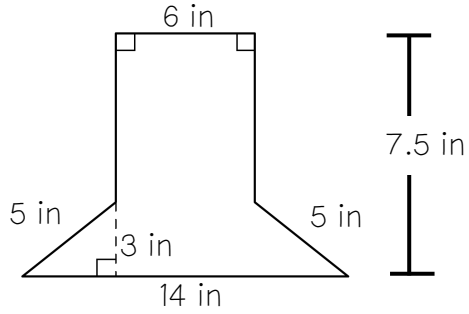


FIGURE B



STATEMENT	T/F?	JUSTIFY
a. The area of figure A can be found by finding the area of a trapezoid.		
b. The area of figure B can be found by decomposing the figure into a rectangle and trapezoid.		
c. Figure B has a total area of 75 in^2.		
d. The area of figure A is 50.5 in^2 more than the area of figure B.		

Unit: Geometry
Student Handout 4

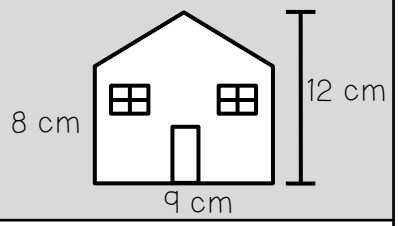
Name _____

Date _____ Pd _____

PROBLEM SOLVING WITH COMPOSITE FIGURES

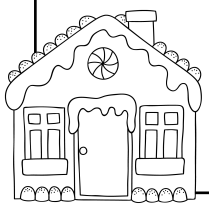
Area can be used to solve real-world problems. Practice solving problems involving composite figures in the space below.

1. Hillary is decorating a gingerbread house and plans to cover the front of the house with icing, not including the windows or door. The windows each measure 2 cm by 2.5 cm and the door measures 2 cm by 3 cm. What is the area of the gingerbread house Hillary will cover with icing?

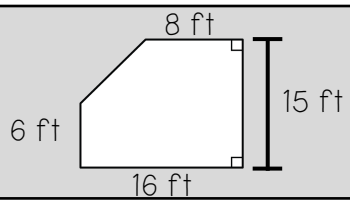


I KNOW:	I NEED TO KNOW:

PLAN AND WORK:	SOLUTION:

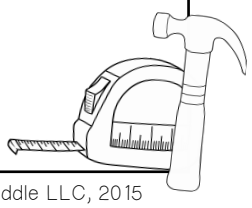


2. Jordan is building a deck in his backyard shown at the right. The wood is priced at $5.30 per square foot. How much will it cost to build the deck?

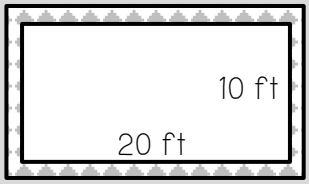


I KNOW:	I NEED TO KNOW:

PLAN AND WORK:	SOLUTION:



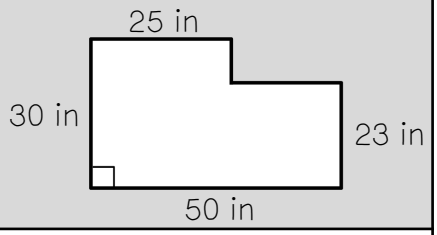
3. Martin is making a stone path border around the pool in his backyard. The pool is in the shape of a rectangle that is 10 feet wide and 20 feet long. He wants to make the border extend 2 feet around each side of the pool. Each stone covers 3 ft^2. How many stones will he need to purchase?



I KNOW:	I NEED TO KNOW:

PLAN AND WORK:	SOLUTION:

4. Brooke is purchasing tile to add a backsplash to her kitchen wall. Each tile covers 25 in^2. If each tile costs $1.75, what is the total amount that Brooke will spend on tile?



I KNOW:	I NEED TO KNOW:

PLAN AND WORK:	SOLUTION:

Unit: Geometry
Homework 4

Name _____

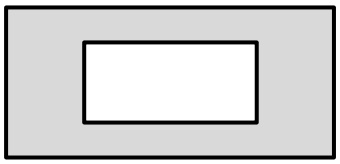
Date _____ Pd _____

PROBLEM SOLVING WITH COMPOSITE FIGURES

Mr. and Mrs. Harper are planning to install a deck and a garden. Help them determine which of the two design choices below is most cost effective. The deck is shown in gray; the garden is shown in white.

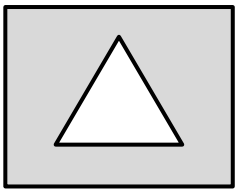
DESIGN A

Deck is 18 feet by 25 feet.
Garden is 9 feet by 12 feet.



DESIGN B

Deck is 21 feet by 20 feet.
Garden has a height of 12 feet and a base of 14 feet.



1. What is the area of the garden in design A? Design B?	2. What is the area of the deck, not including the garden, in design A? Design B?
3. If it costs $4.20 per square foot to install the deck, what is the cost for design A? Design B?	4. If it costs $1.40 per square foot to install the garden, what is the cost for design A? Design B?
5. If Mr. and Mrs. Harper would like to choose the most affordable design, which one should they choose? How much money will they save?	

Unit: Geometry
Student Handout 3

Name _____

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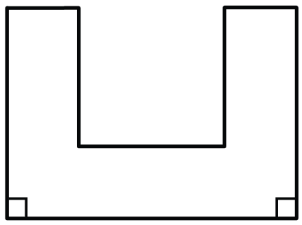
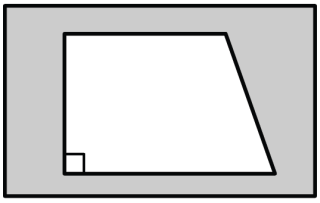
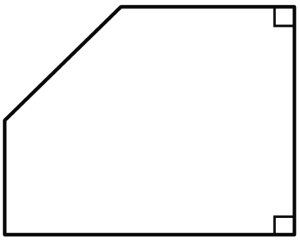
AREA OF COMPOSITE FIGURES

In art class, Mrs. Price is discussing how figures can be decomposed into different shapes. She projects the images below on a screen. Discuss and label the different ways you could decompose these figures into familiar shapes.



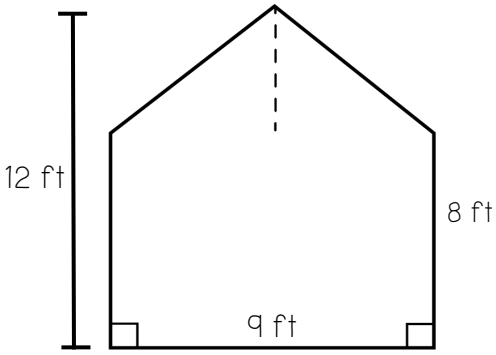




COMPOSITE FIGURES

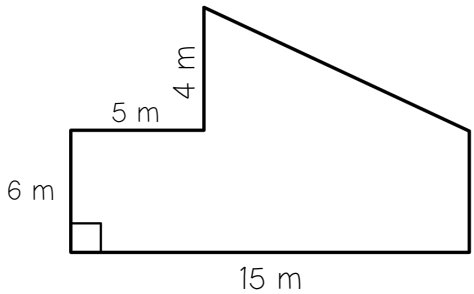
- A composite figure is made up of two or more shapes.
- We can find the area of a composite figure by decomposing the figure into familiar shapes. Then add or subtract the area of each shape.

Decompose the figures below. Then, use the graphic organizer to find the area of each shape.



TOTAL AREA: 90 ft²

	SHAPE 1	SHAPE 2
NAME	triangle	rectangle
FORMULA	$A = \frac{1}{2}bh$	$A = bh$
PLUG IN VALUES	$A = \frac{1}{2}(9)(4)$	$A = 9(8)$
AREA	$A = 18\ ft^2$	$A = 72\ ft^2$

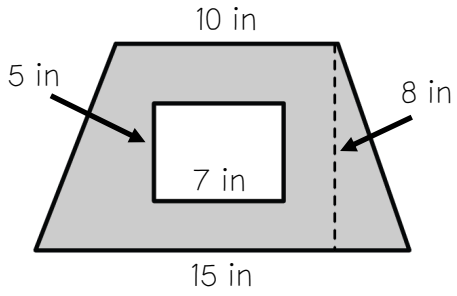


TOTAL AREA: 110 m²

	SHAPE 1	SHAPE 2
NAME	triangle	rectangle
FORMULA	$A = \frac{1}{2}bh$	$A = bh$
PLUG IN VALUES	$A = \frac{1}{2}(10)(4)$	$A = 15(6)$
AREA	$A = 20\ m^2$	$A = 90\ m^2$

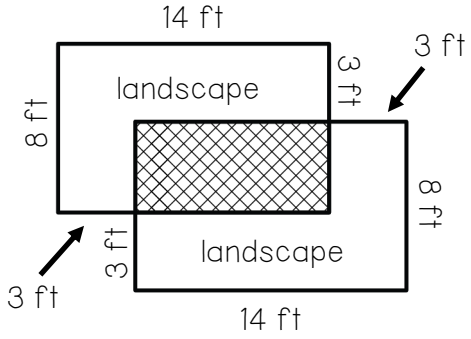
Use your understanding of composite figures to answer the questions below.

1. A rectangle is inscribed in a trapezoid. Determine the area of the shaded region.



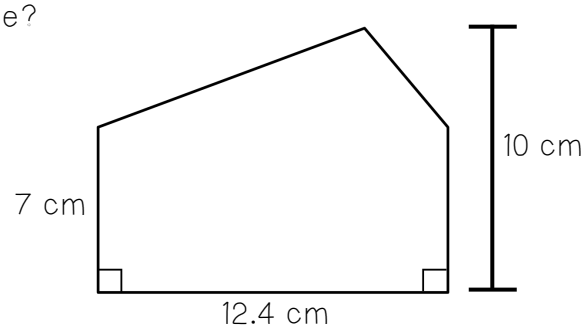
65 in^2

2. A patio is being landscaped with trees and shrubs. How many square feet of landscaping will be around the patio?



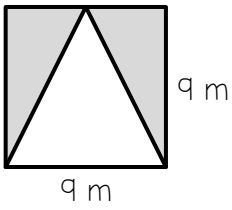
114 ft^2

3. A composite figure is created using a rectangle and triangle. What is the area of the figure?



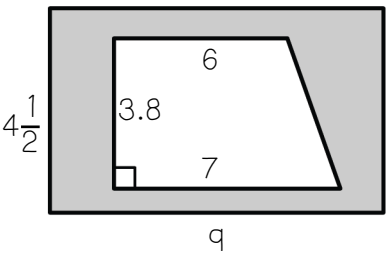
105.4 in^2

4. Find the area of the shaded region.



40.5 m^2

5. A trapezoid is inscribed in a rectangle. Amar and Gabby both found the area of the shaded region. Circle the name of student who correctly calculated the area. Explain the other student's mistake.



AMAR

$(9)(4\frac{1}{2}) + (\frac{1}{2})(6+7)(3.8)$

$40.5 + 24.7$

65.2 $units^2$

GABBY

$(9)(4\frac{1}{2}) - (\frac{1}{2})(6+7)(3.8)$

$40.5 - 24.7$

15.8 $units^2$

Amar added the area of the figures together instead of subtracting.

Summarize today's lesson:

Unit: Geometry
Homework 3

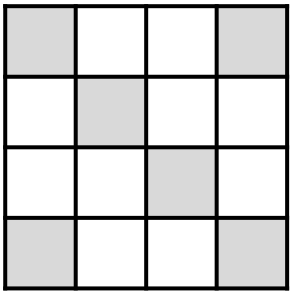
Name _____

Date _____ Pd _____

AREA OF COMPOSITE FIGURES

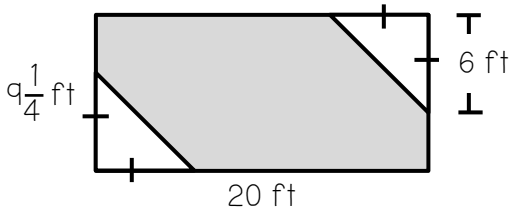
Answer the questions below. Be sure to show your thinking.

1. A 2 ft by 2 ft square is divided into smaller squares and portions are shaded. What is the area of the shaded portion?



1.5 ft^2

2. A garden is sodded in the shaded portion below. How many square feet were covered with sod?



149 ft^2

Use the composite figures below to mark each statement as true or false. Justify your choices.

3.

FIGURE A

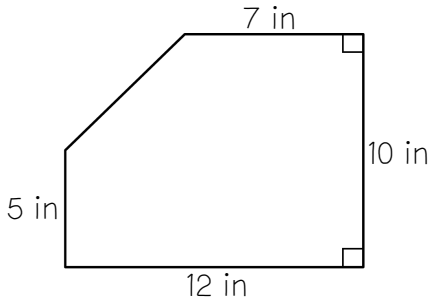
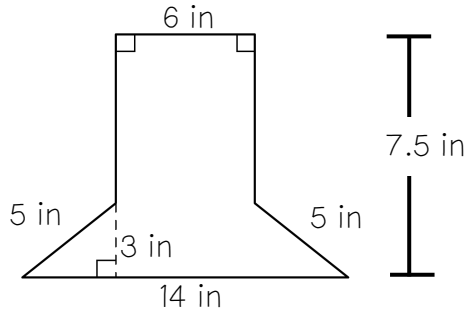


FIGURE B



STATEMENT	T/F?	JUSTIFY
a. The area of figure A can be found by finding the area of a trapezoid.	F	Figure A can be decomposed into a trapezoid and rectangle.
b. The area of figure B can be found by decomposing the figure into a rectangle and trapezoid.	T	Figure B can be decomposed different ways; a rectangle and a trapezoid or a rectangle and two triangles.
c. Figure B has a total area of 75 in^2.	F	$(6)(4.5) + \frac{1}{2}(14+6)(3) = 57\ in^2$
d. The area of figure A is 50.5 in^2 more than the area of figure B.	T	The area of figure A is 107.5 in^2 and the area of figure B is 57 in^2. $107.5 - 57 = 50.5\ in^2$.

Unit: Geometry
Student Handout 4

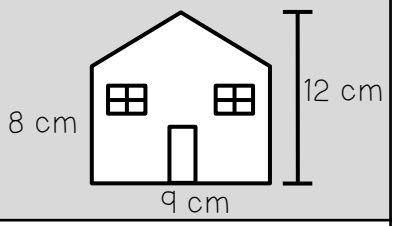
Name _____

Date _____ Pd _____

PROBLEM SOLVING WITH COMPOSITE FIGURES

Area can be used to solve real-world problems. Practice solving problems involving composite figures in the space below.

1. Hillary is decorating a gingerbread house and plans to cover the front of the house with icing, not including the windows or door. The windows each measure 2 cm by 2.5 cm and the door measures 2 cm by 3 cm. What is the area of the gingerbread house Hillary will cover with icing?



I KNOW:

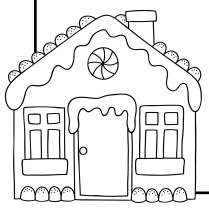
rectangle: b = 9, h = 8
triangle: b = 9, h = 4

2 windows:
2 cm by 2.5 cm
1 door:
2 cm by 3 cm

I NEED TO KNOW:

How many square centimeters of icing did Hillary use to cover the front of the house?

PLAN AND WORK:



Front of the house:

$9(8) + \frac{1}{2}(9)(4) = 90\ cm^2$

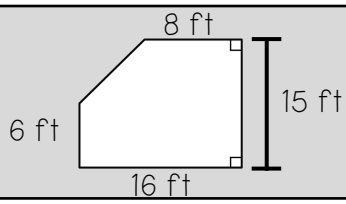
Windows: $2(2)(2.5) = 10\ cm^2$
Door: $2(3) = 6\ cm^2$

$90 - (10 + 6) = 74\ cm^2$

SOLUTION:

Hillary will use $74 cm^2$ of icing to cover the front of the gingerbread house.

2. Jordan is building a deck in his backyard shown at the right. The wood is priced at $5.30 per square foot. How much will it cost to build the deck?



I KNOW:

Dimensions of deck (see below)
Wood costs $5.30/sq ft

I NEED TO KNOW:

The cost of the wood.

PLAN AND WORK:

Rectangle: $16(6) = 96\ ft^2$

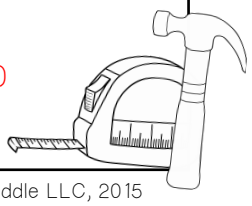
Trapezoid: $\frac{1}{2}(16 + 8)(9) = 108\ ft^2$

Total Area: $96 + 108 = 204\ ft^2$

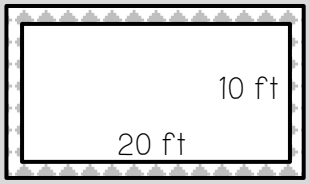
$204\ (5.3) = \$1{,}081.20$

SOLUTION:

It will cost $1,081.20 for the wood.



3. Martin is making a stone path border around the pool in his backyard. The pool is in the shape of a rectangle that is 10 feet wide and 20 feet long. He wants to make the border extend 2 feet around each side of the pool. Each stone covers 3 ft^2. How many stones will he need to purchase?



I KNOW:

Pool is 10 ft by 20 ft.
2 ft border added to each side of the pool.
Each stone covers 3 ft^2.

I NEED TO KNOW:

How many stones will he need to purchase to go around the pool?

PLAN AND WORK:

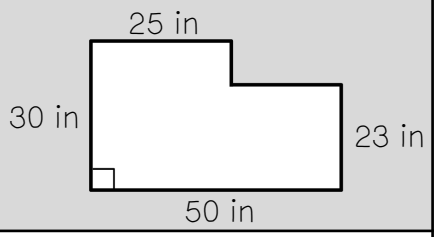
Pool: $10(20) = 200\ ft^2$
Stone path: $14(24) - 200 = 136\ ft^2$

stones needed: $136 \div 3 = 45\frac{1}{3}$

SOLUTION:

Martin will need to purchase 46 stones.

4. Brooke is purchasing tile to add a backsplash to her kitchen wall. Each tile covers 25 in^2. If each tile costs $1.75, what is the total amount that Brooke will spend on tile?



I KNOW:

Each tile covers 25 in^2.
Each tile costs $1.75.

I NEED TO KNOW:

The total cost of the tile.

PLAN AND WORK:

Wall Area: $50(23) + 25(7) = 1{,}325\ in^2$

# of tiles needed: $1325 \div 25 = 53$ tiles

Total cost: $53(1.75) = \$92.75$

SOLUTION:

Brooke will spend $92.75 on tile.

Unit: Geometry
Homework 4

Name _____

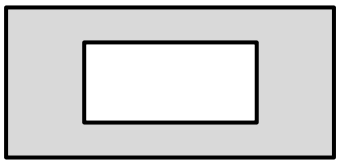
Date _____ Pd _____

PROBLEM SOLVING WITH COMPOSITE FIGURES

Mr. and Mrs. Harper are planning to install a deck and a garden. Help them determine which of the two design choices below is most cost effective. The deck is shown in gray; the garden is shown in white.

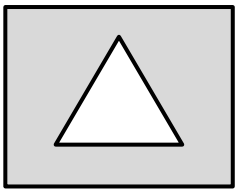
DESIGN A

Deck is 18 feet by 25 feet.
Garden is 9 feet by 12 feet.



DESIGN B

Deck is 21 feet by 20 feet.
Garden has a height of 12 feet and a base of 14 feet.



1. What is the area of the garden in design A? Design B?

Design A: 108 ft^2
Design B: 84 ft^2

2. What is the area of the deck, not including the garden, in design A? Design B?

Design A: 450 ft^2 – 108 ft^2 = 342 ft^2
Design B: 420 ft^2 – 84 ft^2 = 336 ft^2

3. If it costs $4.20 per square foot to install the deck, what is the cost for design A? Design B?

Design A: $1,436.40
Design B: $1,411.20

4. If it costs $1.40 per square foot to install the garden, what is the cost for design A? Design B?

Design A: $151.20
Design B: $117.60

5. If Mr. and Mrs. Harper would like to choose the most affordable design, which one should they choose? How much money will they save?

Design A has a total cost of $1,587.60, while design B has a total cost of $1,528.80. They will save $58.80 using design B.