

Supporting STAAR™ Achievement:
Targeting the TEKS and Readiness
Standards
Grade 5 Mathematics
Teacher Edition

Product ID:
407-1669

Table of Contents

Introduction	iv–x
What Is <i>Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards?</i>	iv
What Is in a Lesson Found in <i>Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards?</i>	v
References and Bibliography	ix
Equivalent Fractions	1–21
Lesson Notes	1
Answer Keys	8
Activity Masters and Student Pages	on CD
Comparing Fractions	22–33
Lesson Notes	22
Answer Keys	28
Activity Masters and Student Pages	on CD
Addition and Subtraction	34–47
Lesson Notes	34
Answer Keys	40
Activity Masters and Student Pages	on CD
Multiplication and Division	48–58
Lesson Notes	48
Answer Keys	54
Activity Masters and Student Pages	on CD
Relationships between Paired Numbers	59–77
Lesson Notes	59
Answer Keys	65
Activity Masters and Student Pages	on CD
Transformations	78–94
Lesson Notes	78
Answer Keys	84
Activity Masters and Student Pages	on CD
Perimeter and Area	95–109
Lesson Notes	95
Answer Keys	100
Activity Masters and Student Pages	on CD

Volume.....	110–119
Lesson Notes.....	110
Answer Keys	115
Activity Masters and Student Pages.....	on CD
Probability.....	120–146
Lesson Notes.....	120
Answer Keys	128
Activity Masters and Student Pages.....	on CD
Median, Mode, and Range.....	147–156
Lesson Notes.....	147
Answer Keys	153
Activity Masters and Student Pages.....	on CD

SAMPLE

What Is *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards*?

1

A resource that focuses on the TEKS identified as readiness standards while integrating appropriate supporting standards and mathematical processes and skills

2

A resource that provides opportunities for rigorous mathematical conversations while providing supports for students at varying levels of readiness

3

A resource that provides support for English language learners and students struggling to learn mathematics through Tier I differentiated activities, preteaching experiences, scaffolds for activities such as hint cards and graphic organizers, and facilitation questions

4

A resource that supports beginning as well as experienced teachers through clear instructions and facilitation questions that focus on potential stumbling blocks for students in the effort to bridge to formal understandings of mathematics

5

A resource of classroom-ready 5E lessons. The Engage phase of each lesson consists of a student-centered activity that either bridges from students' prior knowledge or encourages interest in deeper exploration of the concepts in the lesson. The Explore phase of each lesson provides students with an opportunity to "do mathematics" and begin to formulate ideas and conjectures. In the Explain phase of each lesson, students formalize the mathematical ideas from the Explore phase with a focus on academic vocabulary as well as procedures related to the concepts. The Elaborate phase of each lesson allows students to apply or extend their understanding of the concepts in the lesson. The Evaluate phase consists of four selected-response or griddable items that can be used to assess student understanding.

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards?*

Each readiness standard has been rewritten in student-friendly language so that students may gauge their learning.

Additional TEKS that support the conceptual and procedural development of the readiness standard within this lesson are identified.

Volume

Volume

Readiness Standard

5.10C The student is expected to select and use appropriate units and formulas to measure length, perimeter, area, and volume.

Content Objective

I can calculate base area and volume using formulas.

Additional TEKS

5.10B The student is expected to connect models for perimeter, area, and volume with their respective formulas.

5.14A The student is expected to identify the mathematics in everyday situations.

5.14C The student is expected to select or develop an appropriate problem-solving plan or strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

5.16A The student is expected to make generalizations from patterns or sets of examples and nonexamples.

ELPS

c5F The student is expected to write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasing accurate ways as more English is acquired

Language Objective

I can describe a process for determining base area and volume using length, width, and height.

Prerequisite Knowledge

- Understanding the meaning of area and how to calculate area
- Understanding the meaning of volume

Vocabulary Focus

Area
Height
Length
Two-dimensional
Three-dimensional
Volume
Width

Each lesson includes an English Language Proficiency Standard rewritten in student-friendly language.

Each lesson includes prerequisite knowledge that may impact student success within the lesson as well as vocabulary that will be used during the lesson.

Document: Grade 5

© Region 4 Education Service Center
All rights reserved.

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards?*

Materials for each phase are summarized on one page for ease in preparation.

Grouping strategies for each phase are summarized to assist in the arrangement of the classroom.

Volume

Notes

- Read and select facilitation questions as appropriate to meet your students' needs.

	Materials	Instructional Grouping
Preteach	- One-inch paper squares - Inch cubes - Small rectangular box	Small group with teacher facilitation
Phase	Materials <i>one per student unless otherwise noted</i>	Instructional Grouping
Engage	- Measuring Area - Measuring Area* - Inch ruler and centimeter ruler	Individual or pairs of students
Explore	- Building Rectangular Prisms - Building Rectangular Prisms* - Inch cubes - Centimeter cubes	Individual or pairs of students
Explain	Volume Notes	Whole-group discussion
Elaborate	- Tell Me about It! for display - Student Choice Cube or Student Choice Spinner - Paper clip and pencil to use with Student Choice Spinner	Groups of 2–3 students
	Intervention - Text Template* - Journal Template* - Inch cubes	Small group with teacher facilitation
Evaluate	Evaluate: Volume	Individual

* for targeted students only

The Elaborate phase has two concurrent components: a student-facilitated activity and a teacher-facilitated activity that focuses on the needs of students struggling with the content.

Materials that are provided as supports for students in need of additional help are labeled with an asterisk.

Region 4 Education Service Center
rights reserved.

Supporting STAAR™ Achievement: Grade 5

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards?*

Each lesson includes a preteach activity that teachers may use with students who might benefit from exposure to related concepts prior to the lesson.

Volume



Preteach

1. Prompt students to use one-inch paper squares to cover one face of a small rectangular box.
 - *How many paper squares did it take to cover one face of the box?*
2. Prompt students to use one-inch cubes to fill the box.
 - *How many one-inch cubes did it take to fill the box?*
3. Prompt students to compare and contrast the differences between the two units of measure. Listen for students stating that the units used to measure area were two-dimensional and square and the units used to fill the inside of the box were three-dimensional and cubic.
 - *What is the difference between the units that we used to measure the area of one face of the box and the units that we used to fill the space inside the box?*
4. Prompt students to define area and volume. Listen for students stating that area is the measure of the inside of a plane figure in square units and volume is the number of cubic units of space occupied by a solid figure.



Engage

1. Prompt students to complete **Measuring Base Area**.

Supports
Provide students with **Measuring Base Area**.

Facilitation Questions

- What does the length tell you about the base of the figure?
- What does the width tell you about the base of the figure?
- How does knowing the length and width help you to determine the base area of the figure?
- What is another way that you could determine the base area of the figure?

Listen for . . .

- Students using key terms such as length, width, and area.
- Students connecting attributes to dimensions of the figures.
- Students using formulas to determine area.



Explore

1. Prompt students to use the base rectangles on **Measuring Area** to complete **Building Rectangular Prisms**.
2. Upon completion, debrief with the following questions:
 - Would you describe a rectangle as a two-dimensional geometric figure or a three-dimensional geometric figure? Why?

Facilitation Questions

- How many cubes did you need to match the length of the rectangle?
- How many inches long is the rectangle?
- How many cubes did you need to match the width of the rectangle?

Each phase includes directions to implement the activity and the identification of additional student supports for the activity.

Each phase includes facilitation questions to help students who may be struggling to interpret or process components of the activity.

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards?*

Titles of activity masters and student pages are printed in bold for ease of reference.

- Prompt students to share their thinking with a partner and determine a solution to the problem.
- Prompt pairs of student to share their thinking with the whole group.
 - Repeat Think/Pair/Share for Problem 2.

★ Elaborate

1. Provide each group of 2 or 3 students with the **Student Choice Cube** or **Student Choice Spinner**.
2. Display **Tell Me about It!** and prompt students to follow the directions.
3. If a student appears to be struggling with **Tell Me About It!**, the student may use a **Text Template*** or a **Journal Template*** or join the teacher-led intervention group.

Intervention

1. Use inch cubes to create a rectangular prism. For example, a 4x2x5.
2. Pose the following questions:
 - What is the length, width, and height of the rectangular prism?
 - What relationship did you notice between the length, width, and height of the rectangular prism and the corresponding volume?
 - How did you define volume on **Area and Volume Notes**?
3. Spin the **Student Choice Cube** or **Student Choice Spinner** twice.
4. Prompt students to choose the format (from the two formats rolled or spun) the group would prefer to use to communicate how to determine the volume of a rectangular prism.
5. Ask, "How would you describe the process for determining the volume of a rectangular prism?"
6. Ask, "How could you use a (poem, text, etc.) to describe that process?"
7. If needed, provide students with a **Text Template*** or a **Journal Template***.

The Tier I intervention provides instructions on how to make the mathematics content more explicit for students struggling with the concepts within the lesson. The activity is at the same rigor as the activity being completed by the students in a self-directed environment.

★ Evaluate

Question Number	Correct Answer	Reporting Category	TEKS	TEKS	Conceptual Error	Procedural Error	Guess
1	C	4	5.10C	5.14C	A	D	B
2	S	4	5.10C	5.14C			
3	D	4	5.10C	5.14C	A	B	C
4	A	4	5.10C	5.16C	B	C	D

Each selected-response item is labeled with the STAAR™ reporting category, a content student expectation, and an underlying processes and tools student expectation as appropriate. Incorrect answer choices are classified according to type.

Perimeter and Area

Readiness Standard

5.10C The student is expected to select and use appropriate units and formulas to measure length, perimeter, area, and volume.

Content Objective

I can determine perimeter by measuring length and using formulas.

Additional TEKS

5.10B The student is expected to connect models for perimeter, area, and volume with their respective formulas.

5.14A The student is expected to identify the mathematics in everyday situations.

5.14C The student is expected to select or develop an appropriate problem-solving plan or strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

5.14D The student is expected to use tools such as real objects, manipulatives, and technology to solve problems.

5.15B The student is expected to relate informal language to mathematical language and symbols.

ELPS

c5B The student is expected to write using newly acquired basic vocabulary and content-based grade-level vocabulary.

Language Objective

I can describe formulas for perimeter using correct vocabulary.

Prerequisite Knowledge

- Understanding of linear measurement tools to measure length in centimeters and inches

Vocabulary Focus

Centimeter
Foot
Formula
Inch
Length
Meter
Mile
Perimeter
Width

Notes

- Read and select facilitation questions as appropriate to meet your students' needs.

Preteach	Materials	Instructional Grouping
	◆ Squares and Rectangles ◆ Rulers	Small group with teacher facilitation

Phase	Materials <i>one per student unless otherwise noted</i>	Instructional Grouping
Engage	◆ Kevon Takes a Trip ◆ Kevon Takes a Trip* ◆ Rulers ◆ Calculators	Groups of 2–3 students
Explore	◆ Create 5 workstations: • A: Workstation A and a ruler • B: Workstation B and a ruler • C: Workstation C • D: Workstation D • E: Workstation E ◆ Workstations A–D*	Groups of 4–6 students
Explain	◆ Formula Organizer	Whole-group discussion
Elaborate	◆ Fill in the Numbers	Independent
	Intervention ◆ Fill in the Numbers*	Small group with teacher facilitation
Evaluate	◆ Evaluate: Perimeter and Area	Individual

* for targeted students only



Preteach

1. Prompt students to complete **Squares and Rectangles**.
 - *What is length?*
 - *Which side of the ruler do you think you should use?*
 - *How could you use the ruler to measure the length of a side?*



Engage

1. Prompt students to complete **Kevon Takes a Trip**.

Supports

Provide each student with **Kevon Takes a Trip***, a ruler, and a calculator.

Facilitation Questions

- How might drawing lines to connect the cities help you to determine the approximate number of miles that Kevon drove?
- Which unit would be the most appropriate to use? Why?
- How could you determine the approximate number of miles from Amarillo to Del Rio?

Listen for . . .

- Students describing how they could draw lines to connect the three cities, then measure the three lines.
- Students describing a strategy, including an operation, for determining the approximate distance between each pair of cities.



Explore

1. Divide groups of 4–6 students among **Workstations A–E**.
2. Prompt students to complete the assigned workstation.
3. Prompt students to rotate through each workstation.
4. Upon completion, debrief with the following questions:
 - How could you use the side lengths of a figure to determine the perimeter of a figure?
 - How could you use the side lengths of a figure to determine the area of a figure?

Facilitation Questions

- What does it mean to measure to the nearest quarter inch? Half inch?
- How could determining the area of part of the figure help determine the total area of the figure?
- How could combining the known side lengths help determine the missing side length?
- What do you know about the sides of a square?
- What do you know about the opposite sides of a rectangle?

Supports

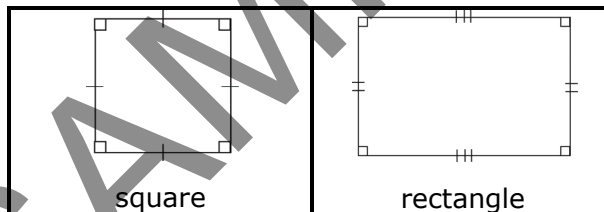
Provide students with **Workstations A–E***.

Listen for . . .

- *Students making connections between the sum of the side lengths and the perimeter.*
- *Students making connections between the product of two side lengths and the area.*

**Explain**

1. Prompt students to refer to **Workstation C**. Prompt students to explain their solution process for determining the missing length. Listen for students connecting the definition of perimeter to the procedure for determining the missing side length of the model.
 - How could we determine a side length if all we have is the perimeter and the lengths of all the other sides?
2. Prompt students to refer to **Workstation E**. Prompt students to describe strategies used to determine the perimeter of a square and a rectangle. Listen for students generalizing their strategies to procedures for determining perimeter of a square and a rectangle.
 - What strategies did you use to determine the perimeter of a square? Rectangle?
 - What generalizations can be made about how to determine the perimeter of a square? Rectangle?
3. Prompt students to cut out the **Formula Organizer** along the dotted lines.
4. Prompt students to fold the **Formula Organizer** along the “fold” line.
5. Prompt students to cut a line halfway down the page along the “cut” line.
6. Prompt students to label the front flaps “square” or “rectangle” and label each angle and side.



7. Prompt students to record a formula for finding perimeter of a square and a rectangle under the appropriate flap.

$P = 4 \times s$	$P = (2 \times l) + (2 \times w)$
------------------	-----------------------------------

8. Prompt students to refer to **Workstation D**. Prompt students to describe strategies used to determine the area of a square and a rectangle. Listen for students generalizing their strategies to a procedure for determining area.
 - What strategies did you use to determine the area of a square? Rectangle?
 - What generalizations can we make about how to determine the area of a square? Rectangle?
9. Prompt students to record a formula for finding perimeter of a square and a rectangle under the appropriate flap.

$P = 4 \times s$	$P = (2 \times l) + (2 \times w)$
$A = s \times s$	$A = l \times w$



Elaborate

1. Prompt students to complete **Fill in the Numbers**.
2. If a student appears to be struggling with **Fill in the Numbers**, the student may complete **Fill in the Numbers*** independently or join the teacher-led intervention group.

Intervention

1. Distribute **Fill in the Numbers*** to each student.
2. Prompt the students to read the first riddle.
3. Pose the following questions:
 - What do we know about the sides of a square?
 - If all four sides of a square are the same length, how could we use the perimeter to determine the side lengths?
 - What operation does that imply?
4. Prompt students to divide 124 by four.
5. If students demonstrate continued need for support, repeat this process for an additional riddle. If students appear ready to work with a partner or independently, allow the students to do so.

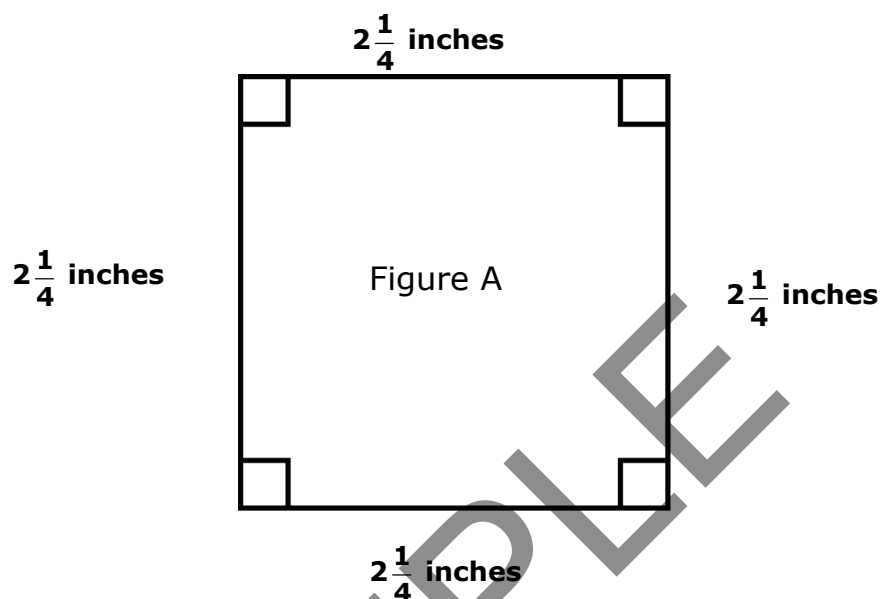


Evaluate

Question Number	Correct Answer	Reporting Category	TEKS	TEKS	Conceptual Error			Procedural Error			Guess
1	B	4	5.10C	5.14C	A	C	D				
2	D	4	5.10C	5.15B	A	B	C				
3	A	4	5.10C	5.14C	D			C			B
4	D	4	5.10C	5.14D	A	B	C				

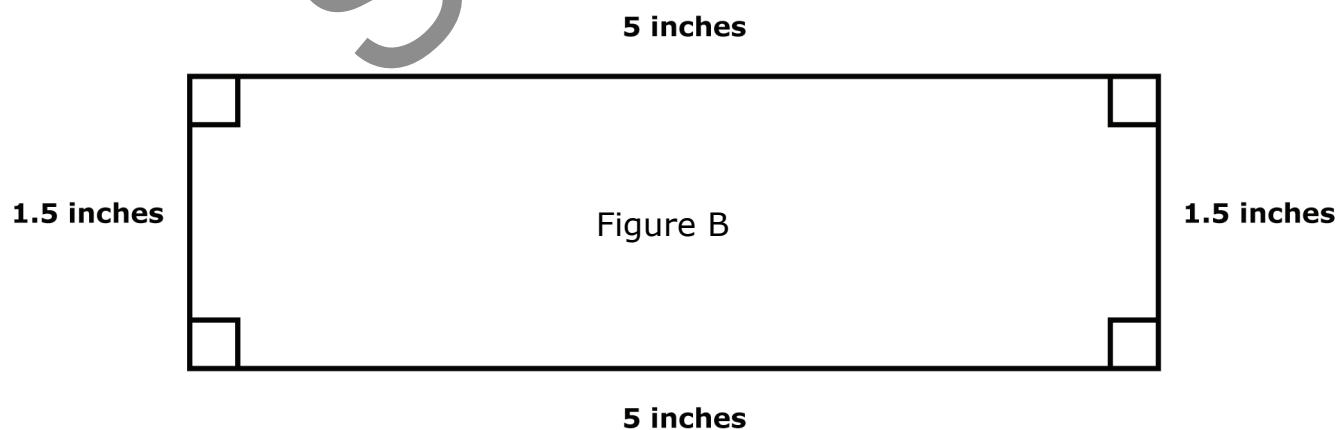
Workstation A (Answer Key)

- Use a ruler to measure each side length of Figure A to the nearest $\frac{1}{4}$ inch.
- Label each side length of Figure A.
- Determine the perimeter of Figure A.



Perimeter: $2\frac{1}{4} + 2\frac{1}{4} + 2\frac{1}{4} + 2\frac{1}{4} = 9$ inches

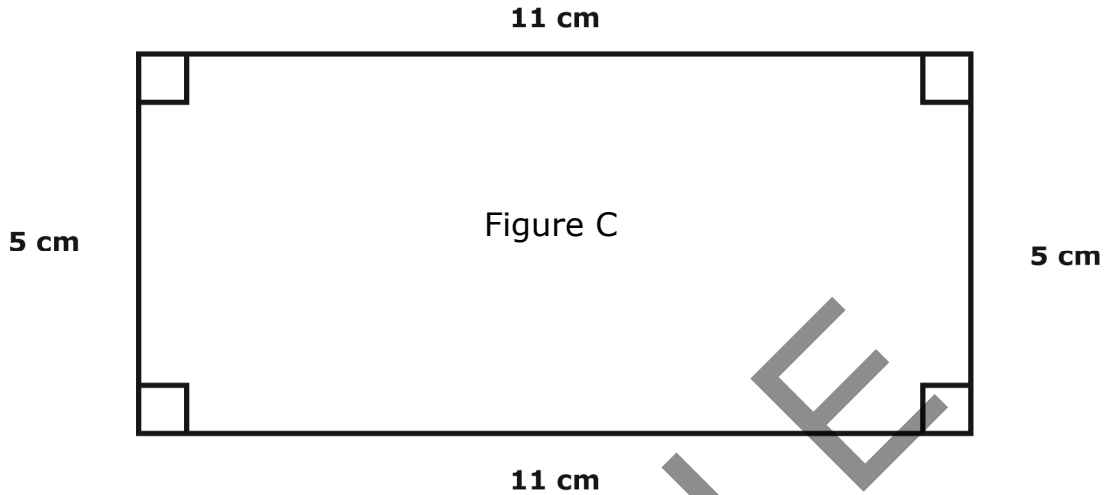
- Use a ruler to measure each side length of Figure B to the nearest half (0.5) inch.
- Label each side length of Figure B.
- Determine the perimeter of Figure B.



Perimeter: $5 + 1.5 + 5 + 1.5 = 13$ inches

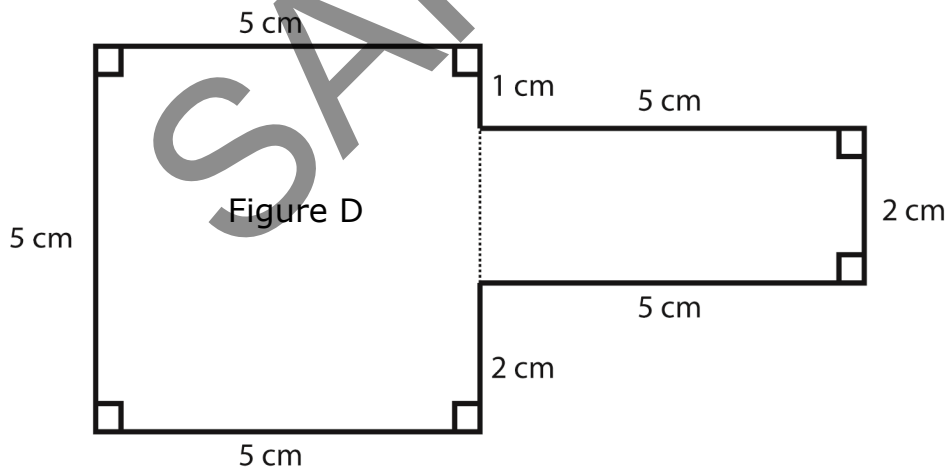
Workstation B (Answer Key)

- Use a ruler to measure each side length of Figure C to the nearest centimeter.
- Label each side length of Figure C.
- Determine the area of Figure C.



Area: $11 \times 5 = 55$ square cm

- Use a ruler to measure each side length of Figure D to the nearest centimeter.
- Label each side length of Figure D.
- Determine the area of Figure D.



Area: $5 \times 5 = 25$ square cm
 $5 \times 2 = 10$ square cm
 $10 + 25 = 35$ square cm

Workstation C (Answer Key)

- Find the length of the missing sides on each figure below.
- Label the missing side lengths on each figure below.

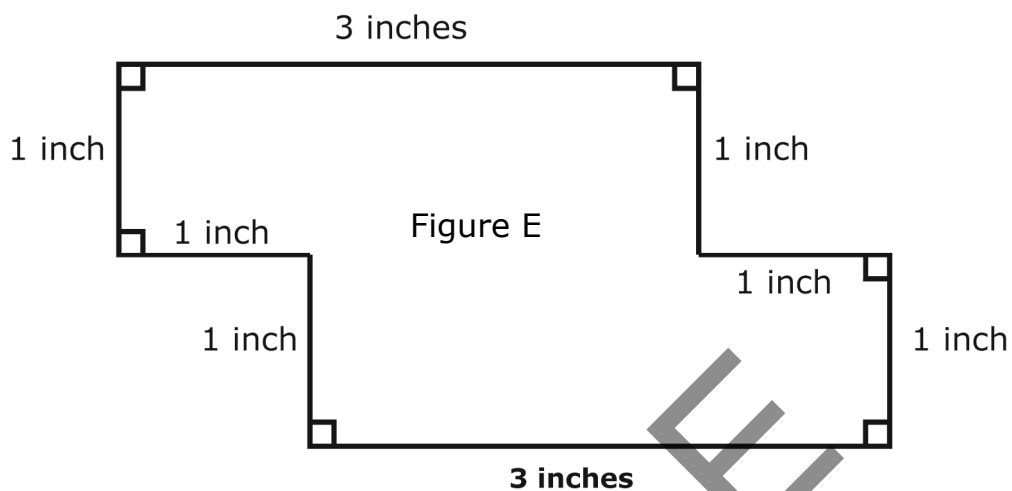


Figure E has a perimeter of 12 inches.

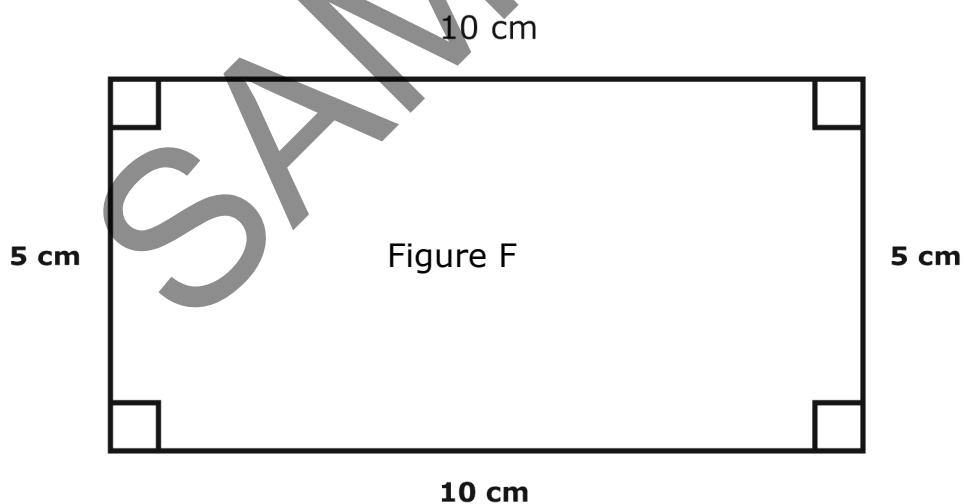
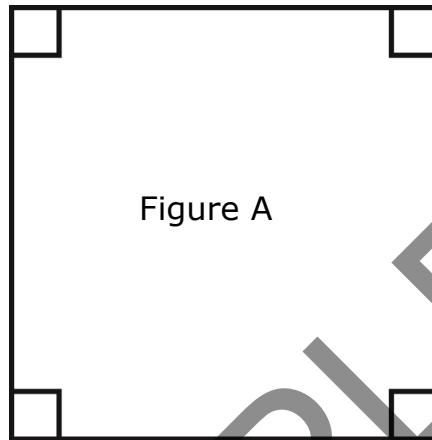


Figure F has a perimeter of 30 centimeters.

Workstation A*

- Use a ruler to measure each side length of Figure A to the nearest $\frac{1}{4}$ inch.
- Label each side length of Figure A.
- Determine the perimeter of Figure A.

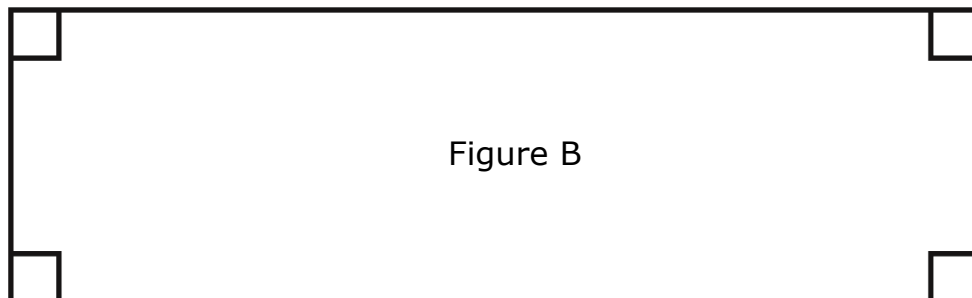
Hint: $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$



Perimeter:

- Use a ruler to measure each side length of Figure B to the nearest half (0.5) inch.
- Label each side length of Figure B.
- Determine the perimeter of Figure B.

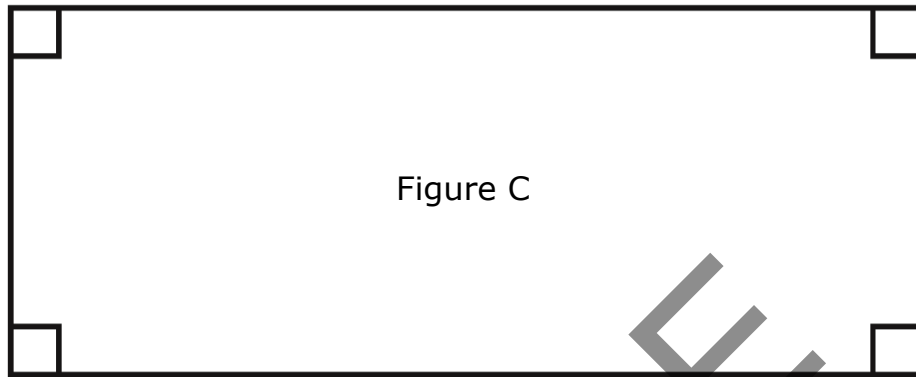
Hint: $0.5 + 0.5 = 1.0$



Perimeter:

Workstation B*

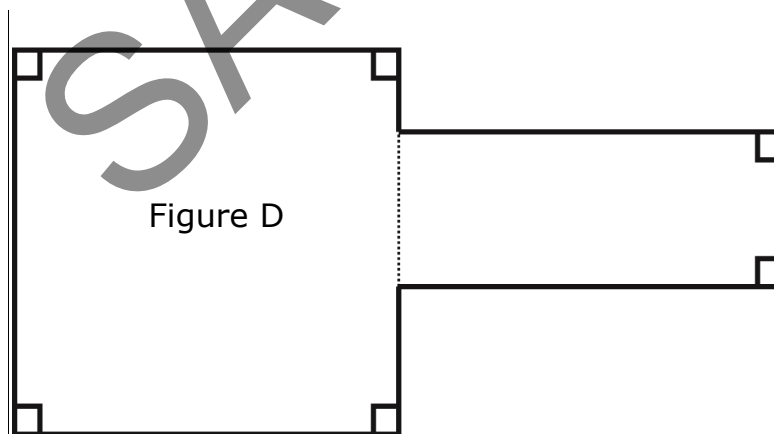
- Use a ruler to measure each side length of Figure C to the nearest centimeter.
- Label each side length of Figure C.
- Determine the area of Figure C.

Hint: $A = l \times w$ 

Area:

- Use a ruler to measure each side length of Figure D to the nearest centimeter.
- Label each side length of Figure D.
- Determine the area of Figure D.

Hint: What is the area of the square?



Area:

Workstation C*

- Find the length of the missing sides on each figure below.
- Label the missing side lengths on each figure below.

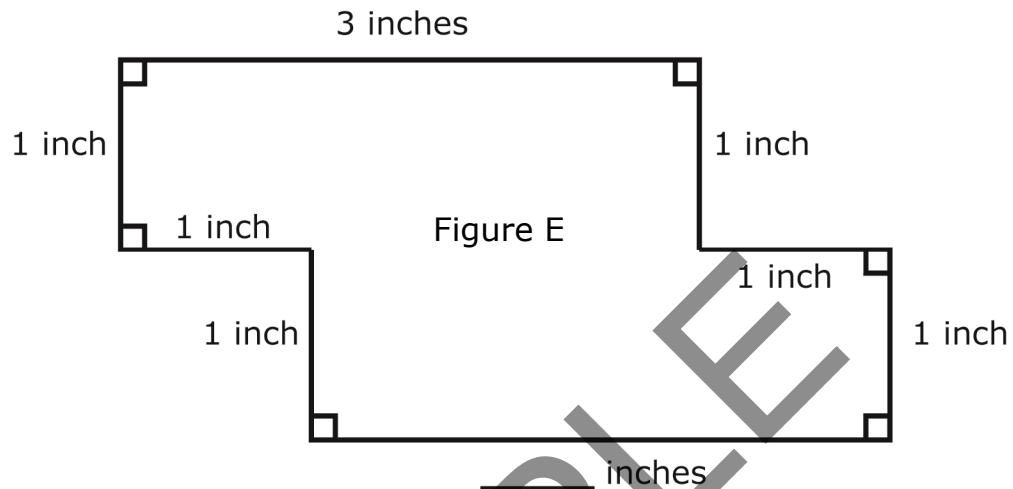


Figure E has a perimeter of 12 inches.

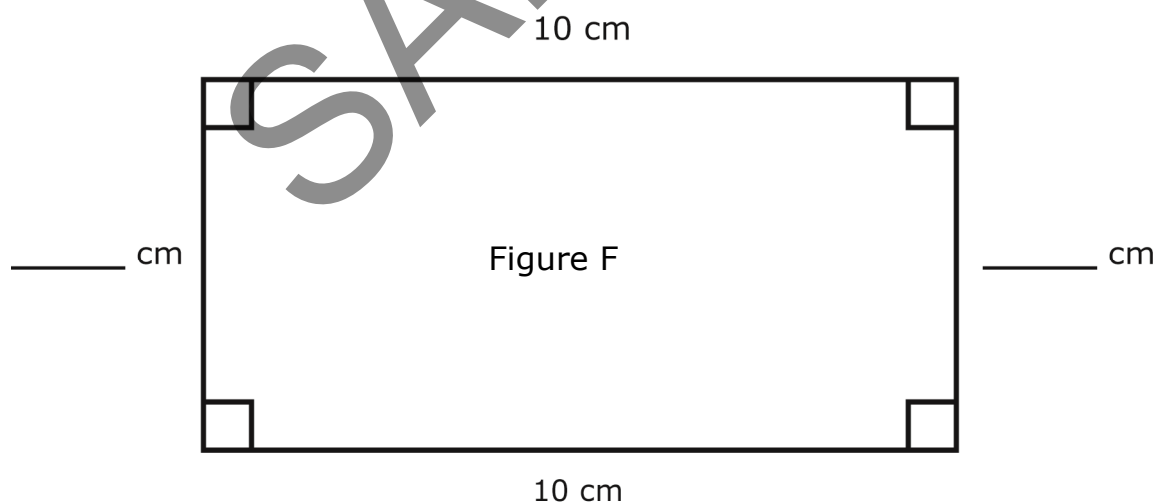


Figure F has a perimeter of 30 centimeters.

Fill in the Numbers

- Use the numbers in the Number Bank to complete each statement.
- Each number can be used only once.

Number Bank			
25	40	124	1,600
30	50	150	1,800
31	60		

If each side of a square is _____ feet, then the perimeter is _____ feet.

If the area of a square is _____ square yards, then each side is _____ yards.

If the longer side of a rectangle is _____ meters and the shorter side is _____ meters, then the area is _____ square meters.

If the perimeter of a rectangle is _____ inches and the longer side is _____ inches, then the shorter side is _____ inches.

Fill in the Numbers*

- Use the numbers in the Number Bank to complete each statement.
- Each number can be used only once.

Number Bank			
25	40	124	1,600
30	50	150	1,800
31	60		

If each side of a square is _____ feet, then the perimeter is
_____ 124 _____ feet.

If the area of a square is _____ square yards, then each side is
_____ 40 _____ yards.

If the longer side of a rectangle is _____ 60 _____ meters and the shorter side
is _____ 30 _____ meters, then the area is _____ square meters.

If the perimeter of a rectangle is _____ 150 _____ inches and the longer side is
_____ 50 _____ inches, then the shorter side is _____ inches.