THOMPSON RIVERS UNIVERSITY | Education & Social Work

Bachelor of Education (Elementary) & Bachelor of Education (Secondary) STEM/BETT Unit Plan Template

Unit Title:	Area of Triangles, Parallelograms, and Trapezoids	**Number of Lessons**	4	**Time (in weeks):**	1
Name:	Danica Davidson	**Subject(s):**	Mathematics	**Grade(s):**	6/7

Rationale

This unit is designed to introduce students to the area of triangles, parallelograms, and trapezoids by having them engage in hands-on activities. Students need to know what an area is and how to calculate it. Area is integrated into every aspect of life, from architecture, interior design, and construction to art, landscaping, and urban planning. Because of this, students need to have a rudimentary understanding in order to better understand the real world.

Overview:

The Area of Squares and Rectangle Unit gives students hands-on introduction to area through debate, physical activities, grid paper, and games. During these lessons students will gain a foundational understanding about the area of squares and rectangles which are two of the foundational shapes used in the real world.

CORE COMPETENCIES

Communication	Thinking	Personal & Social
• **Communicating** • *Connecting and Engaging* – During this unit students will get the chance to connect and engage with others through informal discussions, and structured conversations. • *Focusing on Intent and Purpose* – Students will communicate with each other in order to share ideas and work together to learn about the world.	• **Critical and Reflecting Thinking** • *Analyzing and Critiquing*: - During this unit students will learn to analyze and make defensible judgements and from them draw conclusions about the area. - Students have opportunities for analysis and critique through participating in the lesson activities	• **Social Awareness and Responsibility** • *Building Relationships* • Students work together in a respectful environment where all students can contribute in a way that makes them comfortable, • *Resolving Problems* - Through discussions students get to hear other perspectives and work on respectful disagreements and create spaces for others to explain their perspectives.

BIG IDEAS
(multiple subject areas for integrated unit)

Subject Name	**Subject Name**	**Subject Name**
Mathematics: • Properties of objects and shapes can be described, measured, and compared using volume, area, perimeter, and angles. This unit helps students understand the properties of objects and shapes by breaking down the Area of rectangles and square through various methods.		

LEARNING STANDARDS

Curricular Competencies	Content
Reasoning & Analyzing • Use logic and reasoning to solve puzzles and play games • Use logic and reasoning to explore, analyze, and apply mathematical ideas • Use tools or technology to explore and create patterns and relationships, and test conjectures • Model mathematics in contextualized experiences Understanding and Solving • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Use mathematical vocabulary and language to contribute to mathematical discussions • Apply multiple strategies to solve problems in both abstract and contextualized situations Communicating and Representing • Explain and justify using mathematical ideas and decisions • Communicate mathematical thinking in many ways Connecting and Reflecting • Reflect on mathematical thinking by engaging in a facilitated debate	• Area of triangles, parallelograms, and trapezoids • Perimeter of complex shapes

Prerequisite Concepts and Skills:

- Multiplication and division facts to 100
- One step equation with variables
- Relationships between area and perimeter
- Research information
- Small to Large Numbers
- One-step Equations

Teacher Preparation Required:

Lesson #	Teacher Preparation Required (See Unit Plan Sample)

Lesson 1	Area Vs Perimeter Debate • Plan counter arguments for both teams • Set up a counter for teachers to use to keep track of student participation • Make sure the buzzers work • Make sure that the whiteboard pens are usable • Print worksheets • Use sticky notes to figure out how many notes make up the area of a desk
Lesson 2	Area of Triangles and Rectangles • Either make, or buy enough playdoh for the students • Print off worksheets • Ensure there are enough square tiles for each table group
Lesson 3	Use Grid Paper to Find the Area of Rectangles • Print off the worksheets • Make sure there are 2 pairs of Dice at the tables
Lesson 4	Create Your Own Robot on Grid Paper • Fill up the mystery bag • Print off "Robot Construction Project Worksheet" • Set up the video ahead of time to be sure it works • Make a criteria, rubric, and instructions

Cross-Curricular Connections:

Art: Shapes are the foundation of everything, especially art. This unit can lead into several geometric art projects, for example make a diorama about something you enjoy.

Social Studies: When studying other civilizations students can look at pictures of old buildings and guess how big they were in the past, using what they know about area and perimeter.

Aboriginal Connections/ First Peoples Principles of Learning:

Learning takes patience and time.

- It takes time to learn and understand the formulas presented in this unit plan, and some students do not get it right away but with time and practice all students should be able to apply these formulas to solve area-related scenarios both in mathematics and the real world.

Learning ultimately supports the well-being of the self, the family, the community, the land and the spirits and the ancestors.

- By learning about area and its associated formulas students can properly plan out an area to make something that uses the whole rather than a fraction.

Universal Design for Learning (UDL)

- Use text alternatives like captions or voice recognition for spoken language.
- Activate prior knowledge by asking students what they already know
- Chunk information into smaller, manageable parts for better retention.
- Offer flexibility in timing, pacing, and physical response requirements.

- Provide alternative ways for students to interact with the content, like having the students make grids and shape with their bodies rather than pen and paper.
- Allow students to express their learning through different media, such as text, speech, drawing, music, and sculpture.
- Incorporate assistive technology like spell checkers, grammar tools, and calculators. Sentence starters and guided questions for students who need verbal or written support.
- Offer checklists and guided notes to support organization and self-monitoring.
- Create purposeful, authentic learning experiences.
- Use prompts to reinforce goals and keep students on track
- Use prompts, checklists, and rubrics to encourage self-monitoring and goal setting (ex. Have students share their thoughts about the lesson activities after each lesson)
- Provide models and strategies for managing frustration and emotions such as fidget tools or outdoor movement breaks.
- Model calm problem-solving strategies and adaptability when it comes to understanding and implementing formulas.

Differentiated Instructions (DI)

- For physically challenged students in regard to physical activities all students will sit down or kneel.
- For ESL students upload the worksheets and instructions to google classroom so they can translate the assignment into their language.
- For all students play the videos twice so that everyone has an idea about what the video is about.
- For anxious students fold the assignments into smaller parts to reduce anxiety about the number of questions.
- Redirect student attention when the class is going off task.
- Keep students engaged through mini brain breaks.
- For students who are on IEP's offer them the chance to work in a way that suits them. This could be offering sound-canceling headphones, allowing them to work in other places in the classroom, or hallway.

Overview of Lessons:

Lesson 1

Name &Time (Minutes Allotted):	Area VS Perimeter Debate (30-45 min)
Learning Standards: Curricular Competencies	Reasoning & Analyzing • Use logical reasoning Understanding and Solving • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Use mathematical vocabulary and language to contribute to mathematical discussions Communicating and Representing • Explain and justify using mathematical ideas and decisions

	• Communicate mathematical thinking in many ways Connecting and Reflecting • Reflect on mathematical thinking by engaging in a facilitated debate
Learning Standards: Content	• Area of triangles, parallelograms, and trapezoids • Perimeter of complex shapes
Instructional Objectives	• Identify and explain the differences between Area and Perimeter • Contribute to group discussions
Assessment:	• Student Completion of the True or False Work Sheet • Tally tracking of students who participate or not
Teaching Strategies:	• Set Clear Behavioural Expectations at the beginning and throughout the lesson • Encourage all students to participate • Use Attention Grabbers when necessary (5-0 Countdown) • While facilitating the debate, monitor students and re-direct off task behaviour • Keep students engaged through mini breaks during the lesson • Walk around and mingle with the students to keep them on task as well as see what're their thoughts • Have a representative from each team press the buzzer before talking • Don't talk over students wait until students are fully engaged.
Materials:	• True or False Worksheet • Buzzer • White Board • Whiteboard markers • Sticky Note Pad
Lesson Activities:	
Introduction/Hook:	*Sticky Note Desk (3-5 min)* • The teacher will set clear expectations for the lesson before starting the lesson. • Students will get out of their seats and grab a pad of sticky notes then head back to their tables. • Once at their tables students will engage in full body listening. • The teacher will explain the activity: o 1. Use sticky notes to cover the top of your table **without overlapping** o 2. After your tables are covered count how many squares and compare with your partner.

	• Students will begin to place their sticky notes all over the top of the tables. • Once their tables are covered students will talk to their partner about how many sticky notes are on their tables.

Body:	*Introduce Area (7-10min)*
	
	• Using the previous exercise the teacher will ask students to give answers about how many sticky notes are on their tables.
	
	• Students will raise their hands and wait to be called on.
	
	• The teacher will ask students:
	  o What do those sticky notes represent?
	  o What makes you think that?
	  o What do they not represent?
	
	• The teacher will then talk about what Area is:
	  o Area is the measurement of everything within the perimeter.
	  o How do you calculate area?
	  o What does this remind you of? (Answer: Arrays)
	  o How does area relate to perimeter?
	
	• The teacher will then have students recount their sticky notes to get the final area of their desks.
	
	Area VS Perimeter Debate (15-25 min)
	
	• The teacher will set clear expectations and rules for the debate and ask a student to repeat them.
	
	• The teacher will split the students into two groups and assign one group area, and the other group perimeter.
	
	• Students follow the teachers' instructions and go to their perspective sides.
	
	• The teacher gives the students the prompt:
	
	  o Which is more important perimeter or Area?
	
	• The teacher gives students ten minutes to formulate their argument.

	• Students will discuss in their groups to prove that their side is more important and come up with counter arguments against the opposing team. • The teacher will walk around and ask students about their thought process and give examples to groups about counter arguments. o For Team Perimeter: "If you only focus on area, how do you ensure your space is secure without knowing the perimeter?" o For Team Area: "If you only build a fence (perimeter) around an empty plot, it doesn't tell you how much land you have to use." o For Team Perimeter: "A space is useless if it isn't closed." o For Team Area: "Two shapes can have the same perimeter, but different area." • After ten minutes the teacher will regain the classes' attention by using an attention grabber. • The teacher will give each side a buzzer, explain the expectations, and have a student repeat what was said: o "When I say "Go" one of you will press the buzzer and the rest of you will listen respectfully to their statement. After they are done, the opposing team can buzz in and refute them. Vice-Versa." • During the debate the teacher will facilitate and ask questions to both teams during their team: o "Why do builders and architects need to calculate area first when designing houses or public spaces?" o "Why do builders and architects need to calculate perimeter when designing houses or public spaces?"
Closure:	*Class Discussion and Exit Ticket (5 min)* • The teacher will bring the class together and ask students to share why they think area is important and should be done in tandem with perimeter. • For the Exit Ticket students will be given a True or False Worksheet about Area to do and hand it in before they leave.

Lesson 2

Name & Time (Minutes Allotted):	Create Triangles, Trapezoids and Parallelograms then Calculate the Area (30-45 min)

Learning Standards: Curricular Competencies	Reasoning & Analyzing • Model mathematics in contextualized experiences Understanding & Solving: • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Visualizing to explore mathematical concepts Communicating & Representing • Communicate mathematical thinking in many ways
Learning Standards: Content	• Area of triangles, parallelograms, and trapezoids
Instructional Objectives	• Students will be able to construct various triangles, parallelograms and trapezoids out of playdoh • Students will be able to find the area of a shape using tiles • Students will be able to find the unknown side of rectangles and squares
Assessment:	• Observation of students as they make their shapes • Area of Triangles, Trapezoids, and Parallelograms Worksheet • Area of Squares and Rectangles Review Sheet
Teaching Strategies:	• Set Clear Behavioural Expectations at the beginning and throughout the lesson • Encourage all students to participate • Use Attention Grabbers when necessary (5-0 Countdown) • Keep students engaged through mini breaks during the lesson • Walk around and mingle with the students to keep them on task and ask them about their thinking. • Don't talk over the students, wait until students are fully engaged.
Materials:	• Playdoh • Area of Squares and Rectangles Review Worksheet • Area of Triangles, Trapezoids, and Parallelograms Worksheet • Square Tile counters
Lesson Activities:	
Introduction/Hook:	*Make A Square (3-5 min)* • The teacher will set clear expectations for the lesson before starting the lesson and have students repeat them. • The teacher will ask the students to get out of their desks and use their bodies to create a square/rectangle (depending on the students) • Students will get out of their desk and through collaborative discussion they will form a square/rectangle around the classroom. • The teacher will then ask:

	○ How much space do you think is inside the square? ○ Why do you think that? ○ What might be a way of counting that could help us figure out the area? • Students will raise their hands and wait to be called on before responding. • After the teacher calls on a couple of students, they head back to their tables to begin the lesson.
Body:	*Area of Rectangles and Squares (2-3 min)* • The teacher will draw a square and rectangle on the board and ask students: ○ Which shape has more space? ○ What's the difference between the two shapes? ○ How could we accurately measure the space inside? • Students will use their whiteboards to write down the answer and then hold them up. • The teacher will erase the shapes and do two more examples. *Do the "Area of Squares and Rectangles Review Sheet" (5 min)* • The teacher will ask for volunteers to hand out the sheet. • Once students have the sheet students will be given five minutes to do as much as they can. • After the five minutes are up the teacher will use an attention grabber and then ask a couple of students to show how they solved one of the problems. • It is alright if they are not done all of the questions. *Area of Triangles and Parallelograms (5min)* • The teacher will draw a triangle on the board and ask students: ○ How could we accurately measure the space inside? ○ How do you think we would find the area? • After a couple of answers, the teacher will discuss how to find the area: ○ "We know that triangles are one half of a rectangle, because of this we need to include ½ in the formula. Next we need to know the _____ (base) and Multiply it by the _____ (height)." ○ Pause during explanation to let students guess.

	○ "So this would mean that in order to find the area our formula will be A=1/2 x B x H." • The teacher will go back to the triangle drawing, replace the letters with numbers and solve the problem as a class, using their white boards. • The teacher will then draw a parallelogram and ask students what they think the formula. • After a couple of answers the teacher will discuss how to find the area: ○ "The formula to find Parallelograms is similar to triangles however, since the parallelogram is a full shape, rather then half of a shape. To find the area we simply need to multiply the base by the height." ○ "So the formula for parallelograms is A= b x h." *Construct Your Own Triangles and Parallelograms out of Playdoh and Measure the Space Inside Using the Tiles (10 min)* • The teacher will go over the rules and expectations and ask a student to repeat them. ○ "No throwing the playdoh." ○ "If rules are not being followed, I will take the playdoh away." ○ "If you're in a group be sure to share the playdoh so everyone has a turn to make shapes." • The teacher will ask for some volunteers to hand out playdoh and Square Tiles. • Students can either practice by themselves or with a partner or small group. • While the students are practicing their shapes the teacher will walk around and observe. Redirecting off-task students. • If tiles don't fit inside the triangle the students can use the tiles to count the base, and height of the triangles. *Area of Trapezoids (5-7 min)* • The teacher will use an attention grabber and draw a trapezoid on the board and ask: ○ How could we accurately measure the space inside? ○ How do you think we would find the area? • After a couple of answers, the teacher will discuss how to find the area: ○ "A trapezoid is a combination of parallelograms and triangles. Meaning we have two triangles on both ends

	of the shape, with a parallelogram between the two triangles." o "Because of this trapezoid, have two _____ (bases), but one height. The formula is like triangles where we multiply the base by height. But since it has two bases, we need to add the bases together, then multiply by the height. Lastly, we need to divide the product by two to get the area. " o "Our formula will be A= (b+b) x h /2." *Area of Triangles, Parallelograms, and Trapezoids Worksheet (15-20 min)* • The teacher will use the attention grabber and ask for another student to help hand out the worksheets. • Once all students are given the sheets the teacher will go over the worksheet with them and have a student repeat. • When students are done, they put the sheet in the hand-in bin or give them to the teacher. • If students finish early, they can grab a blank piece of paper and draw as many squares and rectangles as possible then use the tiles to find the area of what they drew. • Or students can continue making shapes with their playdoh.
Closure:	*Clean Up (3 min)* • The teacher will regain the classes' attention before telling them to clean up: o "Put the playdoh and tiles back in the containers, or bags." *Make A Triangle, Square, or Parallelogram (5 min)* • The teacher will ask students to stand up and form a square/rectangle and ask: o "Since we now have practice measuring squares/rectangles how do you think we should accurately measure the space inside of our shape?" • Students will raise their hands and wait to be called on. • The teacher will listen to the students' ideas before saying: o "Those are all great ways to measure the space but looking at all of you I can think of another way. What if we counted how many classmates are standing length wise, and how many are standing width wise?"

	• Following the teacher's instruction students will count and say the answer.

Lesson 3

Name &Time (Minutes Allotted):	Use Grid Paper to Find the Area of Rectangles, Triangles, Trapezoids, and Parallelograms (30-45 min)
Learning Standards: Curricular Competencies	Reasoning & Analyzing • Use reasoning and logic to explore, analyze, and apply mathematical ideas Understanding and Solving • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Use mathematical vocabulary and language to contribute to mathematical discussions • Visualize to explore mathematical concepts Communicating and Representing • Explain and justify using mathematical ideas and decisions • Communicate mathematical thinking in many ways Connecting & Reflecting • Reflect on mathematical thinking • Use mathematical arguments to support personal choices
Learning Standards: Content	• Area of triangles, parallelograms, and trapezoids
Instructional Objectives	• Students will be able to find the area of squares and rectangles using grid paper
Assessment:	• Area of Shapes Dice Game Worksheet • Basketball Discussion
Teaching Strategies:	• Set Clear Behavioural Expectations at the beginning and throughout the lesson • Encourage all students to participate • Use Attention Grabbers when necessary (5-0 Countdown) • Keep students engaged through mini breaks during the lesson • Walk around and mingle with the students to keep them on task and ask them about their thinking. • Don't talk over the students, wait until students are fully engaged.
Materials:	• Dice • Area of Rectangles Dice Game Worksheet • Ball • Grid Paper
Lesson Activities:	
Introduction/Hook:	*Human Grid (5-7 min)* • The teacher will set clear expectations for the lesson before starting the lesson and have students repeat them.

	• The teacher would ask students to: 1. Get out of their desks 2. Form a line of three people, and either stand or sit down 3. Across from them form another line of three people 4. Add another line of three, but this line will stand back-to-back with the second line. 5. Repeat until there are six lines of three. 6. Students standing across from each other will place one hand on the person to their right shoulder, and the other arm will go on the person's shoulder across from them. 7. Four students will stand in between the top and bottom row and place their hands on the shoulder of the people facing inward. • Once the students are in a grid-like shape the teacher will ask to step inside of the grid and enter one square. While in the square the teacher will ask: o What measurement do I represent? • The teacher will ask one of the extra students to come in the grid and take up another square and ask: o What is the measurement now? • The teacher will repeat this two more times, before having the students return to their desks.
Body:	*Recap of the Intro (3-5 min)* • Once back at their desks the teacher will ask students: o What do you think that activity was about? • Students will raise their hands and wait to be called on. *Discuss How to Use Grid Paper in Terms of Area (10 min)* • The teacher will discuss what the measurements for area are, by asking students to finish the question and wait to give them the answer: o The measurement for area is _____ (square units) o Why do we use standard units? • If students know the answer, they will raise their hand and wait to be called on. • From there the teacher will discuss how to use grid paper, for those students who may need a refresher or haven't used it before. The teacher will draw an example on the board as they explain: o "Every square on grid paper represents one square unit so if we draw a rectangle."

	○ "How wide do we want our rectangle to be? How long would we want it to be?" the students will give a number, and the teacher does the corresponding action. ○ "Alright so now we have a rectangle, in order to find the area, we'll count the squares inside of the rectangle." • Before moving into the activity, the teacher will review the area for rectangles, triangles, parallelograms and trapezoids: ○ Rectangles: A= l x w ○ Triangles: A= ½ b x h ○ Parallelograms: A= b x h ○ Trapezoids: A= (b + b) x h / 2 *Area of Rectangles Dice Game (15-25 min)* • The teacher will ask students to split into pairs, or if there's not enough people, a small group of three. • The teacher will ask for two volunteers to hand out a pair of dice and the game board. • Once all students have a sheet the teacher will go over the rules and expectations, and have a student repeat them. ○ "Do not throw the dice at each other." ○ Each person will take turns rolling the dice ○ The numbers on the dice correspond to either the length or width of the rectangle, they choose, and shade in the shape. ○ Then multiply the numbers together to find the area. ○ The goal is to be the first person to fill up the grid until there isn't any possible way to make a rectangle. • If students finish one game they can play against a different partner/group, or the same person.
Closure:	*Basketball Discussion (5 min)* • The teacher will ask the students to clean up and hand in their worksheets before finishing the lesson. • The teacher will gently toss a ball to a student and ask them one of these questions: ○ What do you like about the activity? ○ What did you learn? ○ If I were to give you a shape how would you use grid paper to find the area? ○ What didn't you like about it? • After the student who caught the ball answers, they will gently toss it to another student.

	• The teacher will repeat this process until five or so students have shared their thoughts.

Lesson 4

Name & Time (Minutes Allotted):	Create Your Own Robot on Grid Paper (30-45 min)
Learning Standards: Curricular Competencies	Reasoning & Analyzing • Use reasoning and logic to explore, analyze, and apply mathematical ideas • Use tools or technology to explore and create patterns and relationships, and test conjectures • Understanding and Solving • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Use mathematical vocabulary and language to contribute to mathematical discussions Communicating and Representing • Explain and justify using mathematical ideas and decisions • Communicate mathematical thinking in many ways Connecting and Reflecting • Reflect on mathematical thinking
Learning Standards: Content	• Area of triangles, parallelograms, and trapezoids
Instructional Objectives	• Students will be able to use mathematical shapes to create a robot on grid paper
Assessment:	• Rubric
Teaching Strategies:	• Set Clear Behavioural Expectations at the beginning and throughout the lesson • Encourage all students to participate • Use Attention Grabbers when necessary (5-0 Countdown) • Keep students engaged through mini breaks during the lesson • Walk around and mingle with the students to keep them on task and ask them about their thinking. • Don't talk over the students, wait until students are fully engaged.
Materials:	• Projector • Internet Access • Grid Paper • Robot Construction Project Worksheet
Lesson Activities:	
Introduction/Hook:	*Put on the video "How to Find Area and Perimeter" by Flocabulary (3 min)* • The teacher will set clear expectations for the lesson before starting the lesson and have students repeat them.

	• The teacher will play the video twice: https://youtu.be/rSVMrPu0__U?si=YExhv1g9htc0OvI2

Body:	*Video and Formula Recap (5-10 min)*
	
	• After the video the teacher will ask students:
	  ○ How do you find the area of a rectangle?
	  ○ What's the difference between area and perimeter?
	  ○ What do you use to measure area?
	
	• Students will raise their hands and wait to be called on.
	
	• After calling on a couple of students the teacher will ask students to come up and draw a triangle, trapezoid, parallelogram, rectangle, and square.
	
	• The teacher will ask students for numbers and measurements to represent each side and write the numbers accordingly.
	
	• With the completed shapes the teacher will ask students to solve the area and perimeter of each shape.
	
	Introduce the "Create Your Own Robot" Activity (3-5 min)
	
	• The teacher will ask for volunteers to hand out the sheets.
	
	• Once all students have their sheets the teacher will go through each part of the worksheets with the students.
	
	• After going over the worksheet the teacher will set clear behavioral expectations, and have a student repeat the expectations.
	
	• The teacher will call up table groups to pick an item out of the mystery bag.
	
	• The item that students get is what they will be modeling their robot after.
	
	Do the "Create Your Own Robot" Activity (15-40 min)
	
	• Students will begin the activity and raise their hands if they have questions or would like assistance/guidance.
	
	• While the students are working on the activity the teacher will walk around, re-directing off task behaviour and assisting students.

	• The teacher will also ask students to talk about their thinking process.
Closure:	*Shape it Up Game (3-5min)* • The teacher will use an attention grabber to regain class attention. • The teacher will ask students to grab their whiteboards. • The teacher will call out an area or perimeter measurement and students draw a shape they think fits the measurement on their whiteboards and hold them up. • The teacher then asks a couple of students about their thinking process.

Resources:

- "True or False Worksheet" (LP1)
- "Area of Squares and Rectangles Review Worksheet" (LP2)
- "Area of Shapes Worksheet" (LP2)
- "Area of Shapes Worksheet Answers" (LP2)
- "Area of Rectangles Dice Game Worksheet" (LP3)
- "Mystery Bag" (LP4)
- "Robot Construction Project Worksheet" (LP 4)
- *"How to Find Area and Perimeter" by Flocabulary* https://youtu.be/rSVMrPu0__U?si=YExhv1g9htc0OvI2 (LP4)

Extensions to Unit:

This unit could be expanded into other geometric shapes like circles, rhombus, etc. It can also extend into volumes of 3D shapes and various aspects of art. Students can do a long-term project using these shapes and formulas. For example, they can create their own diorama about something they enjoy, using the 2D and 3D shapes discussed in this and future lessons, to tie in some English students can make up a story to go along with their diorama.

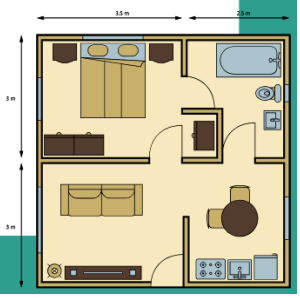
Reflections and Revisions

Name: _____ **Date:** _____

TRUE OR FALSE
AREA

Read each statement below about Area. Write True or False in the Space Below.

- The area of a shape is found by multiplying the sides together.
- Perimeter and Area of a shape are always equal.
- Different shapes can have the same perimeter and same area.
- The units of area are always squared.
- If a gardener wants to plant a garden they must first calculate the area.
- When buying flooring tile we must first know about the perimeter of the room.



Name: Date:

AREA OF SQUARES & RECTANGLES REVIEW

Find the Unknown Side

X

14 cm A= 98cm^2

X = _____ cm

X A= 120cm^2

6 cm

X = _____ cm

X A= 51 cm^2

3 cm

X = _____cm

X

9 cm A= 117 cm^2

X = _____cm

12 cm

A= 72 cm^2 X

X =_____cm

17 cm A= 34 cm^2

X

X = _____ cm

X A= 80 cm^2

5 cm

X = _____ cm

A= 171cm^2 19 cm

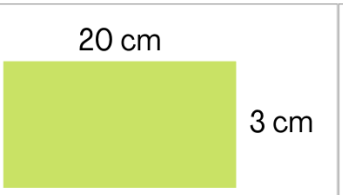
X

X = _____ cm

Name: Date:

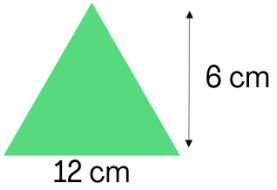
AREA OF SHAPES

Calculate the area of the following shapes:

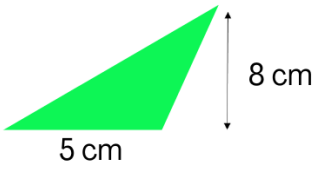


Area = _____ cm^2

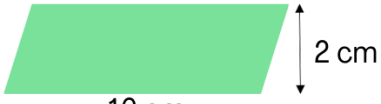
Area = _____ cm^2



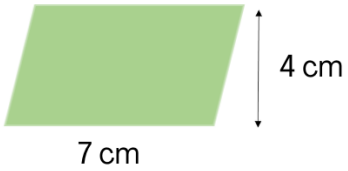
Area = _____ cm^2



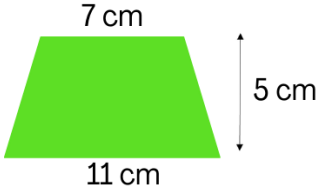
Area = _____ cm^2



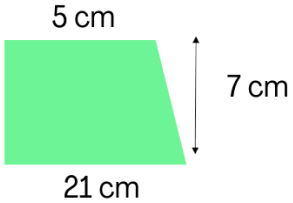
Area = _____ cm^2



Area = _____ cm^2



Area = _____ cm^2

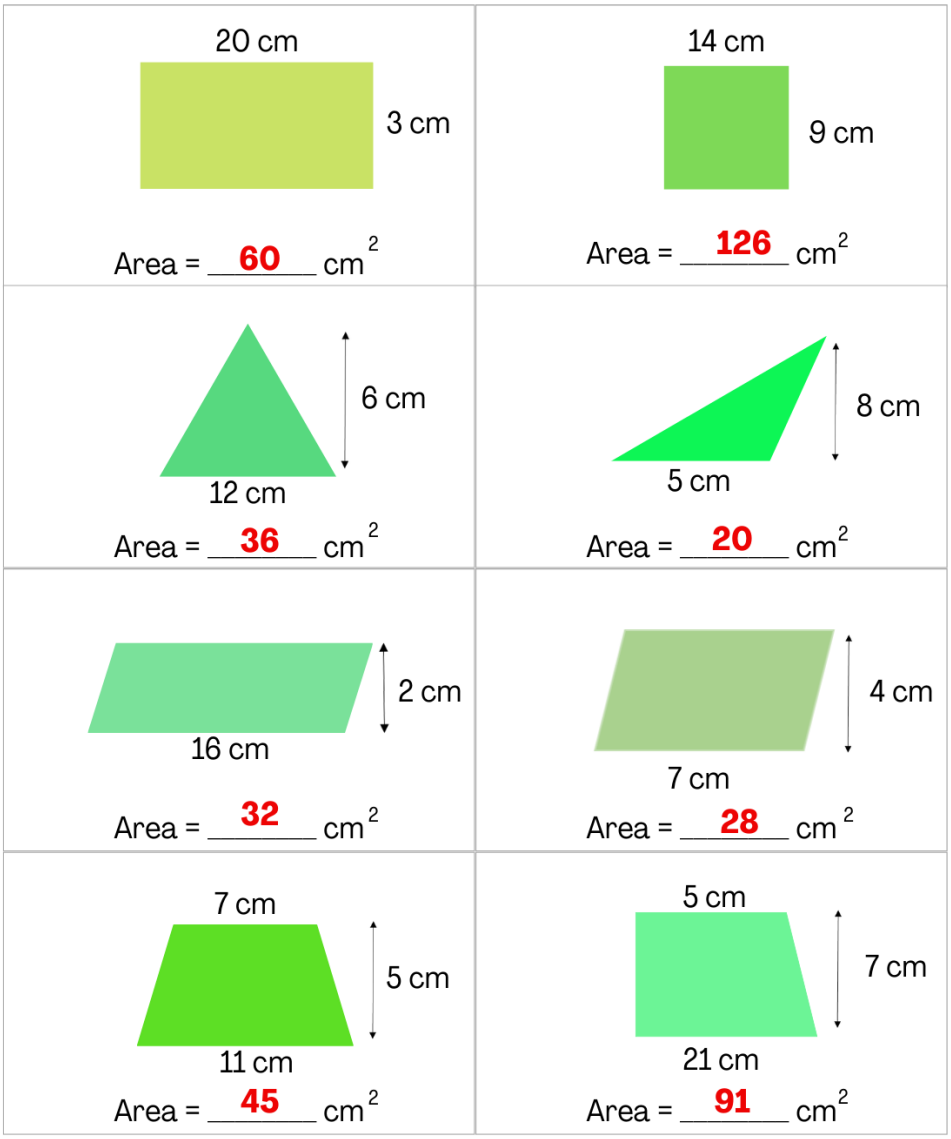


Area = _____ cm^2

Name: Date:

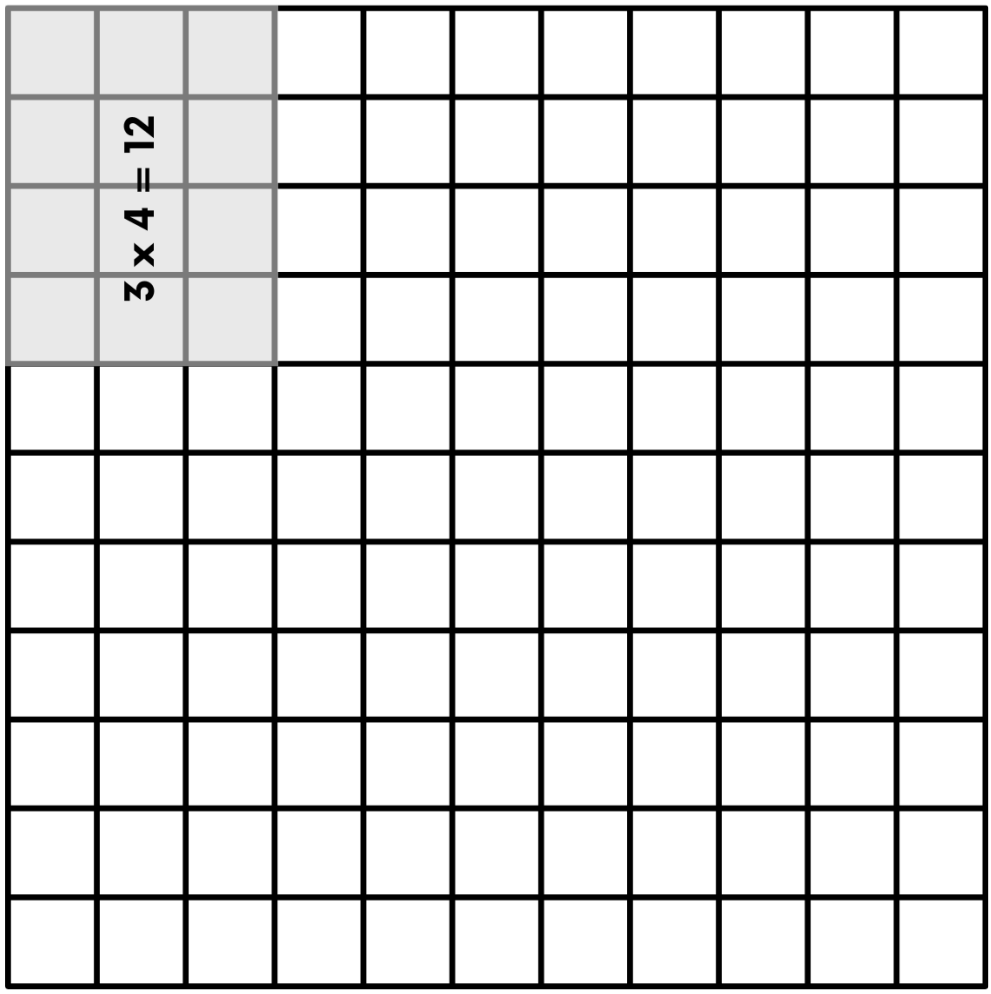
AREA OF SHAPES – ANSWERS

Calculate the area of the following shapes:



RECTANGLE AREA

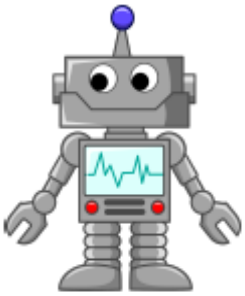
Roll two dice and multiply to find the area of a rectangle. Draw and label the area on the grid:



RECTANGLE AREA

Roll two dice and multiply to find the area of a rectangle. Draw and label the area on the grid:

Lesson # 4 Worksheet (Robot Construction Project Worksheet)



ROBOT CONSTRUCTION PROJECT

TASK: WITH YOUR KNOWLEDGE OF THE PERIMETERS AND AREAS OF RECTANGLES, SQUARES, TRIANGLES, TRAPEZOIDS, AND PARALLELOGRAMS, YOU ARE ASKED BY AN ENGINEER TO DESIGN A ROBOT THAT INCORPORATES ALL OF THESE SHAPES.

MATERIALS:

- PEN/PENCIL
- GRID PAPER
- RULER
- CALCULATOR

CRITERIA: YOUR DESIGN MUST INCLUDE THE FOLLOWING:
AT LEAST:

- ☐ 2 TRAPEZOIDS
- ☐ 2 RECTANGLES
- ☐ 2 TRIANGLES
- ☐ 2 SQUARES
- ☐ 2 PARALLELOGRAMS

DO NOT USE THESE SHAPES:

- ☐ CIRCLES
- ☐ RHOMBUS
- ☐ PENTAGONS
- ☐ HEXAGONS
- ☐ OVALS
- ☐ STARS

INSTRUCTIONS:

1. DRAW A ROUGH DRAFT OF YOUR ROBOT ON A BLANK SHEET OF PAPER.
2. GRAB A PIECE OF GRID PAPER.
3. REDRAW YOUR ROBOT ON THE GRID PAPER.
4. LABEL ALL OF THE MEASUREMENTS.
5. CALCULATE THE PERIMETER OF EACH BODY PART AND RECORD IT IN THE TABLE.
6. NAME THE SHAPES USED FOR EACH BODY PART, CALCULATE THE AREA, AND RECORD YOUR ANSWERS IN THE TABLE.
7. WITH YOUR ROBOT COMPLETE, CALCULATE THE PERIMETER OF YOUR ROBOT'S ENTIRE BODY.
8. COLOUR YOUR ROBOT.

BODY PART	SHAPES AND AREAS	PERIMETER
HEAD		
TORSO		

ARMS		
LEGS		

RUBRIC:

	DEVELOPING	PROFICIENT	GLOWS/GROWS
MEASUREMENTS OF DIMENSIONS	Some of the measurements are labeled and correct.	Measurements are labeled and accurate.	
PERIMETER CALCULATIONS	Some of the calculations are correct or in the process.	All of the calculations are correct.	
AREA CALCULATIONS	Some of the calculations are correct or in the process.	All of the calculations are correct.	
CRITERIA	Some of the criteria were included in the assignment	All of the criteria were included in the assignment	