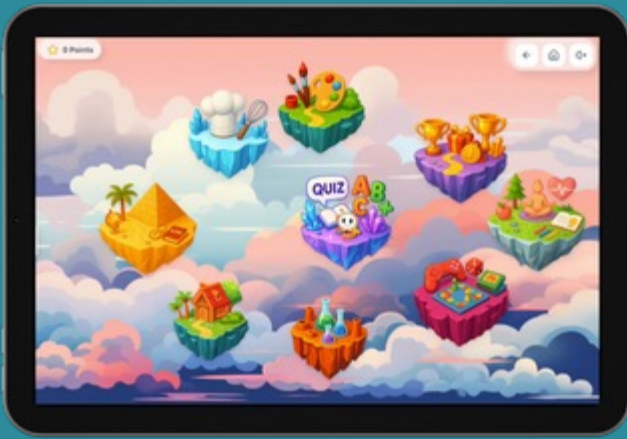


Sukindi

— LEARNING —

Homework without the hassle

Sukindi is an Australian learning platform that supports Teachers, Parents and Students with an interactive homework app and downloadable resources.



Scan to start your
free 7-day trial

www.sukindi.com.au



Creating 2D Shapes - Year 4

Table of Contents	
Presentation: Creating 2D Shapes	
Display & Reference: Composite Shapes	
Activity 1: Pattern Block Design Studio	
Activity 2: Tangram Challenge	
Game: Shape Builder Race	
Worksheet 1: Build and Name Composite Shapes	
Worksheet 2: Decompose and Count	
Worksheet 3: Same Outline, Different Pieces	
Worksheet 4: Design a Tiny Home	
Worksheet 5: Tangram Reasoning	
Quiz: Creating 2D Shapes	
Assessment: Composite Shape Design	
Rubric: Creating 2D Shapes Rubric	



Composite Shapes at a Glance

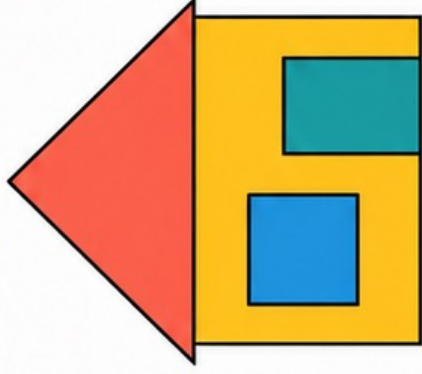
A composite shape is made by joining two or more familiar 2D shapes.

1

COMPOSE



HOUSE

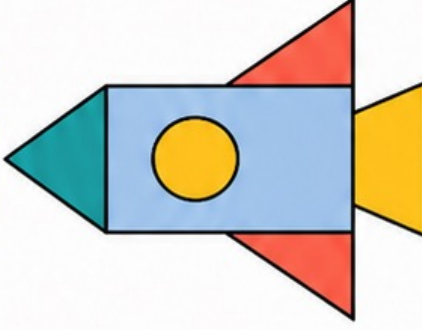


2

DECOMPOSE

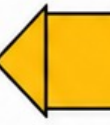


ROCKET

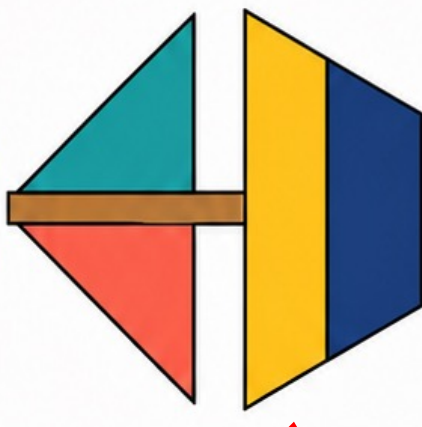


3

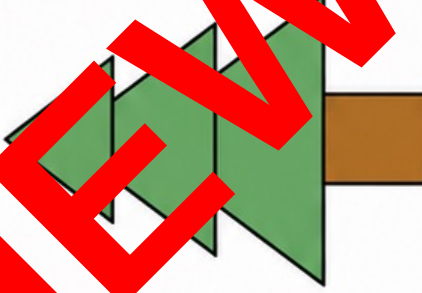
CHECK



BOAT



TREE



edge • vertex • rotate • flip • resize • outline

Composite Shape Strategy Cards



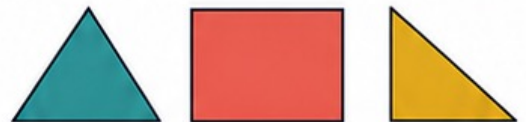
COMPOSE

1. Choose familiar shapes.
2. Rotate, flip or resize.
3. Join edges to build an outline.



DECOMPOSE

1. Trace the outside outline.
2. Find component shapes.
3. Name and count each shape.



CHECK

- ✓ No gaps or overlaps unless the task allows them.
- ✓ Every piece has a purpose.
- ✓ Explain how your design works.



edge • vertex • rotate • flip • resize • outline • component shape

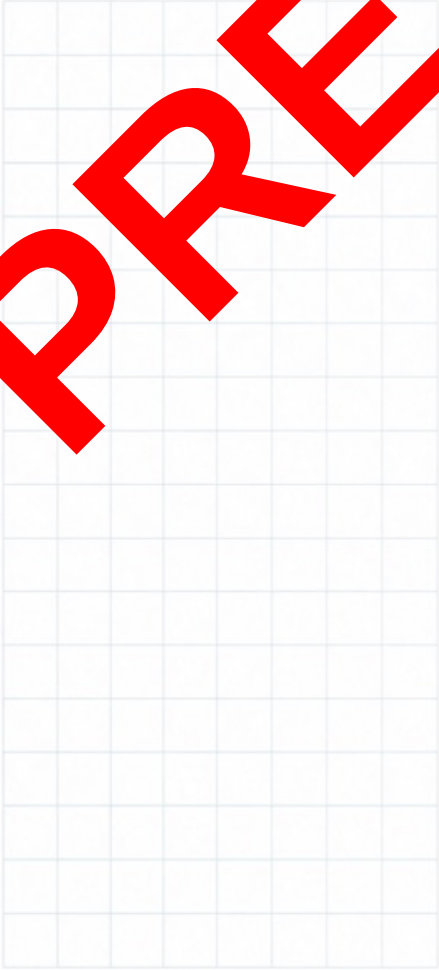


Pattern Block Design Studio



Use pattern blocks to build, trace and label each design.

SYMMETRICAL DESIGN



Shapes used: _____

TRANSPORT



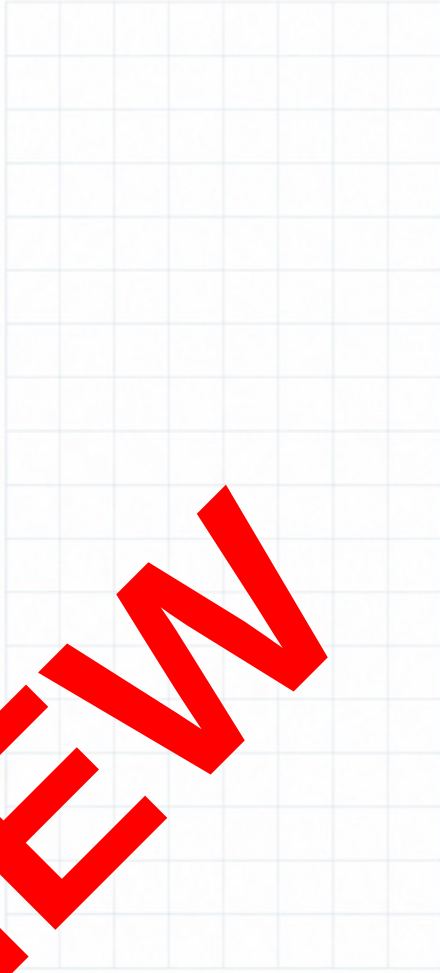
Shapes used: _____

ANIMAL



Shapes used: _____

SAME OUTLINE, TWO WAYS

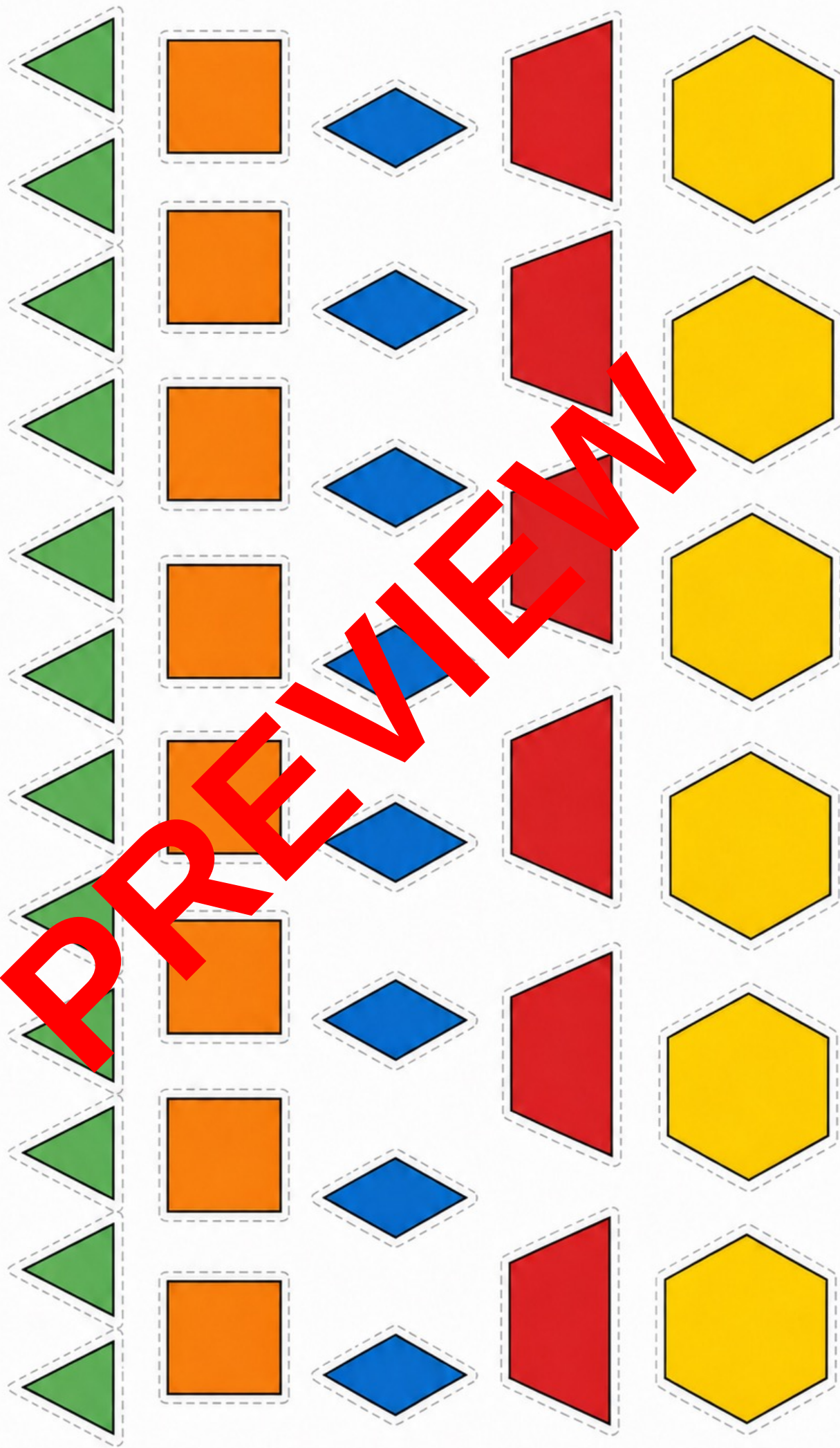


Shapes used: _____

PREVIEW

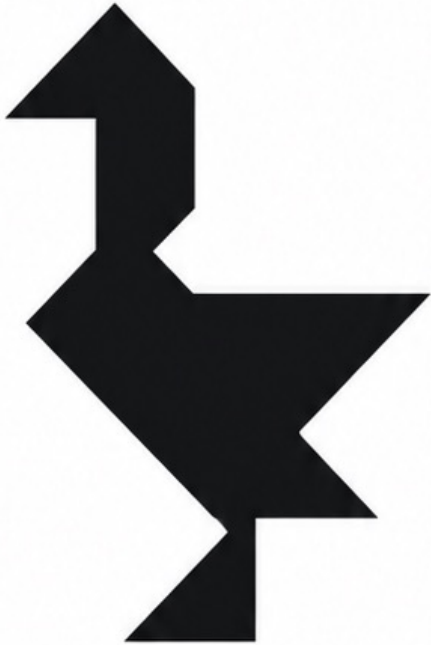
Pattern Block Pieces

Cut carefully. Store the pieces in an envelope for reuse.



Tangram Challenge Cards

Use all seven tans. Pieces may touch but must not overlap.



BIRD



RABBIT



BOAT

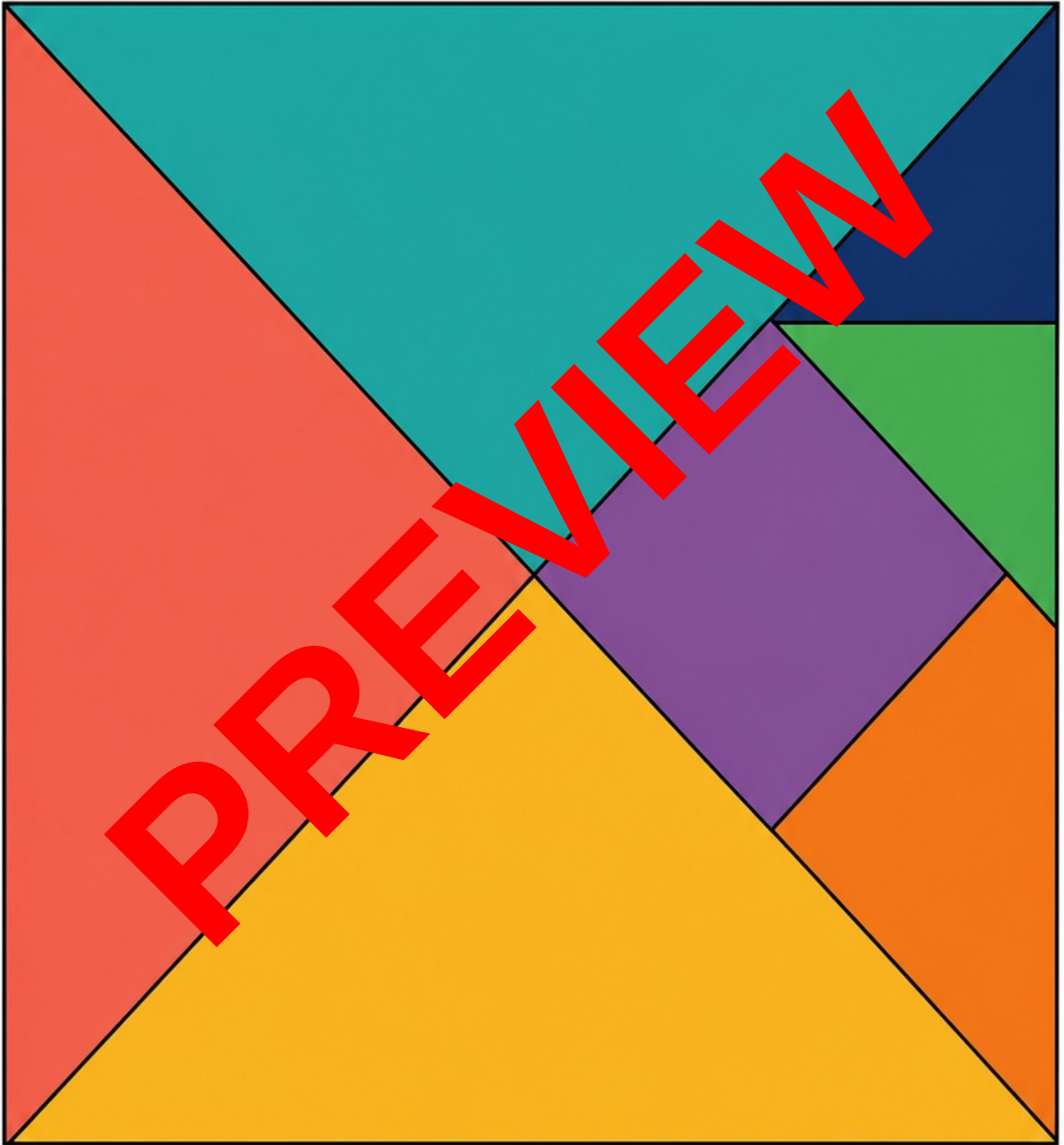


ROCKET



Tangram Pieces

Cut along every black line. Keep all seven tans together.



Shape Builder Race



Roll. Move. If you land on a named shape, include it in your design. On CHALLENGE, draw a card.



Shape Builder Challenge Cards



Draw one card when you land on CHALLENGE.

Use exactly
5 shapes.



Include a line
of symmetry.



Use at least
3 triangles.



Use two
different
quadrilaterals.



Make the same
outline two ways.



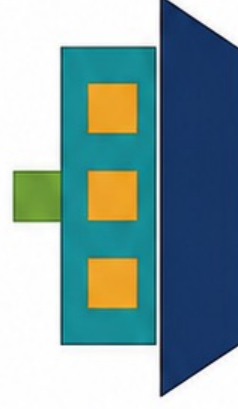
Include one
flipped shape.



Create
an animal.



Create a mode
of transport.



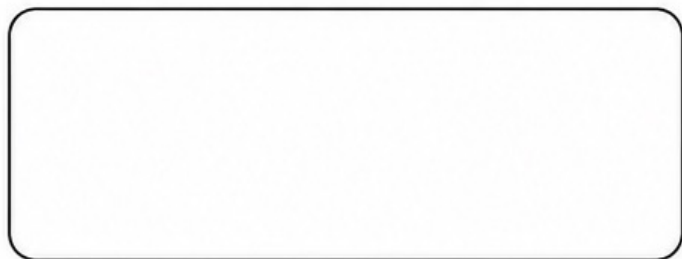
Build and Name Composite Shapes



Name: _____

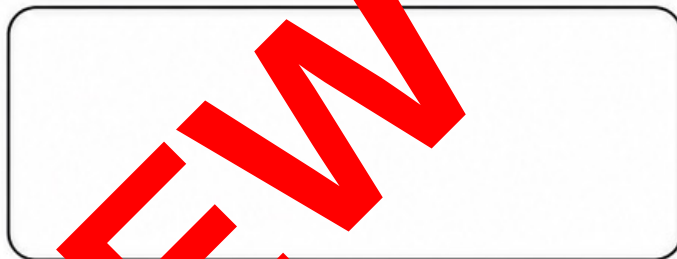
Join the given shapes to make one composite shape. Sketch your result and give it a sensible name.

1.



Name: _____

2.



Name: _____

3.



Name: _____

4.



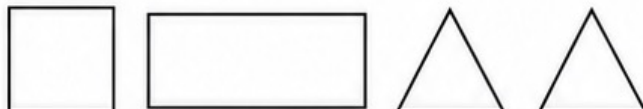
Name: _____

5.



Name: _____

6.



Name: _____

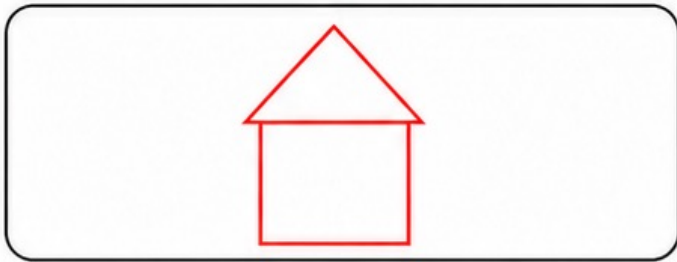
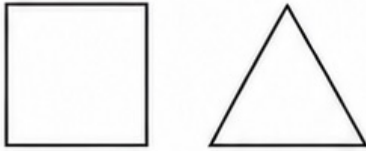
Build and Name Composite Shapes



Name: ANSWERS

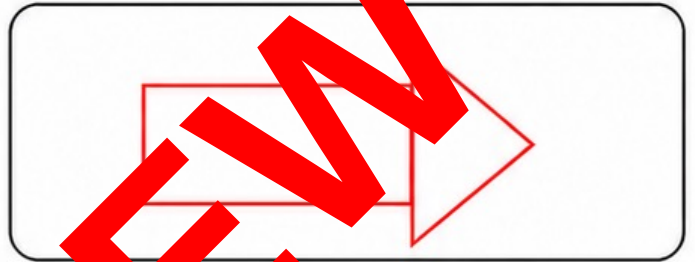
Join the given shapes to make one composite shape. Sketch your result and give it a sensible name.

1.



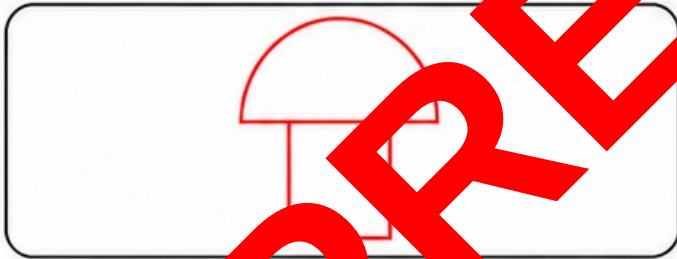
Name: house

2.

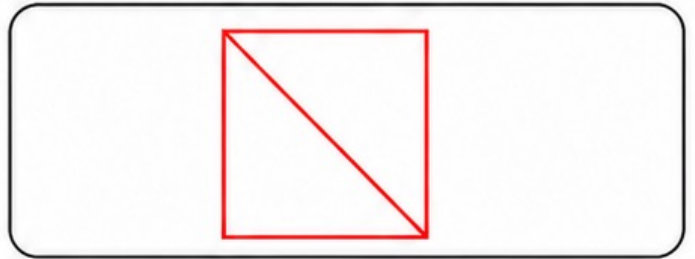
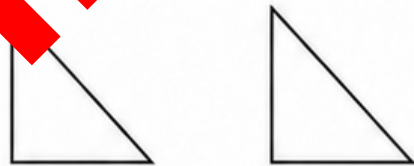


Name: arrow

3.

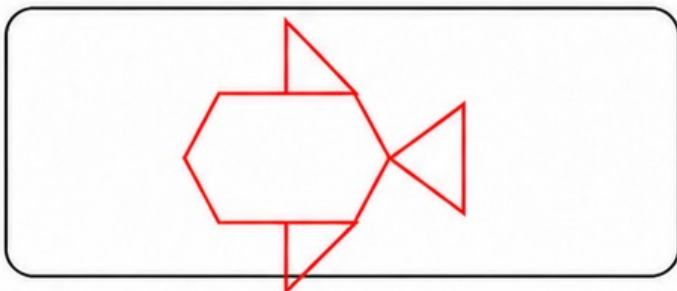


Name: mushroom



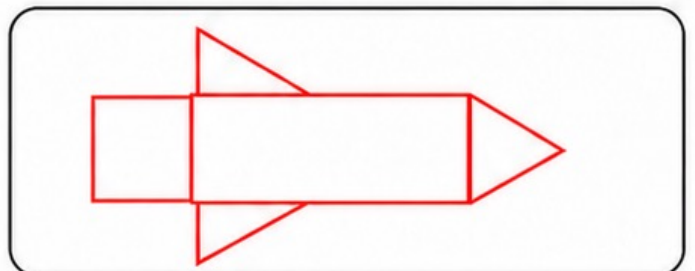
Name: square

5.



Name: fish

6.



Name: rocket

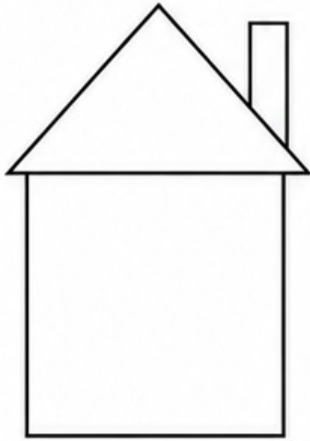
Decompose and Count



Name: _____

Study each composite design. Count its component shapes, then record the totals.

HOUSE



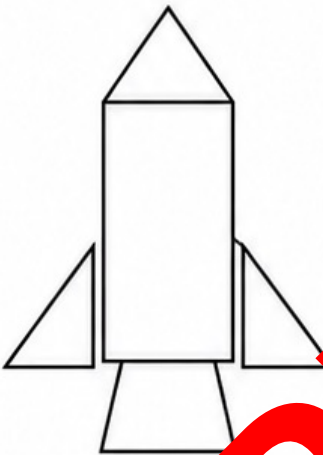
Triangles	
Quadrilaterals	
Other shapes	
Total pieces	

SAILBOAT



Triangles	
Quadrilaterals	
Other shapes	
Total pieces	

ROCKET



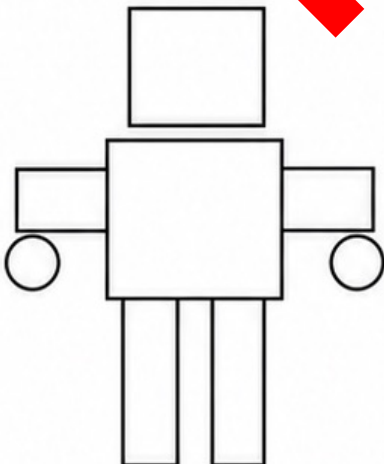
Triangles	
Quadrilaterals	
Other shapes	
Total pieces	

TREE



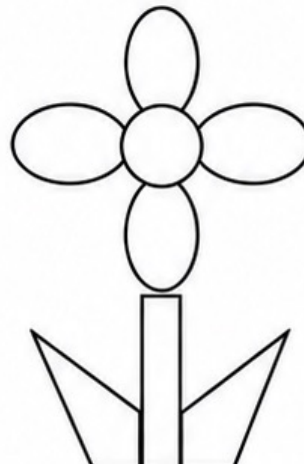
Triangles	
Quadrilaterals	
Other shapes	
Total pieces	

ROBOT



Triangles	
Quadrilaterals	
Other shapes	
Total pieces	

FLOWER



Triangles	
Quadrilaterals	
Other shapes	
Total pieces	

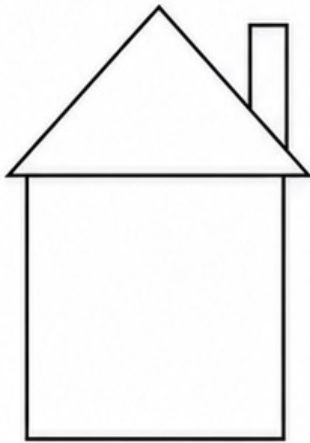
Decompose and Count



Name: **ANSWERS**

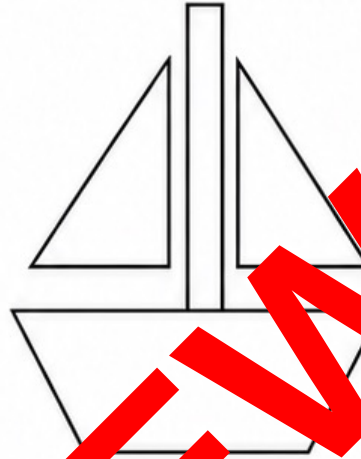
Study each composite design. Count its component shapes, then record the totals.

HOUSE



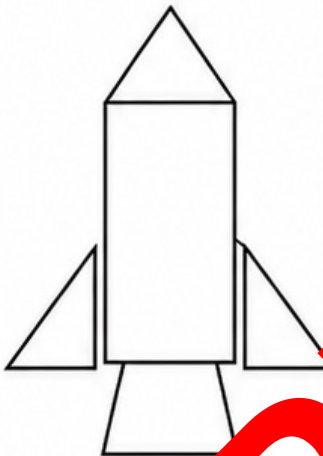
Triangles	1
Quadrilaterals	2
Other shapes	0
Total pieces	3

SAILBOAT



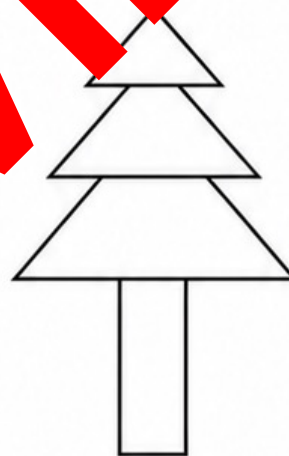
Triangles	2
Quadrilaterals	2
Other shapes	0
Total pieces	4

ROCKET



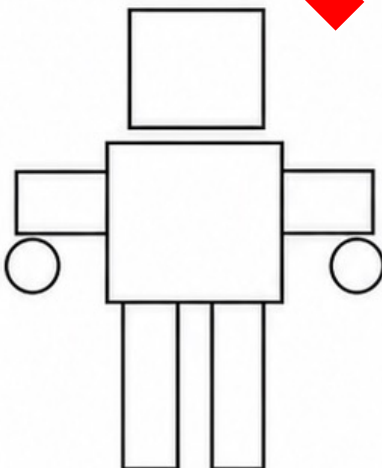
Triangles	3
Quadrilaterals	2
Other shapes	0
Total pieces	5

TREE



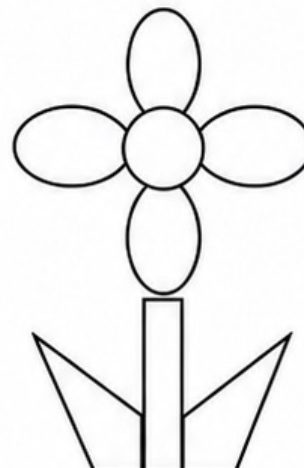
Triangles	3
Quadrilaterals	1
Other shapes	0
Total pieces	4

ROBOT



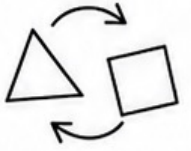
Triangles	0
Quadrilaterals	6
Other shapes	2
Total pieces	8

FLOWER



Triangles	2
Quadrilaterals	1
Other shapes	5
Total pieces	8

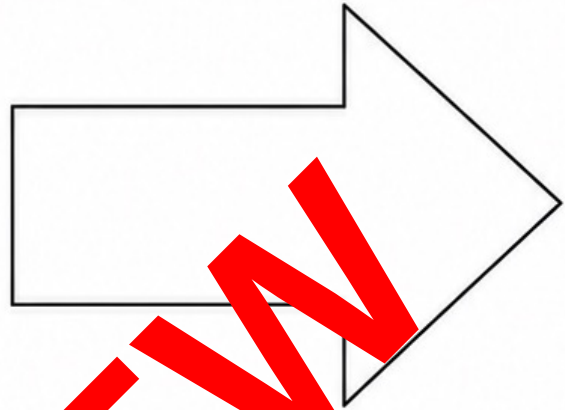
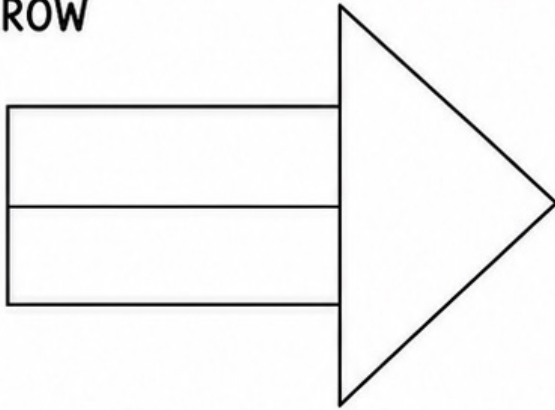
Same Outline, Different Pieces



Name: _____

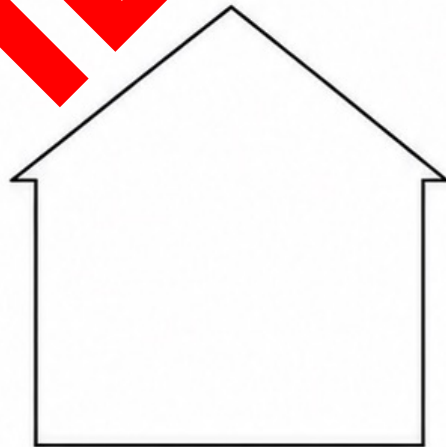
Each outline can be made in more than one way. Draw a different valid decomposition, then explain what changed.

1. ARROW



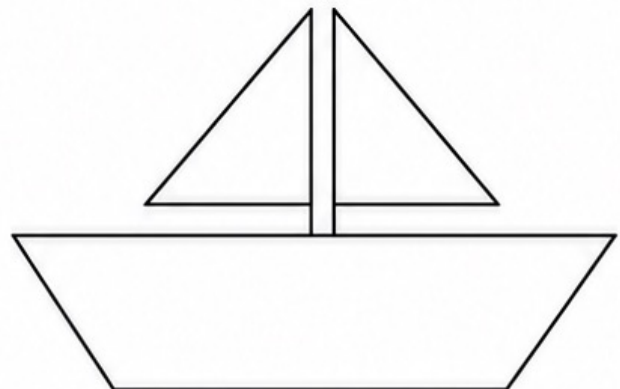
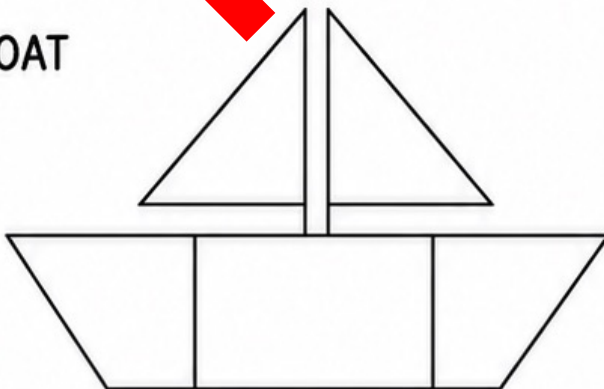
I changed _____.

2. HOUSE



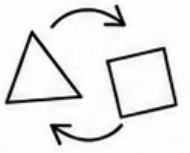
I changed _____.

3. BOAT



I changed _____.

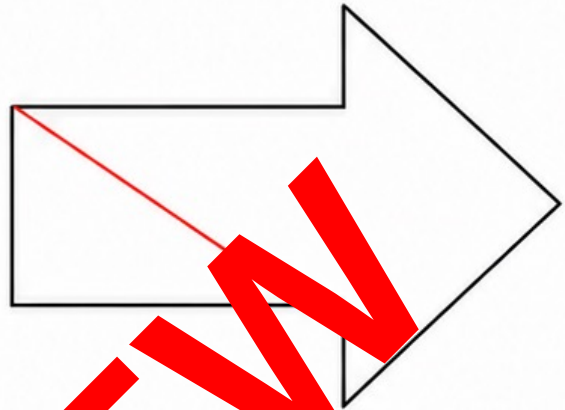
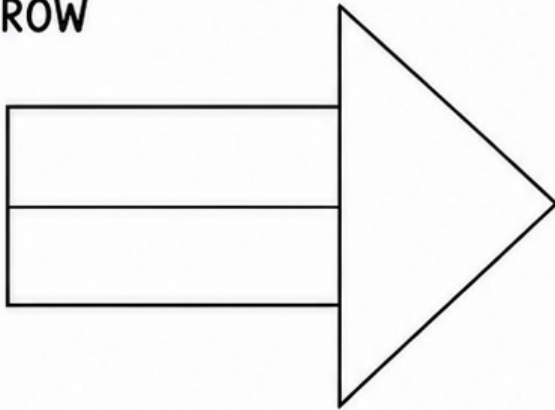
Same Outline, Different Pieces



Name: ANSWERS

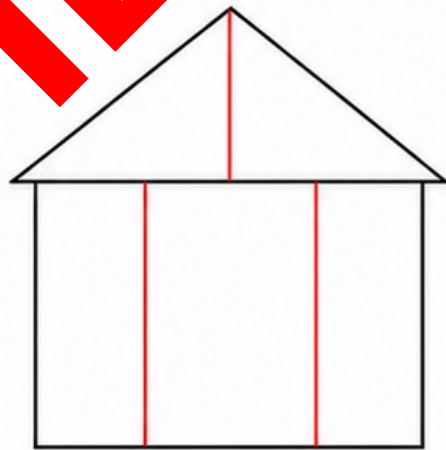
Each outline can be made in more than one way. Draw a different valid decomposition, then explain what changed.

1. ARROW



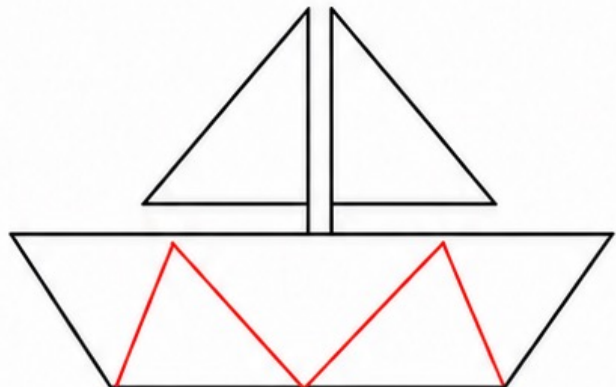
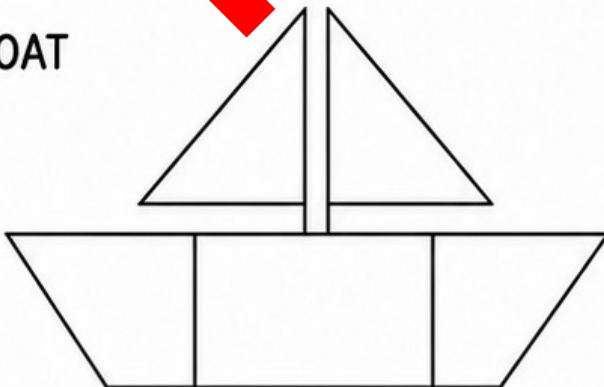
I changed the rectangle into two triangles.

2. HOUSE



I changed the roof and wall into smaller pieces.

3. BOAT

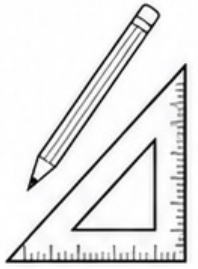


I changed the hull into triangles instead of rectangles.



Design a Tiny Home

Name: _____



Design a tiny home as one composite shape. Use every required shape at least once, then label and count your pieces.

square • rectangle • triangle • trapezium • parallelogram • semicircle

PREVIEW

Shape	How many?	How did you use it?

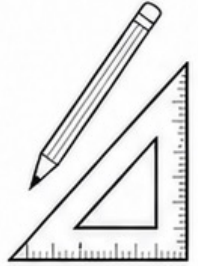
Which shape did you rotate, flip or resize? _____





Design a Tiny Home

Name: ANSWERS



Design a tiny home as one composite shape. Use every required shape at least once, then label and count your pieces.

square • rectangle • triangle • trapezium • parallelogram • semicircle



Shape	How many?	How did you use it?
square	2	windows
rectangle	3	two wall sections and door
triangle	1	roof
trapezium	1	porch
parallelogram	1	solar panel
semicircle	1	awning

Which shape did you rotate, flip or resize? I rotated the parallelogram to make the solar panel.





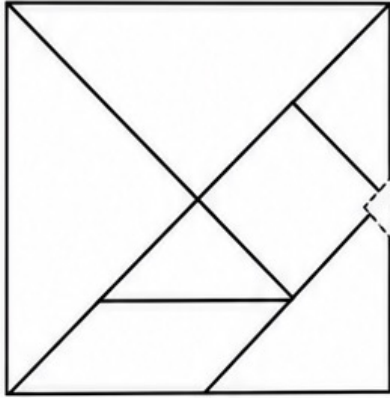
Tangram Reasoning



Name: _____

Think about how the seven tans can rotate, flip and join. Show your reasoning.

1 MISSING TAN



Circle the missing tan.

A

B

C

D



small
triangle



square

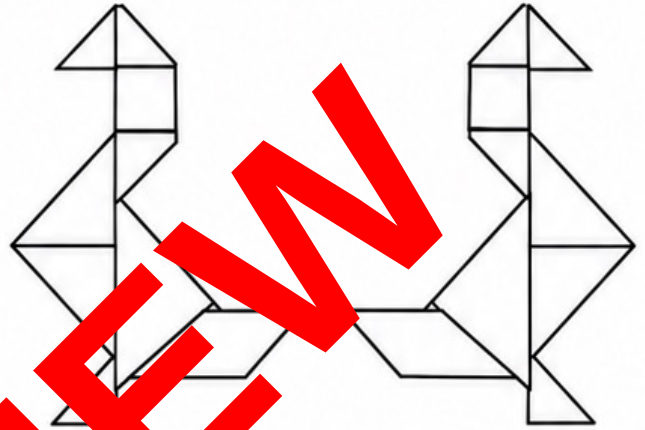


parallelogram



medium
triangle

2 SAME OR DIFFERENT?



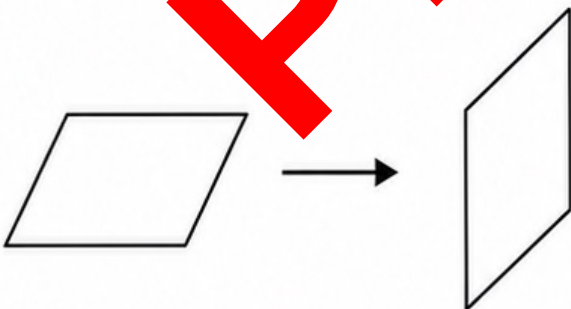
Are they the same design after a flip? Explain.

4 PLAN A SOLUTION



Sketch where the seven tans could go.

3 ROTATE OR FLIP?



Which transformation was used? _____



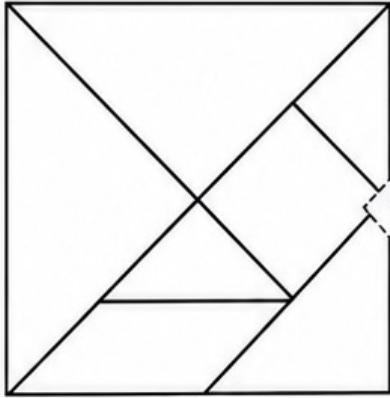
Tangram Reasoning



Name: ANSWERS

Think about how the seven tans can rotate, flip and join. Show your reasoning.

1 MISSING TAN

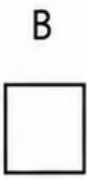


Circle the missing tan.

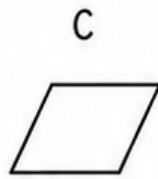


small triangle

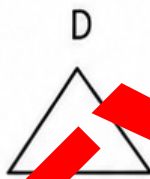
small triangle



square

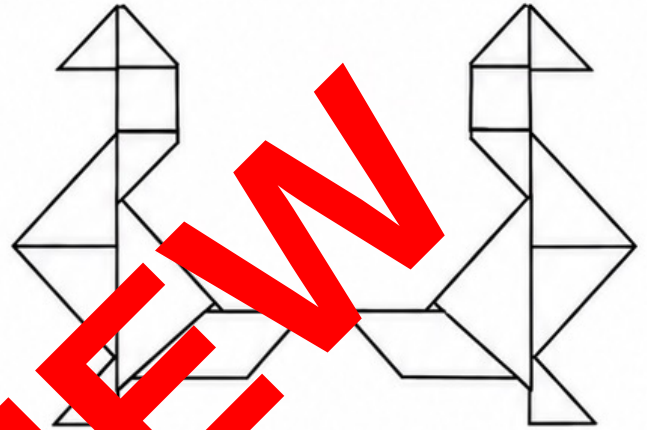


parallelogram



medium triangle

2 SAME OR DIFFERENT?



Are they the same design after a flip? Explain.

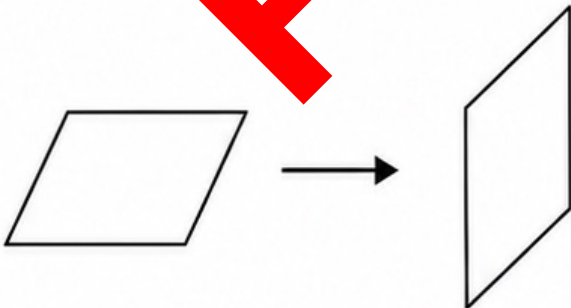
Yes. One design is a reflection of the other.

4 PLAN A SOLUTION



Sketch where the seven tans could go.

3 ROTATE OR FLIP?



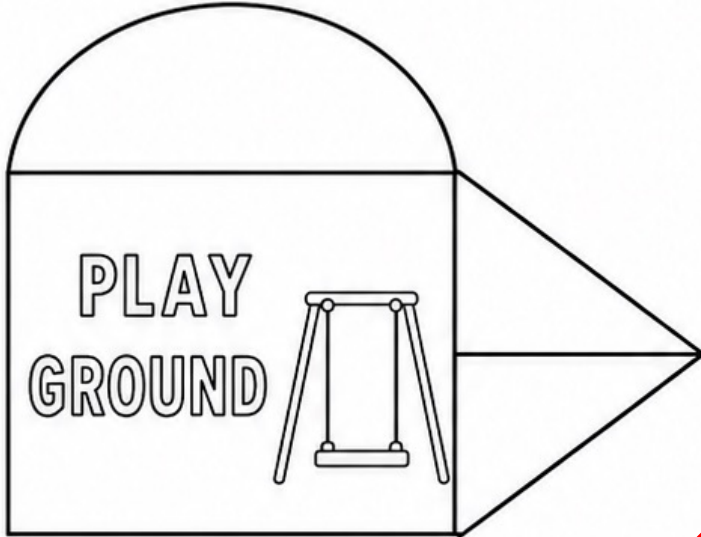
Which transformation was used? rotate 90°

Composite Shape Design Assessment - Part A

Name: _____

Score: ____ / 10

1. DECOMPOSE A PLAYGROUND SIGN (4 marks)



Name and count the component shapes.

Triangles: _____

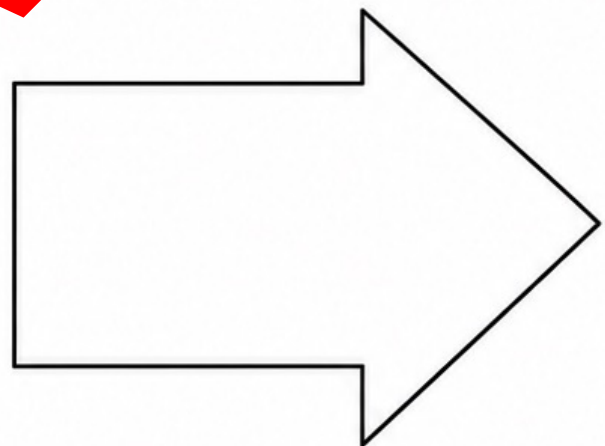
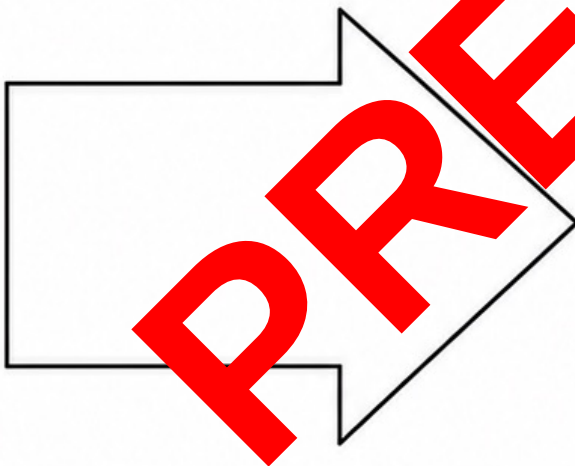
Rectangles: _____

Semicircles: _____

Total pieces: _____

2. SAME OUTLINE, TWO WAYS (4 marks)

Draw a different valid decomposition inside the arrow.



3. EXPLAIN YOUR CHOICE (2 marks)

Describe one shape you rotated, flipped or resized and explain why.

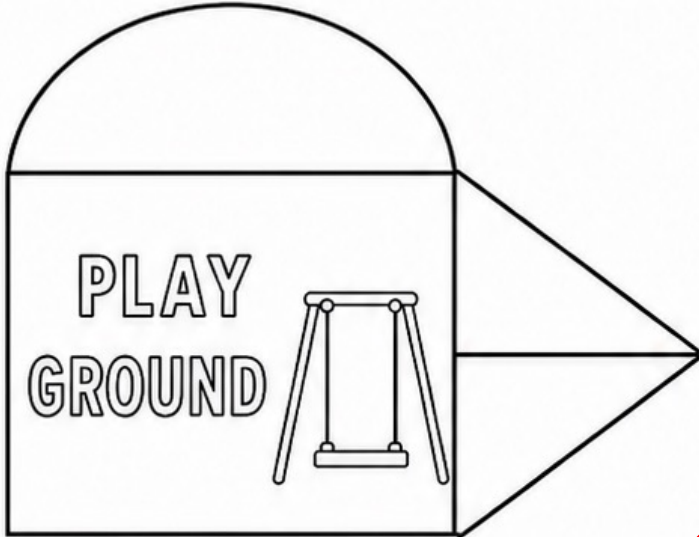


Composite Shape Design Assessment - Part A

Name: ANSWERS

Score: ____ / 10

1. DECOMPOSE A PLAYGROUND SIGN (4 marks)



Name and count the component shapes.

Triangles: 2

Rectangles: 1

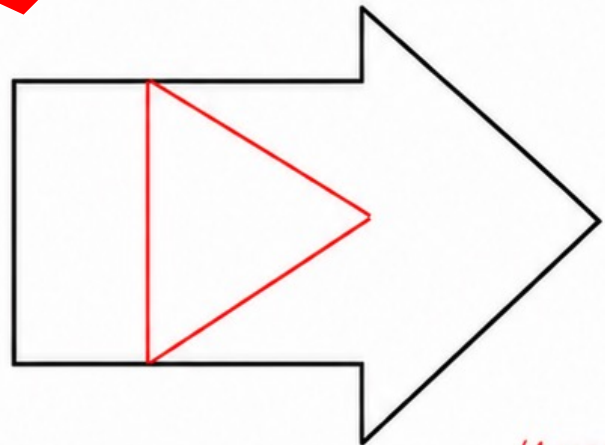
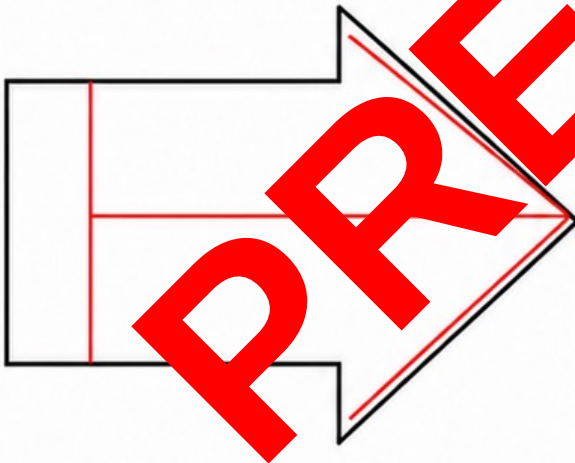
Semicircles: 1

Total pieces: 4

(4 marks)

2. SAME OUTLINE, TWO WAYS (4 marks)

Draw a different valid decomposition inside the arrow.



(4 marks)

3. EXPLAIN YOUR CHOICE (2 marks)

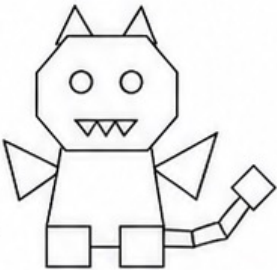
Describe one shape you rotated, flipped or resized and explain why.

I rotated the triangles so both arrows point forwards.



(2 marks)

Composite Shape Design Assessment - Part B



Name: _____

Score: ____ /10

COMPOSITE CREATURE CHALLENGE

Design one creature using exactly 8 familiar 2D shapes.
Label every component shape.

CONSTRAINTS (Must meet all four)
Use at least 3 different shape types.
Include at least 1 quadrilateral.
Include a matching pair of shapes.
Rotate, flip, resize at least 2 pieces.

PREVIEW

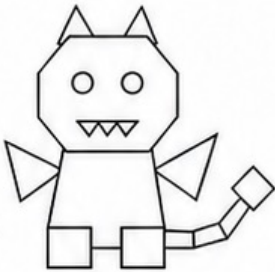
8 shapes used	
Every shape labelled	
Constraints met	
Neat edge-to-edge joins	

/6

Explain two transformations you used and why.

/4

Composite Shape Design Assessment - Part B



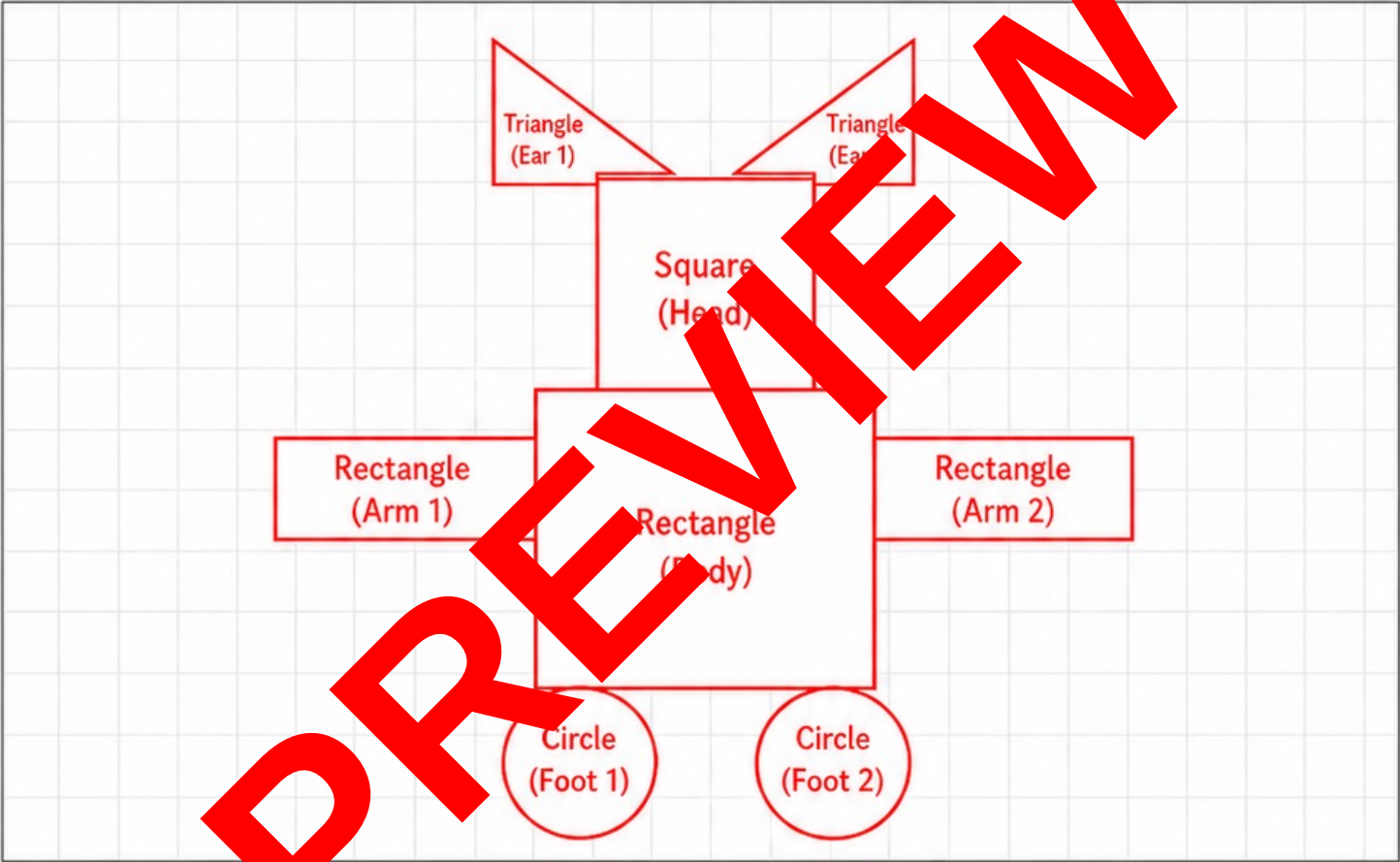
Name: ANSWERS

Score: 10 /10

COMPOSITE CREATURE CHALLENGE

Design one creature using exactly 8 familiar 2D shapes.
Label every component shape.

CONSTRAINTS (Must meet all four)	
Use at least 3 different shape types.	✓
Include at least 1 quadrilateral.	✓
Include a matching pair of shapes.	✓
Rotate, flip or resize at least 2 pieces	✓

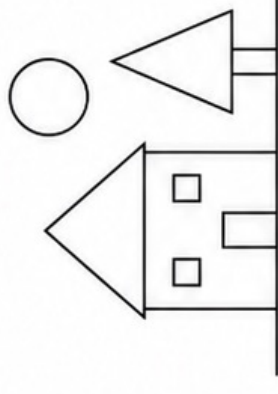


8 shapes used	✓
Every shape labelled	✓
Constraints met	✓
Neat edge-to-edge joins	✓

6/6

Explain two transformations you used and why.
I flipped the matching ears so they face outwards. I
rotated the arm rectangles to make them reach sideways.

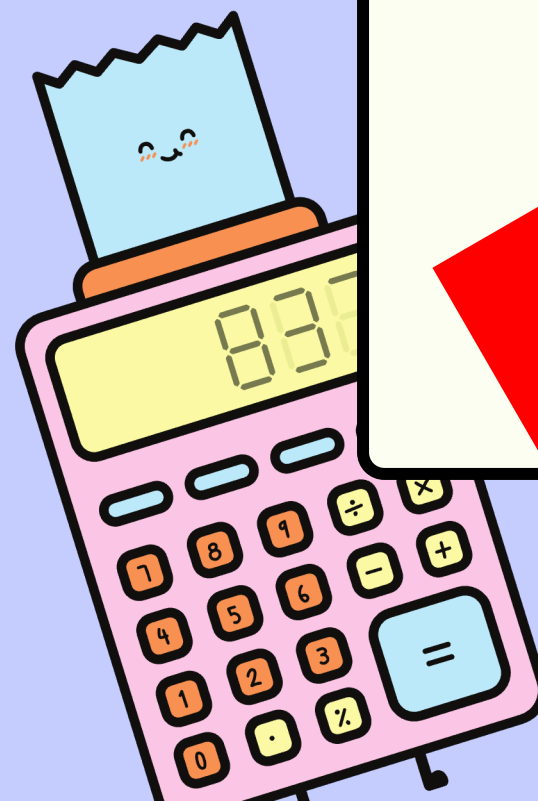
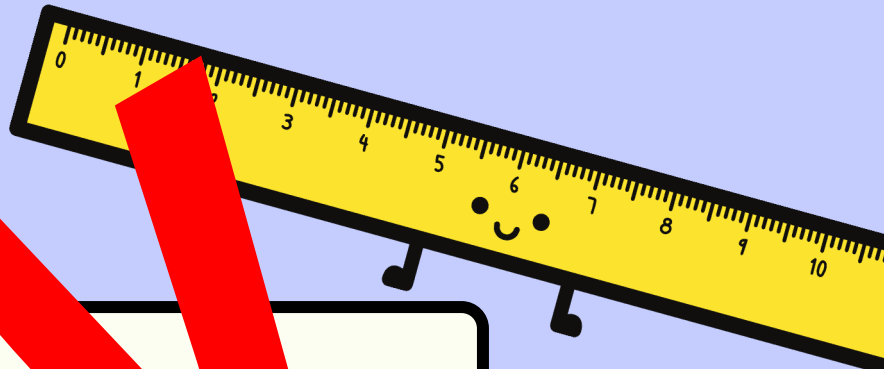
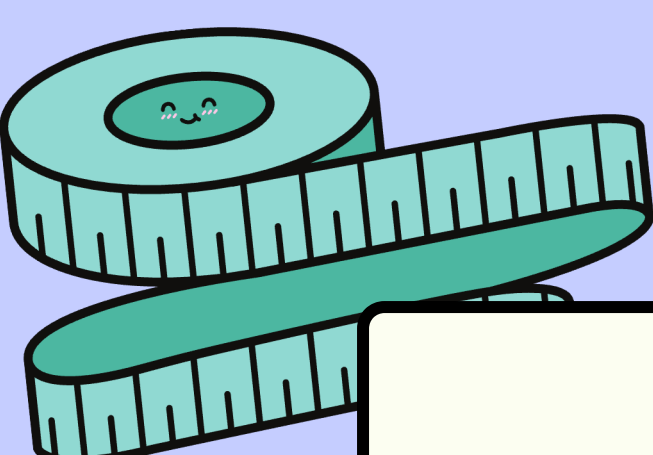
Creating 2D Shapes Rubric



Student: _____

Date: _____

CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
Identifies component shapes	Needs support to name shapes.	Names some shapes with help.	Names most shapes correctly.	Names all shapes clearly and confidently.	Identifies and describes shapes flexibly.
Composes shapes accurately	Builds shapes with frequent errors.	Builds shapes with some errors.	Builds shapes accurately.	Builds shapes accurately and neatly.	Creates shapes in clever and efficient ways.
Decomposes shapes accurately	Struggles to break shapes apart.	Breaks shapes with some errors.	Breaks shapes accurately.	Breaks shapes accurately and clearly.	Breaks shapes in multiple effective ways.
Uses rotate, flip and resize	Needs support to use tools.	Uses tools with inconsistent success.	Uses tools appropriately.	Uses tools confidently and independently.	Uses tools creatively and efficiently.
Explains geometric reasoning	Explains with help and prompts.	Gives simple explanations.	Explains thinking clearly.	Explains thinking clearly with examples.	Explains thinking insightfully and deeply.
Checks and refines designs	Needs support to check work.	Checks with reminders and makes changes.	Checks work and makes changes.	Checks carefully and refines independently.	Checks thoroughly and improves designs insightfully.



PREVIEW

Creating 2D Shapes

A small, friendly cartoon character wearing a blue graduation cap and holding a yellow pencil is positioned in the bottom-right corner of the central white box.

Learning Goal

We are learning to compose and decompose familiar two-dimensional shapes to create and explain composite designs.



Success Criteria

I can:

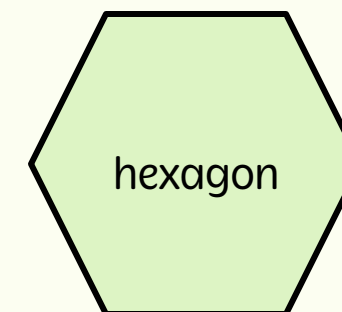
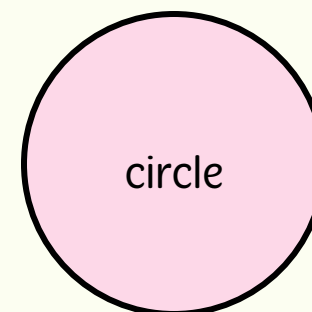
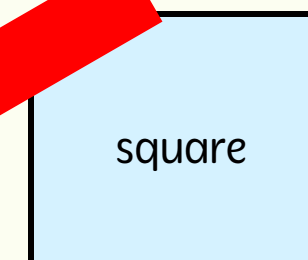
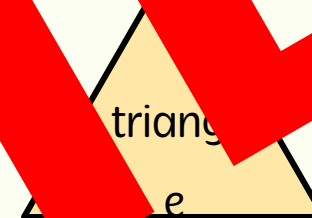
- join familiar shapes edge-to-edge
- split a composite shape into useful parts
- rotate, flip or resize pieces
- explain and check my design



Shape Review

A shape can be described by its sides, vertices and curved edges.

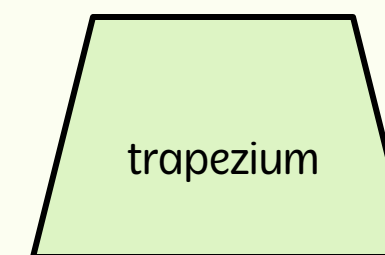
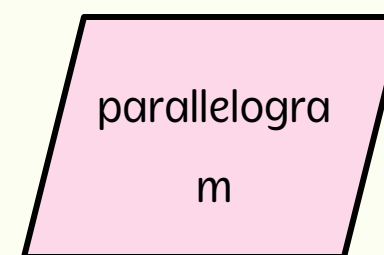
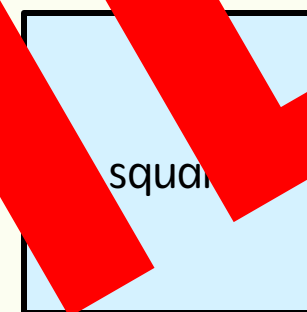
Name each shape and notice which properties stay the same when it is rotated, flipped, or resized.



Meet the Quadrilaterals

Quadrilaterals have four straight sides.

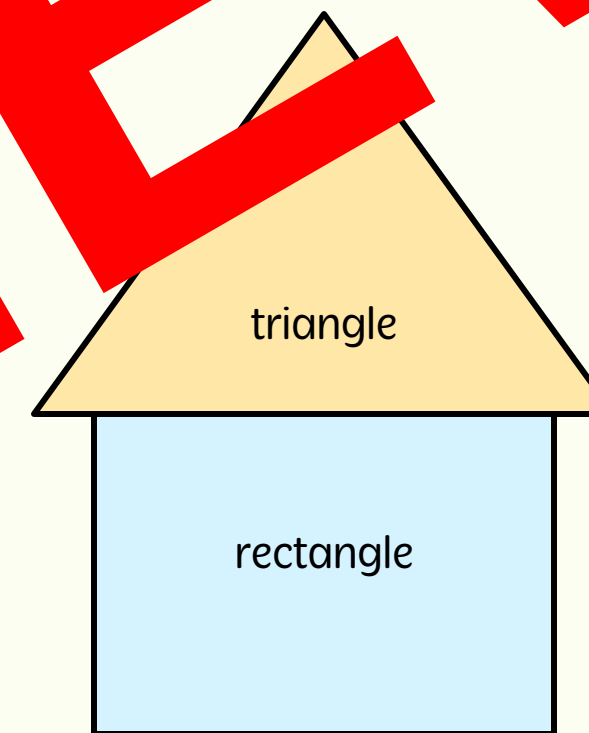
A square, rectangle, parallelogram and trapezium look different, but each is a quadrilateral.



What Is a Composite Shape?

A composite shape is one connected outline made by joining two or more familiar 2D shapes.

The pieces are called component shapes.



one connected house outline

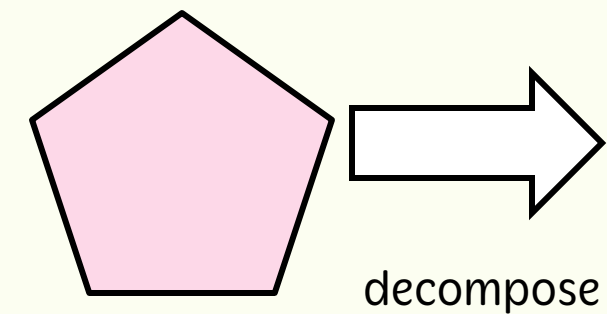
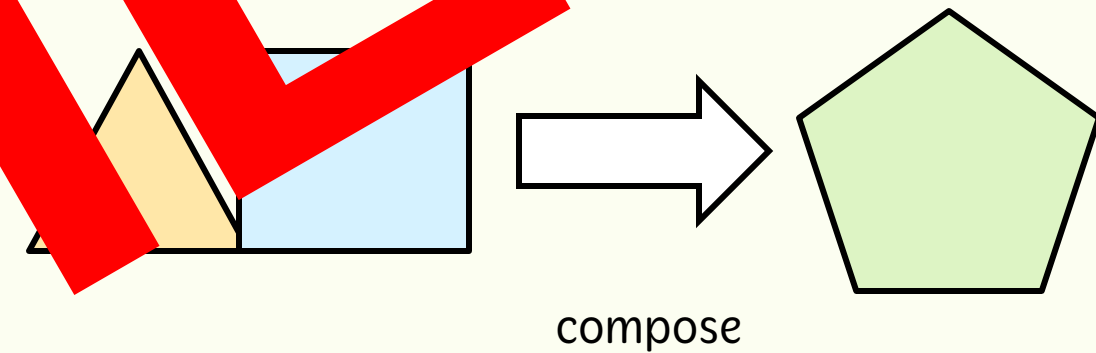


Compose and Decompose

Compose means join pieces to make a new whole.

Decompose means split a whole into familiar shapes.

These actions undo each other.



Joining Rules

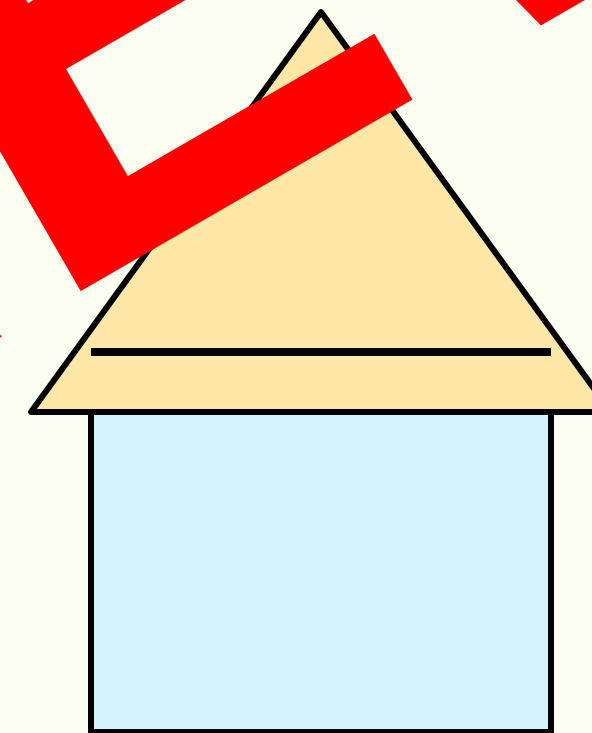
For a clear composite design:

- make pieces touch edge-to-edge
- avoid accidental gaps and overlaps
- keep the outline easy to trace
- count every component once



Worked Example: House

1. Start with one rectangle.
2. Rotate a triangle so its base is horizontal.
3. Join the triangle to the top edge.
4. Trace the outer outline and name both pieces.



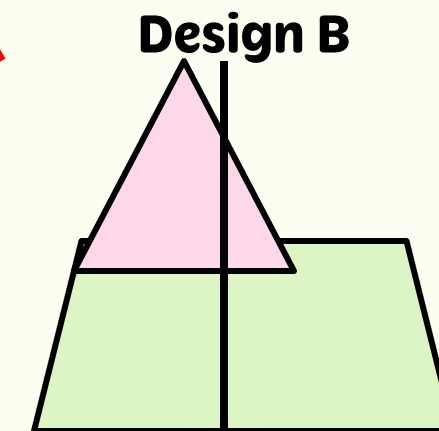
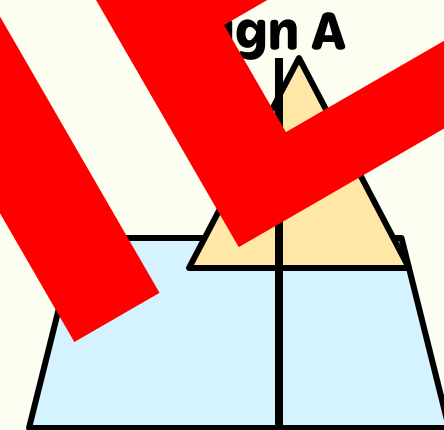
2 component shapes



One Boat, Two Ways

Two designs can have the same outer outline but different component shapes.

Compare where each boundary is placed. Both decompositions can be used if the pieces fill the outline exactly.



same outline • different pieces



Composite Shapes Around Us

Look for familiar shapes inside:

- road signs and logos
- buildings and playgrounds
- vehicles and machines
- patterns, mosaics, maps

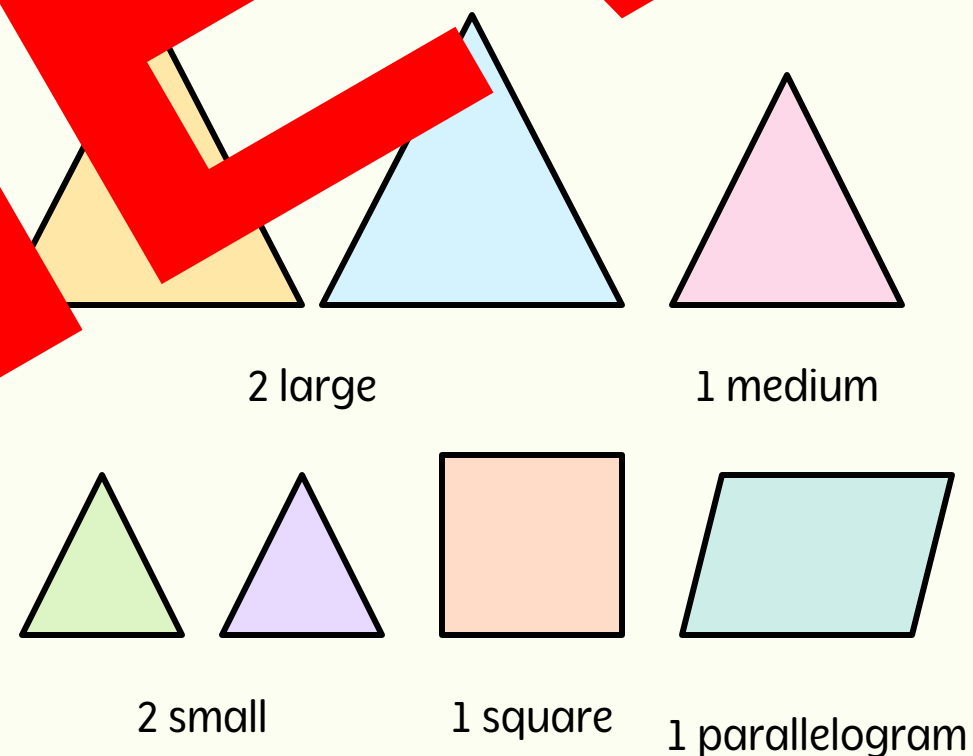
The same shape can often be built in more than one way.



Tangrams: Seven Useful Pieces

A tangram uses exactly seven tans: two large triangles, one medium triangle, two small triangles, one square and one parallelogram.

All seven pieces are used once to complete a tangram puzzle.



A Reliable Strategy

COMPOSE: choose, transform, join.

DECOMPOSE: trace, split, name.

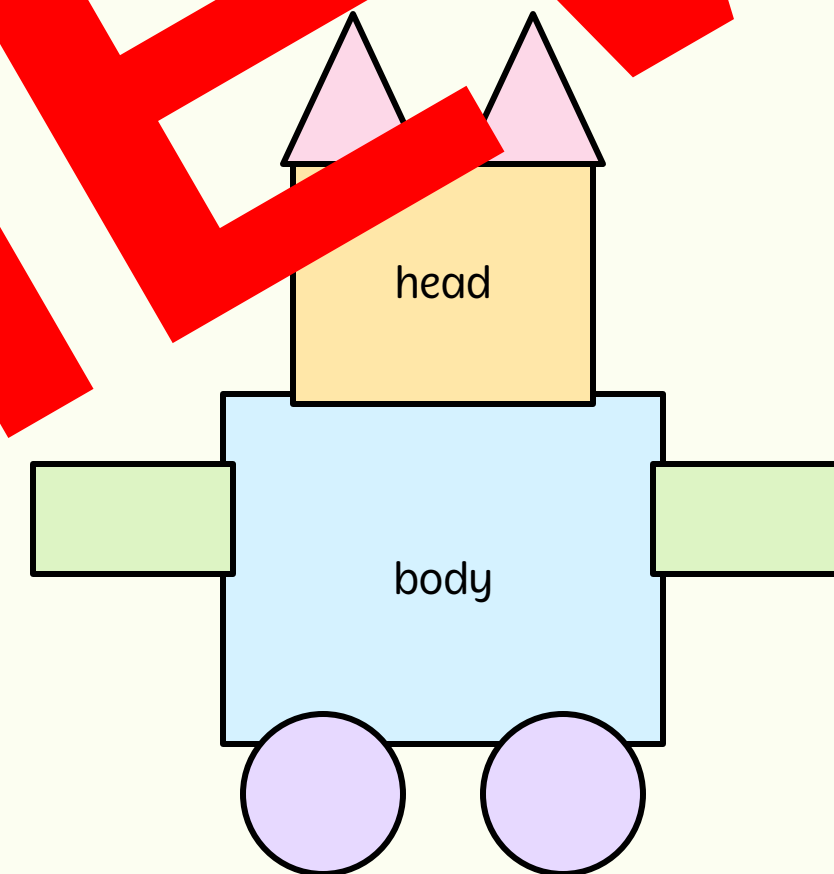
CHECK: count pieces, check join, compare the outline, then refine.



Challenge: Composite Animal

Build one connected animal from exactly eight shapes.

Include at least three shape types, a matching pair, and one quadrilateral that is not a square at least two pieces.



Explain Your Reasoning

A strong explanation names the shape and the transformation.

Example: "I flipped the matching triangles so the eyes face upwards."

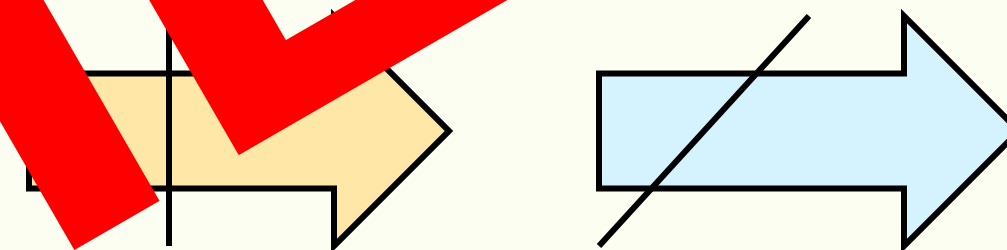
Then explain why the shape improved the design.



Compare Two Constructions

Ask:

- Is the outer outline the same?
- Which component shapes are different?
- Where were pieces rotated, copied or resized?
- Does each design have constraints?



same outer arrow

different component boundaries



Independent Practice

Create a composite sign for a new playground area.

Use 6–10 familiar shapes, label every component and show the different valid decomposition of the same figure.



Common Mistakes

Watch for:

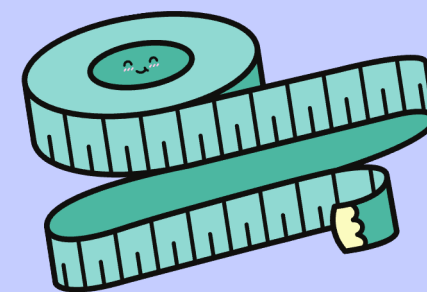
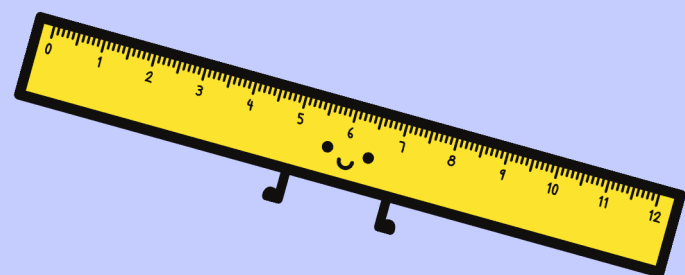
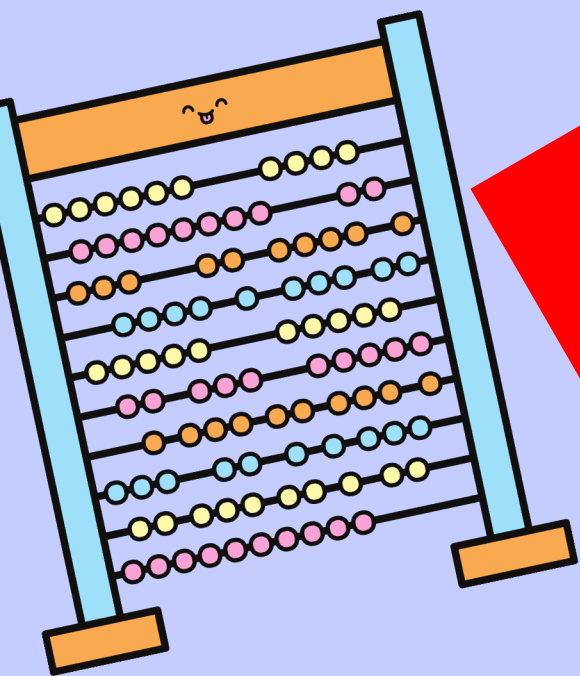
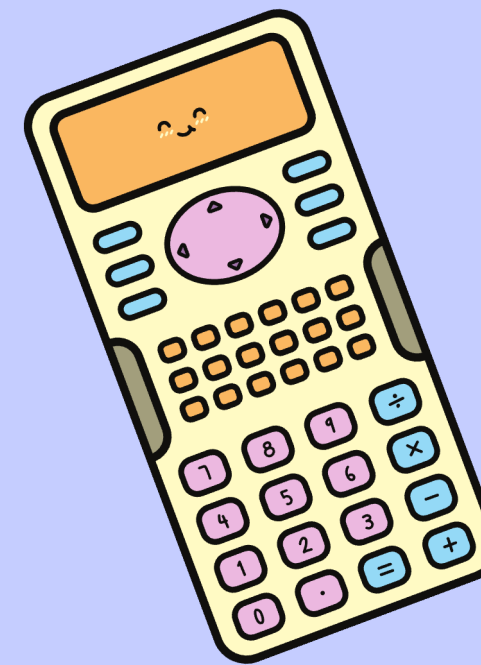
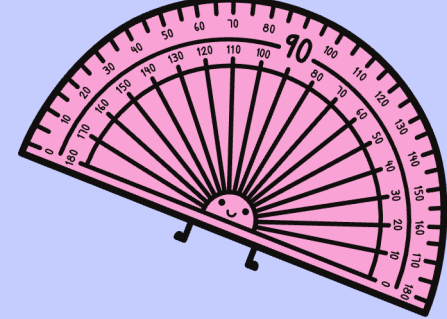
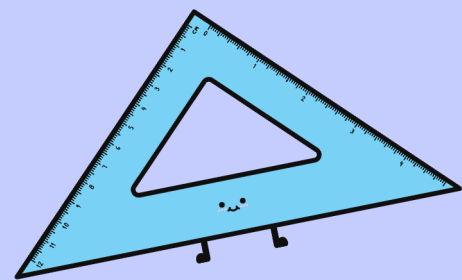
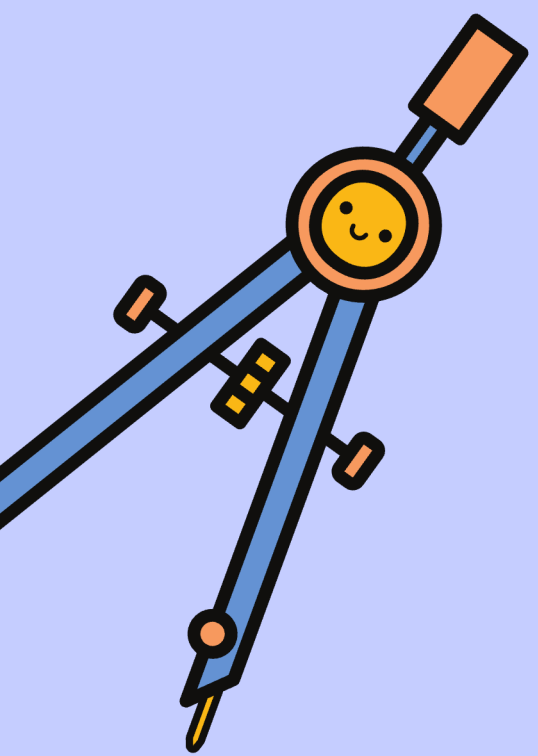
- pieces that overlap or float apart
- a shape counted twice
- a changed outline after decomposing
- naming a shape by position not its properties
- forgetting to explain the transformation



Exit Ticket

1. Define a composite shape in your own words.
2. Sketch one shape made from a rectangle and two triangles.
3. Draw a different decomposition of the same outline.
4. Name one transformation you used.





PREVIEW

Well Done!

Creating 2D Shapes Quiz

Question 1

TRUE / FALSE

A composite shape is made by joining two or more familiar 2D shapes.

True or False?



Answer 1

THINK YOUR THINKING

Answer: True.

The familiar pieces are the component s of the new connected outline.



Question 2

MULTIPLE CHOICE

Which pair can be joined to make a simple closed figure?

- A. circle + circle
- B. square + triangle
- C. semicircle + hexagon
- D. two parallel lines



Answer 2

THINK YOUR THINKING

Answer: B — square + triangle.

The square can form the walls and the triangle can form the roof.



Question 3

SHORT ANSWER

A triangle is turned through a quarter-turn. What transformation was used?

PREVIEW



Answer 3

Answer: a rotation (or turn) of 90 degrees.

THINK YOUR THINKING



Question 4

TRUE / FALSE

A reflected shape keeps the same size and shape as the original.

True or False?



Answer 4

THINK YOUR THINKING

Answer: True.

A reflection flips the shape. It does not rotate it.



Question 5

MULTIPLE CHOICE

How many pieces are in a complete tangram set?

A. 5

B. 6

C. 7

D. 8



Answer 5

THINK YOUR THINKING

Answer: C — 7 pieces.

A complete set contains five triangles, one square and one parallelogram.



Question 6

SHORT ANSWER

A vertical line splits a rectangle from its top edge to its bottom edge. What two familiar shapes can be formed?



Answer 6

Answer: two smaller rectangles.

THINK YOUR THINKING



Question 7

MULTIPLE CHOICE

Which statement best describes decompos

- A. Make a shape larger
- B. Break a composite shape into familiar parts
- C. Colour every component
- D. Take a shape and draw



Answer 7

THINK YOUR THINKING

Answer: B — break a composite shape into similar parts

PREVIEW



Question 8

TRUE / FALSE

Flipping a shape changes its size.

True or False?



Answer 8

THINK YOUR THINKING

Answer: False.

A flip changes orientation not size.



Question 9

SHORT ANSWER

A design uses 2 triangles, 3 rectangles and 1 semicircle. How many component pieces are used altogether?



Answer 9

Answer: 6 pieces.

$$2 + 3 + 1 = 6.$$

THANK YOUR THINKING



Question 10

MULTIPLE CHOICE

Which is the best final check for a composition design?

- A. Every piece is a different colour
- B. The title is underlined
- C. Pieces match cleanly and the outline matches
- D. The design is a square



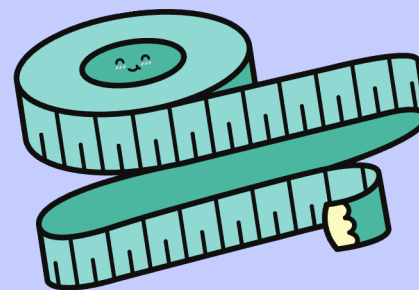
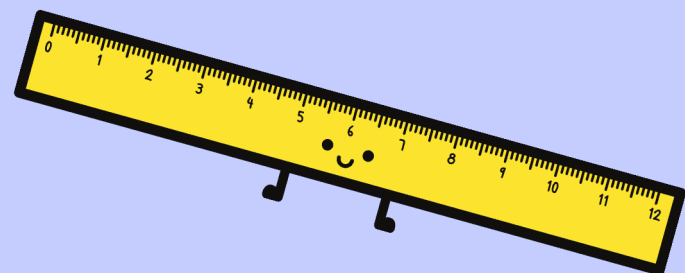
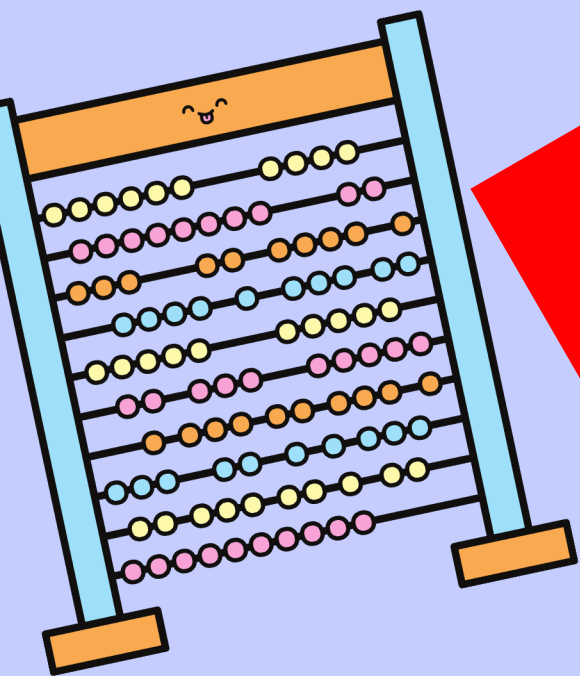
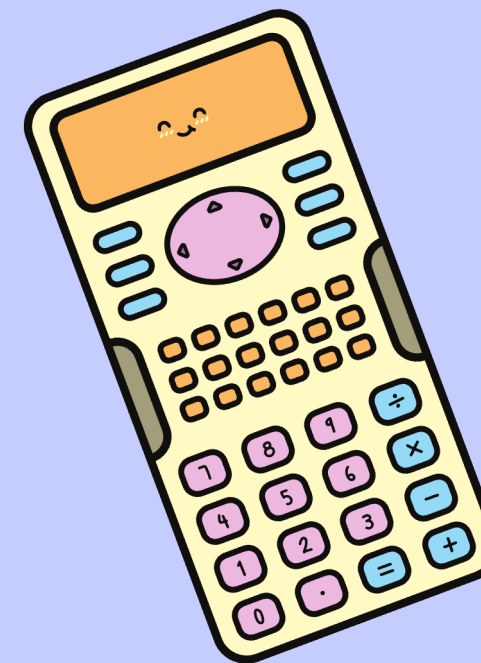
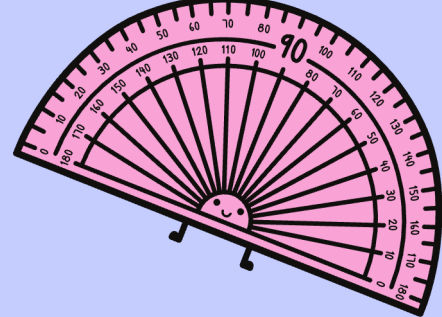
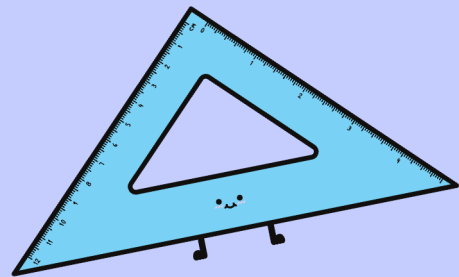
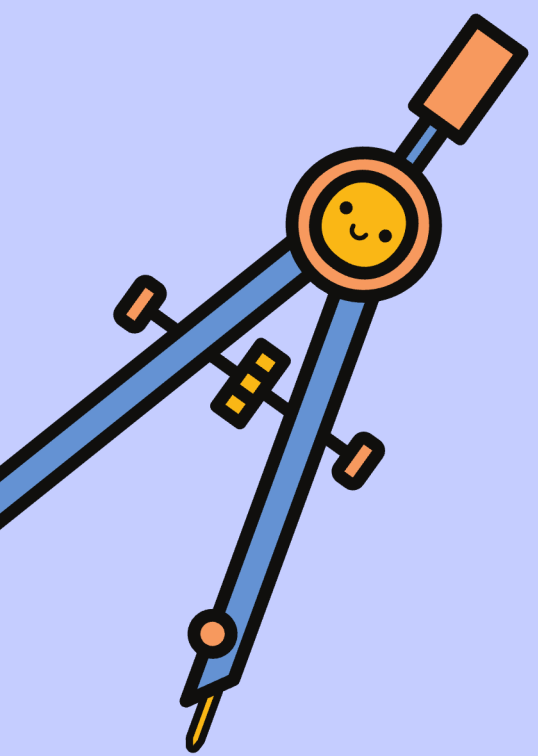
Answer 10

THINK YOUR THINKING

Answer: C — pieces meet cleanly and the outline matches

PREVIEW





Well Done!

PREVIEW