Measurement and Geometry: Understanding Nets

Australian Curriculum
This lesson plan could be used to support the teaching and learning of the following Content Description from the Australian Curriculum.
Y5 – Measurement and Geometry
Connect three-dimensional objects with their nets and other two-dimensional representations (ACMMG111)

Child-Friendly Aim:	**Success Criteria:**	**Resources:**
To relate 3D objects to 2D nets.	I can describe the 2D faces of 3D objects. I can identify the nets of common 3D objects.	**Lesson Pack** Polydron, Clixi or other 3D object modelling equipment
	Key/New Words: Net, two-dimensional, three-dimensional.	**Preparation:** Differentiated **Shape Nets Activity Sheets** – one per child **Shape Net Bingo Game**

Prior Learning: It will be helpful if children have previously explored the properties of faces, edges and vertices of common 3D objects.

Learning Sequence

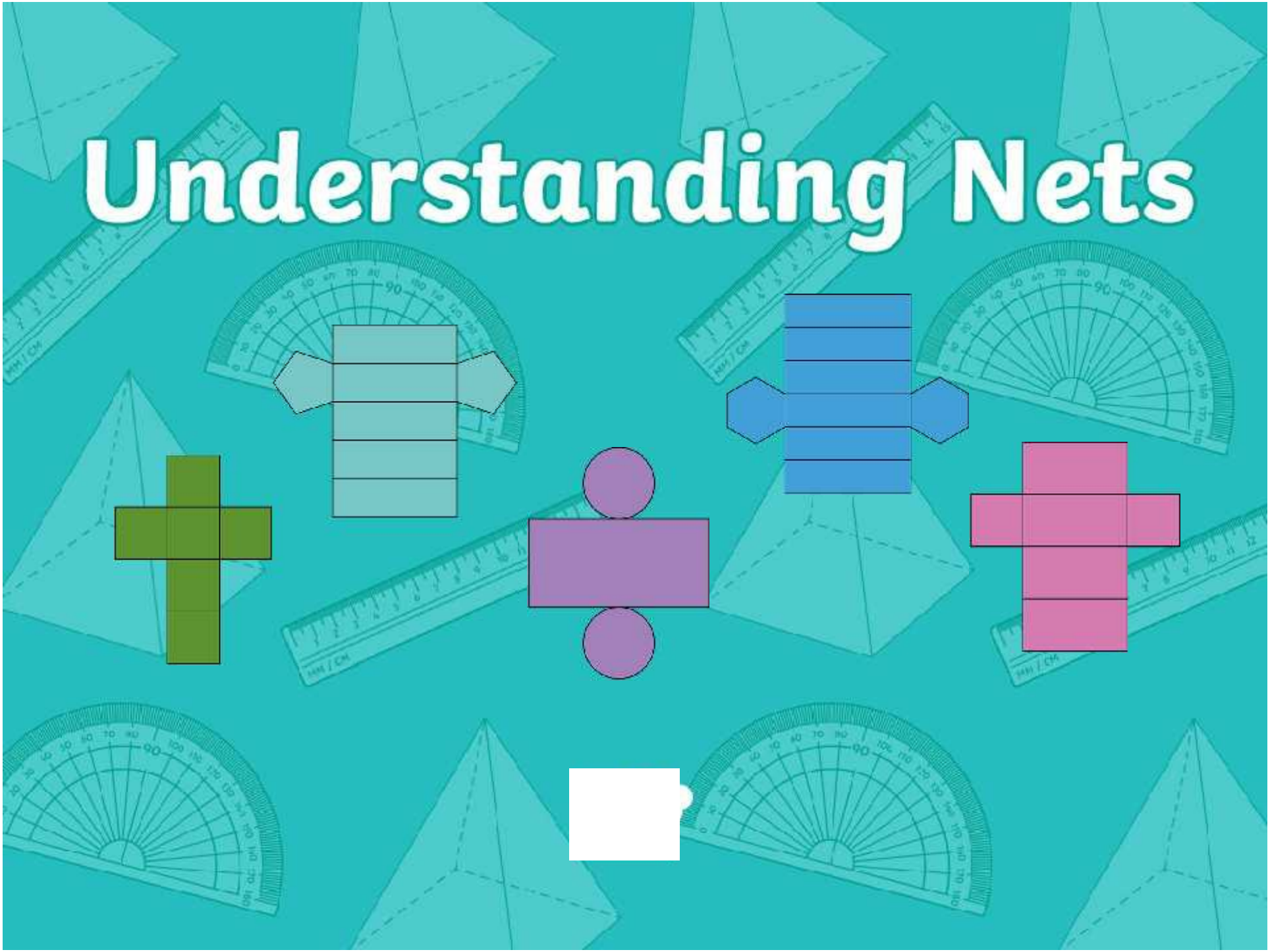
	**Name the 3D Object:** As a class answer the eleven multiple choice questions on the **Lesson Presentation** to rehearse and consolidate identifying a range of 3D objects.	
	**Shape Nets:** Explain that a shape net is a flat 2D representation of the faces of a 3D object after they have been opened up flat.	
	**Which Net?** Using the images shown on the **Lesson Presentation**, children discuss the 3D object shown and which of the nets shown match it. Emphasise the link between the faces of the 3D object and the 2D shapes forming the net.	
	**Untrue Nets:** Explain that the 2D shapes creating the net must be arranged so that when it is folded up it represents the 3D object correctly. Look at the examples of incorrect nets and, as a class, discuss what needs to be changed to make them correct.	
	**Shape Nets Activity:** Children complete the differentiated **Shape Nets Activity Sheets**, identifying the nets of common 3D objects. Provide Polydron, Clixi or other 3D object modelling equipment as support.  Children match the 3D object to the correct 2D shape net.  Children select the correct 2D shape net for the 3D object from a choice of three options.  Children draw nets for given 3D objects.	
	**Shape Net Bingo:** Provide each group (up to 4 children) with a bingo card from the **Shape Net Bingo Game.** The children take it in turns to randomly choose a calling card which will display a 3D object. If any of the children have the matching 2D shape net on their bingo card, they mark it off. The first child to mark off all their nets wins.	

Masterit
***Build*it:** Draw and construct 3D objects from 2D shape nets for real life purposes through a Design Technology project.
***Explore*it:** Explore everyday food packaging and identify the nets which are used to create a maths display.

Mathematics

Measurement and Geometry

Understanding Nets



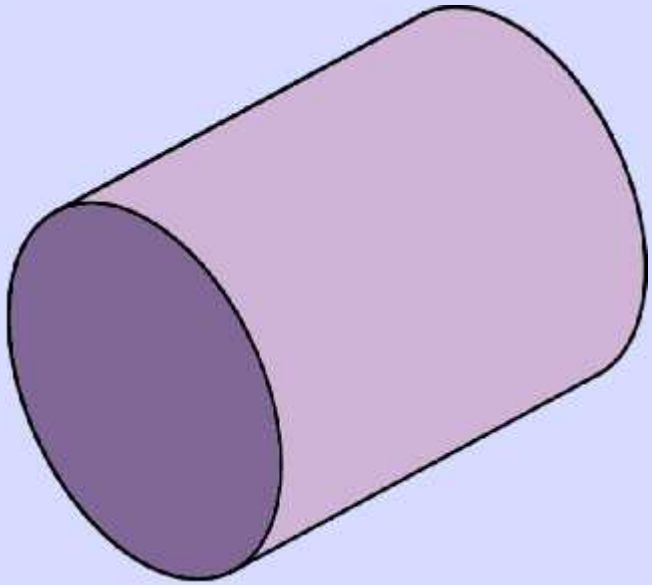
Aim

- To relate 3D objects to 2D nets.

Success Criteria

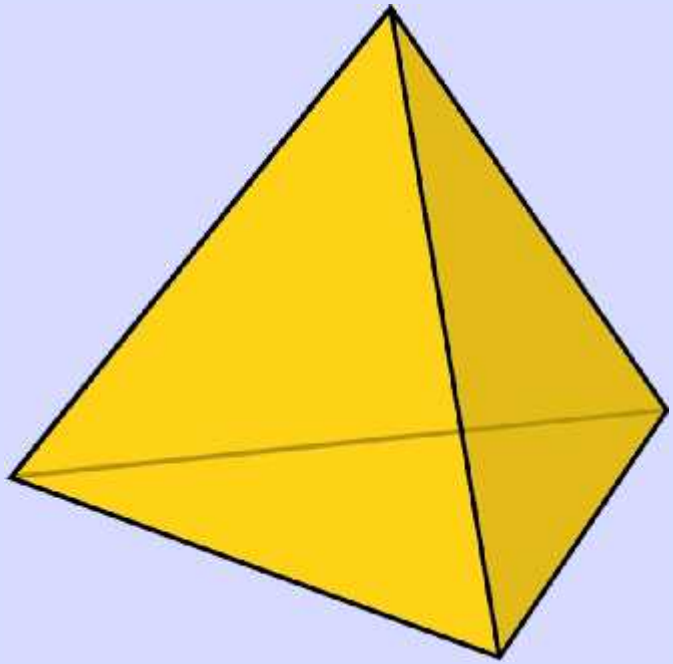
- I can describe the 2D faces of 3D objects.
- I can identify the nets of common 3D objects.

Name the 3D Object



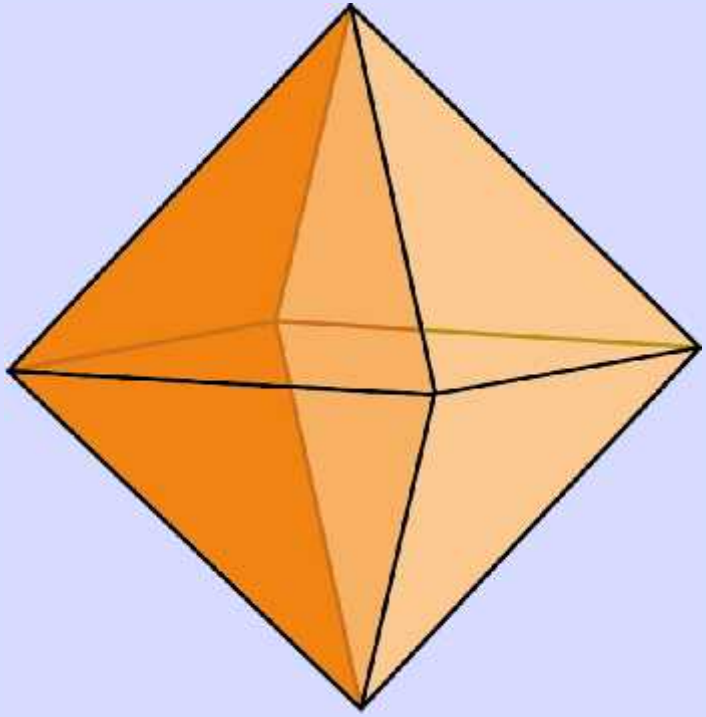
cylinder	pyramid	cone

Name the 3D Object



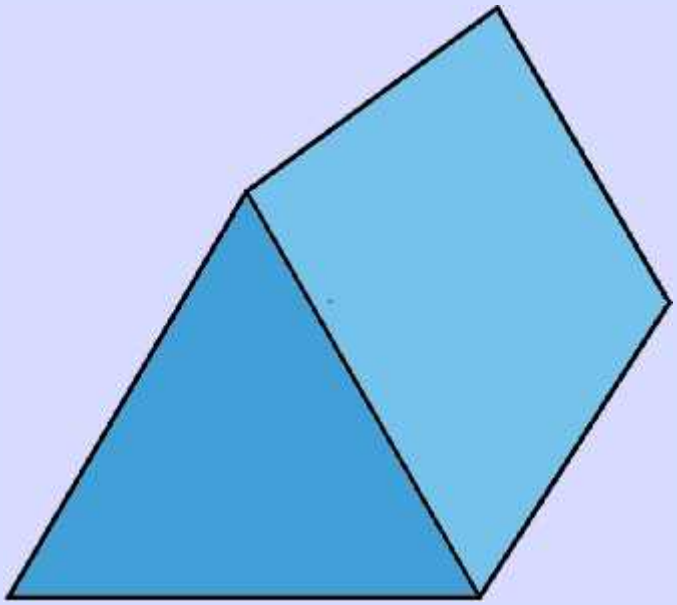
sphere	prism	tetrahedron

Name the 3D Object



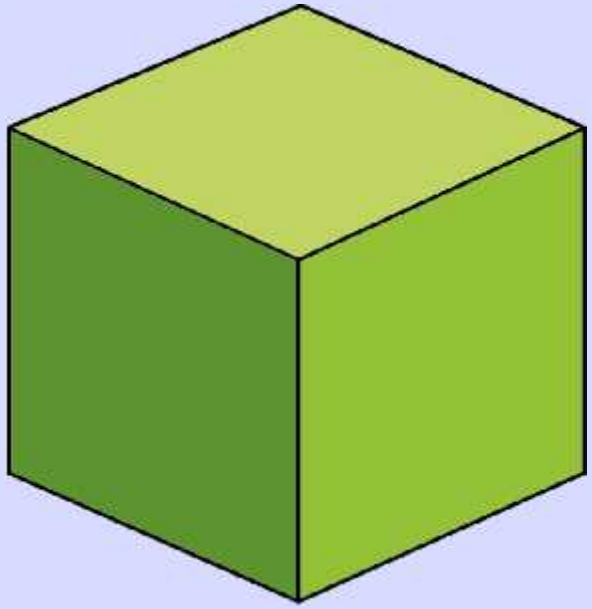
prism	octahedron	tetrahedron

Name the 3D Object



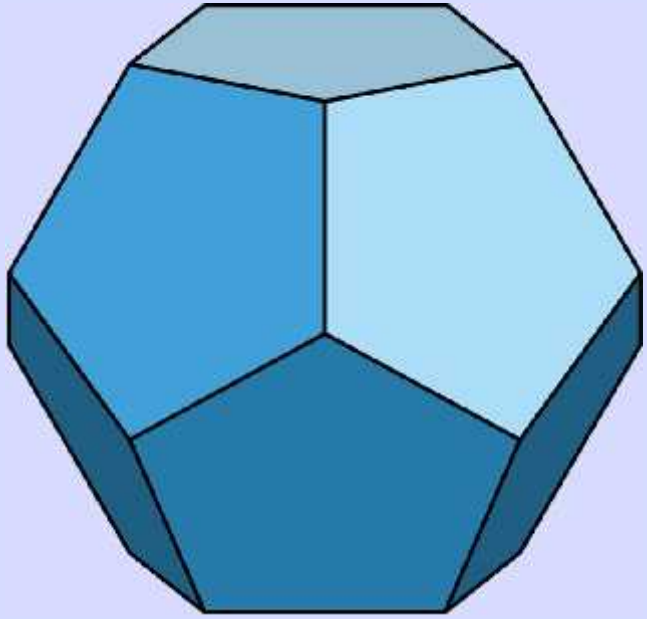
cylinder	pyramid	triangular prism

Name the 3D Object



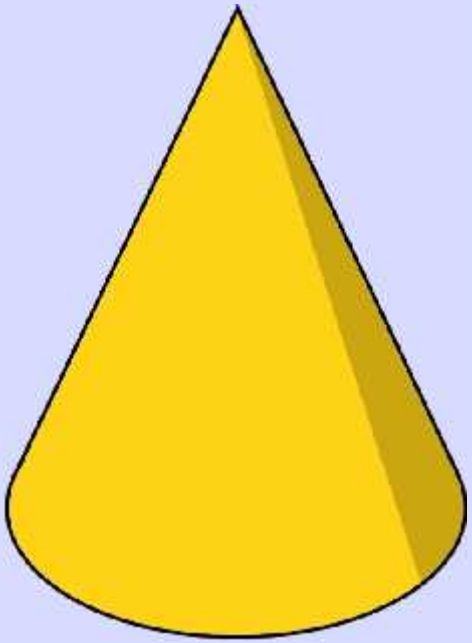
cube	cuboid	cone

Name the 3D Object



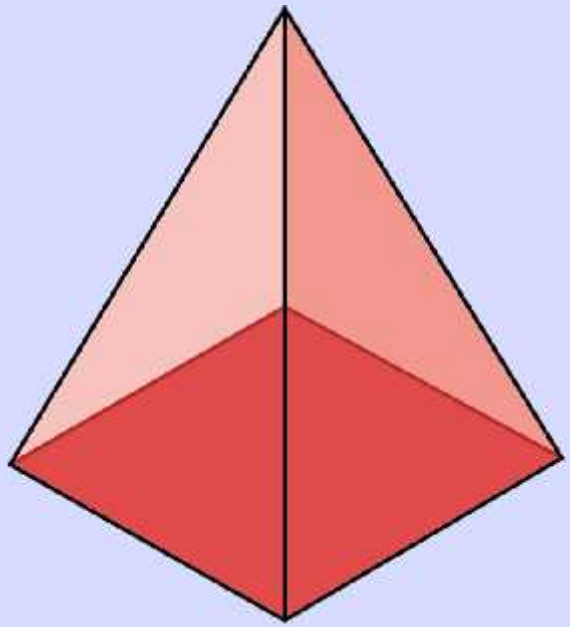
octahedron	polyhedron	dodecahedron

Name the 3D Object



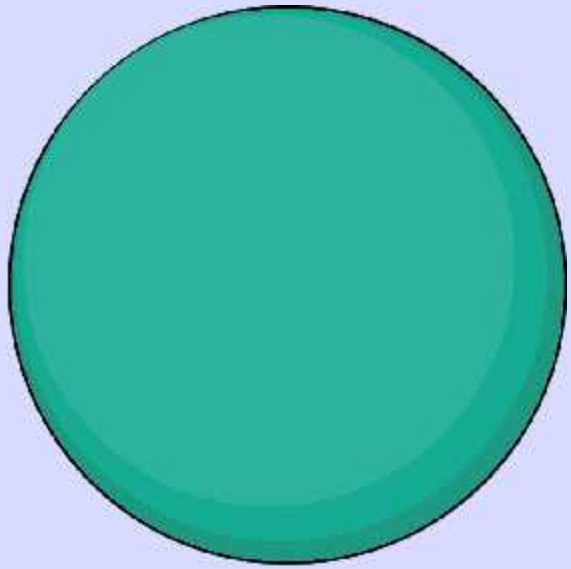
cuboid	cone	sphere

Name the 3D Object



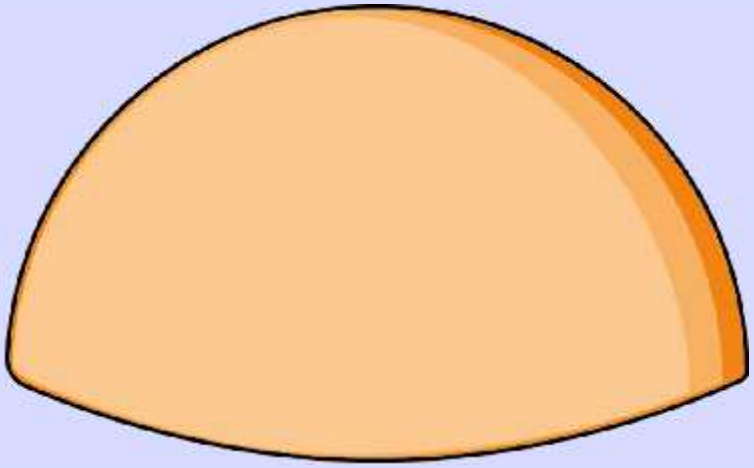
prism	square-based pyramid	triangle

Name the 3D Object



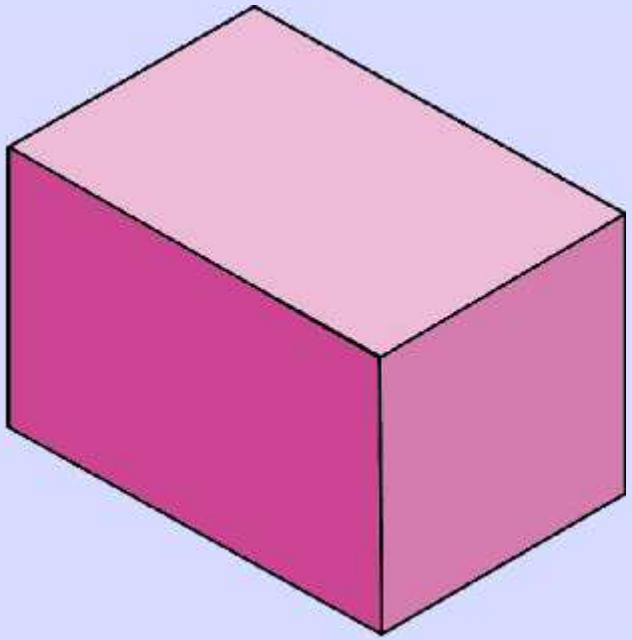
cuboid	cylinder	sphere

Name the 3D Object



hemisphere	semicircle	prism

Name the 3D Object

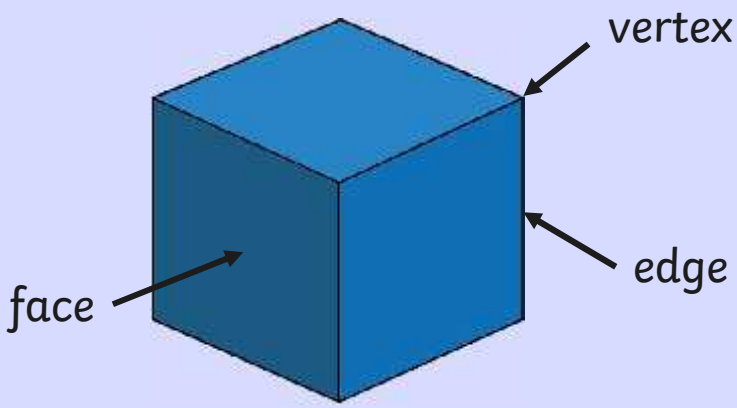


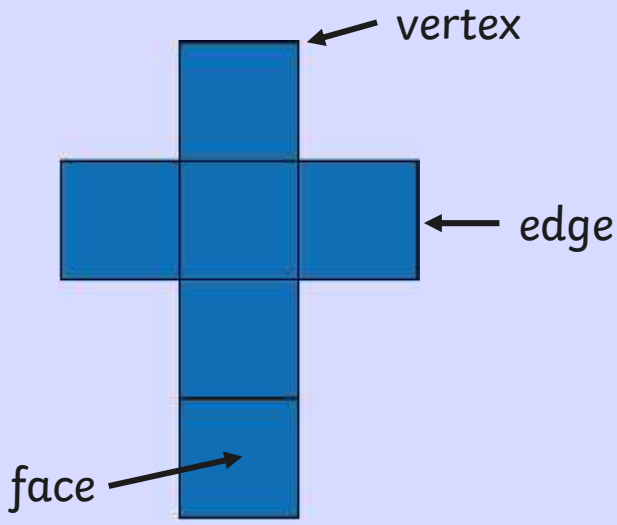
cube	rectangle	cuboid

Shape Nets

3D objects have **faces** (sides), **edges** and **vertices** (corners).

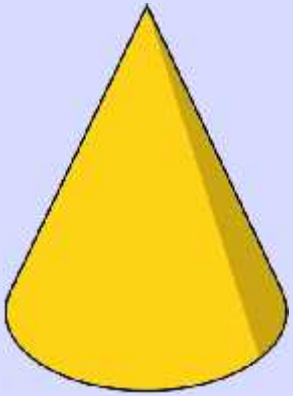
A **net** shows what a 3D object would look like if it were opened out flat.

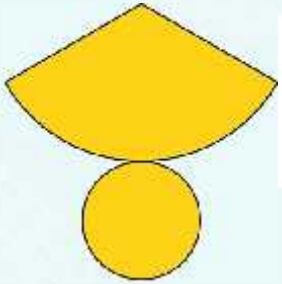


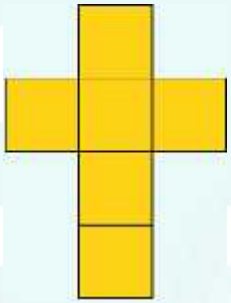


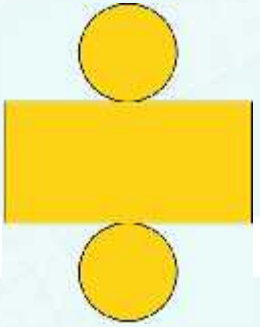
Which Net?

Which of the nets shown match the 3D object?









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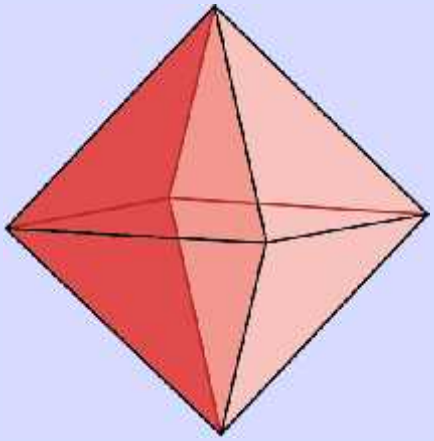

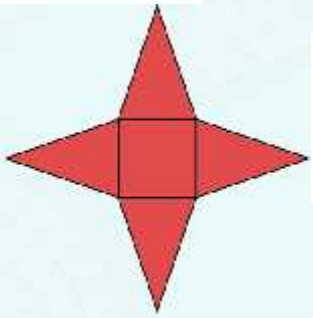

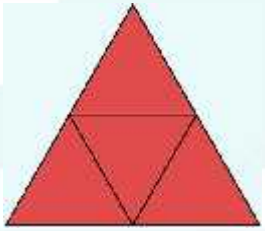

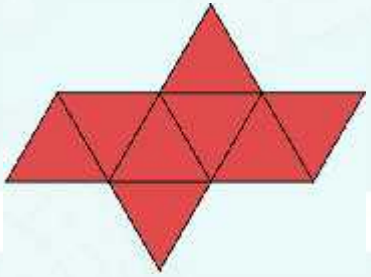

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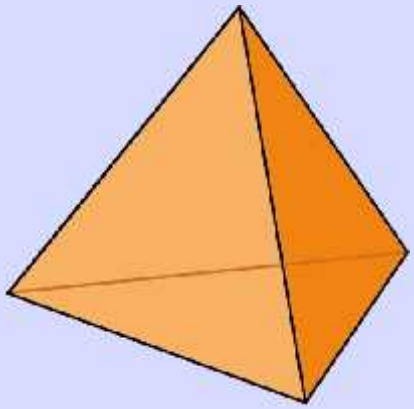

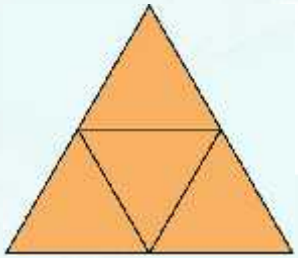

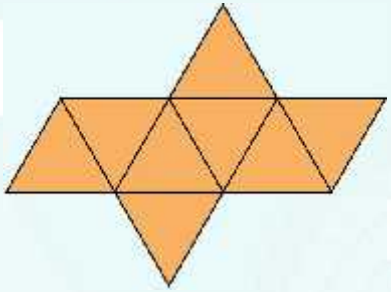

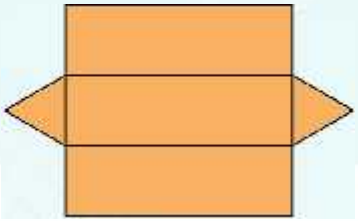

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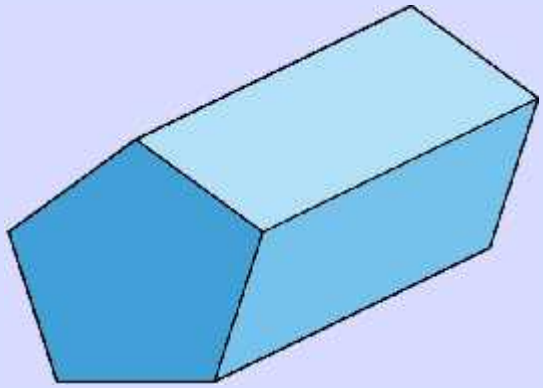

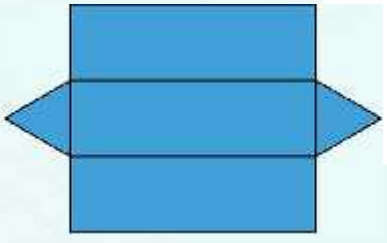

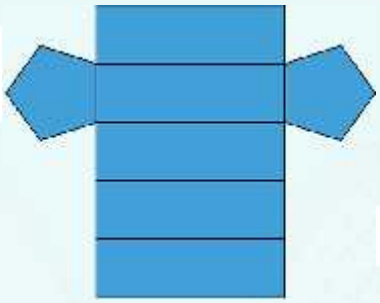

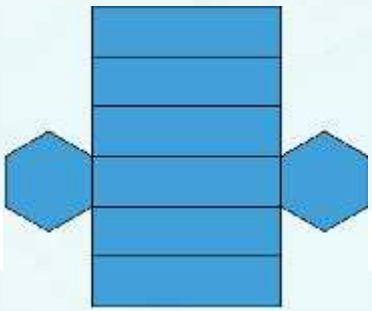

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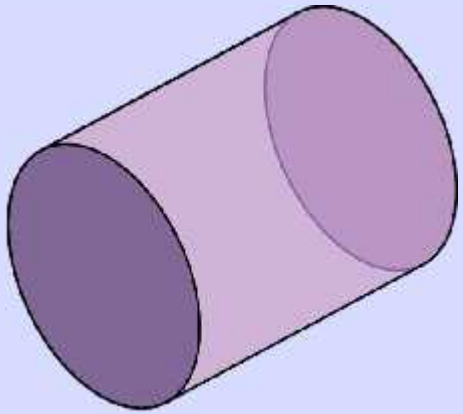

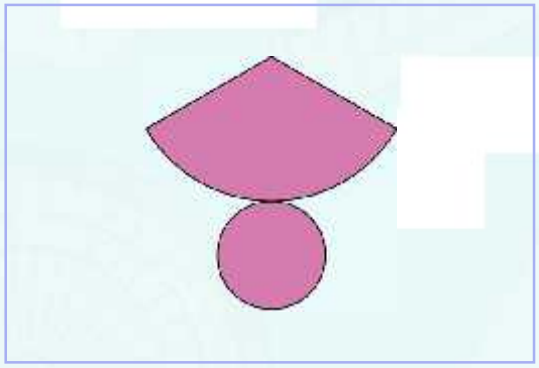

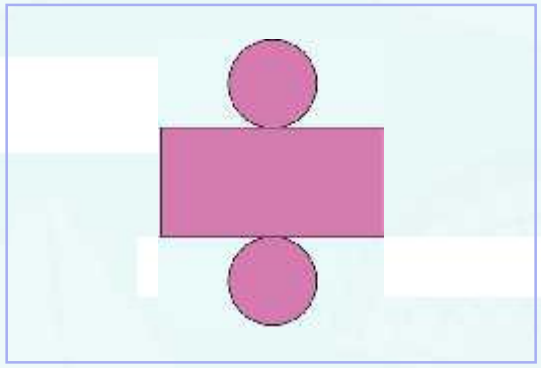

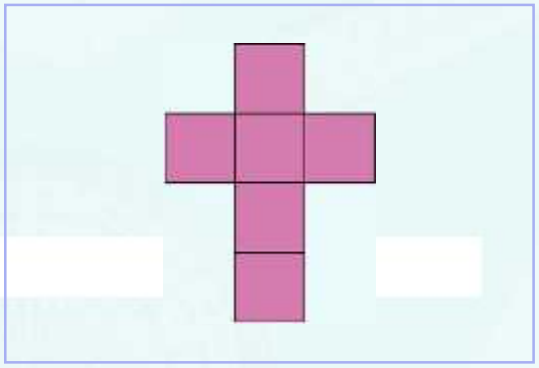

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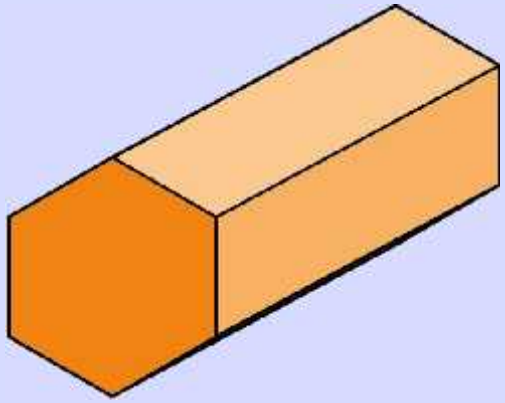

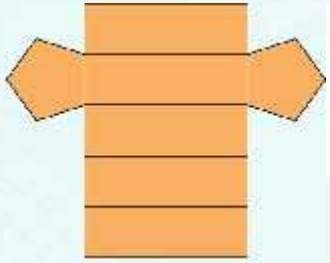

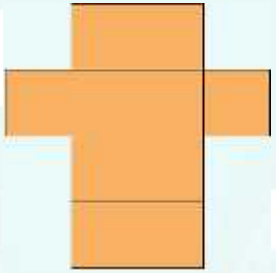

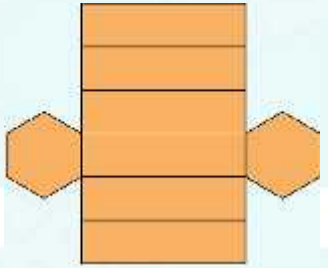

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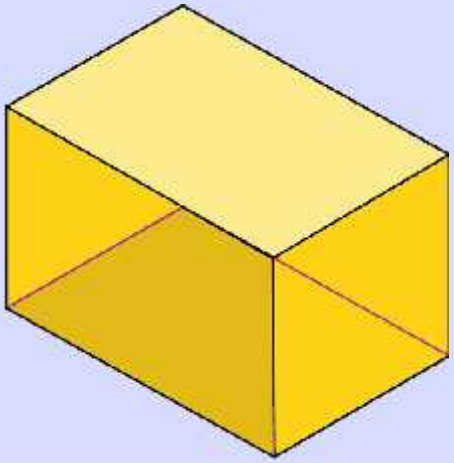

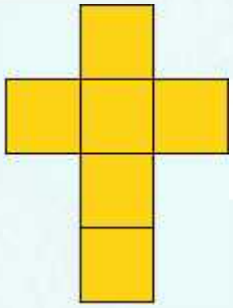

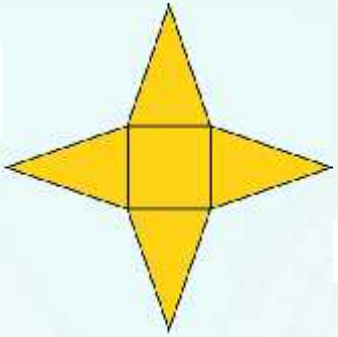

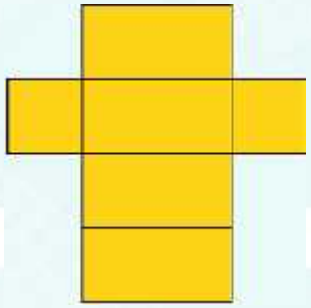

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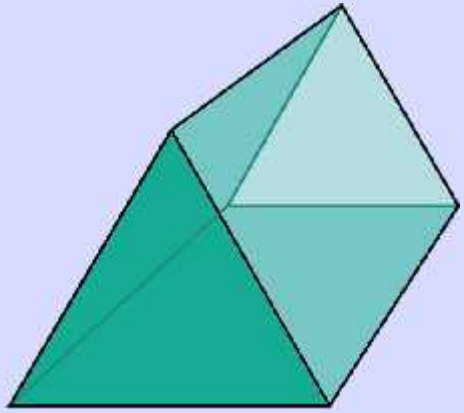

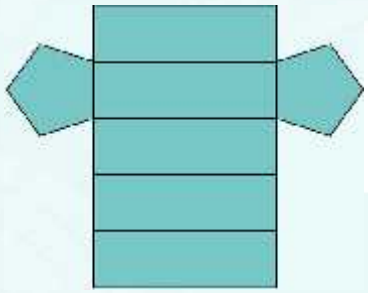

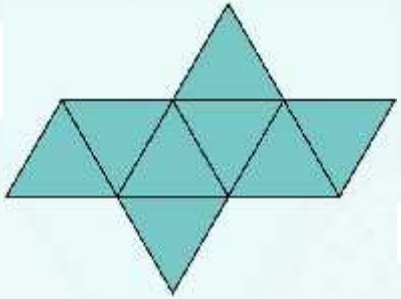

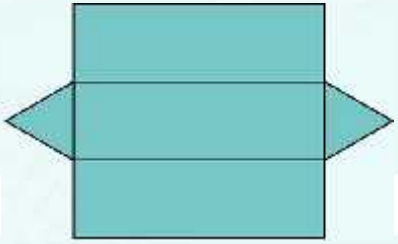

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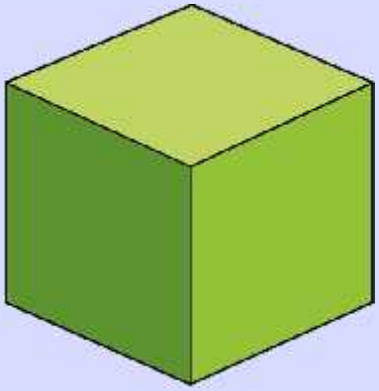

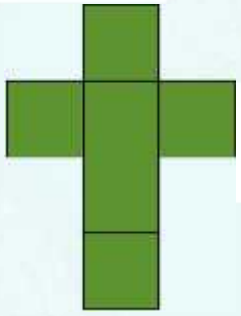

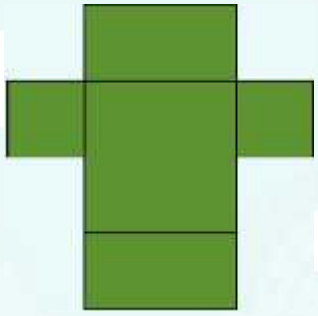

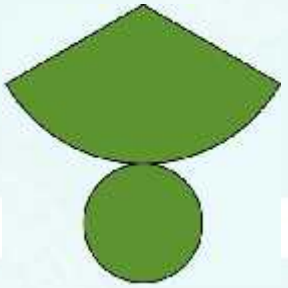

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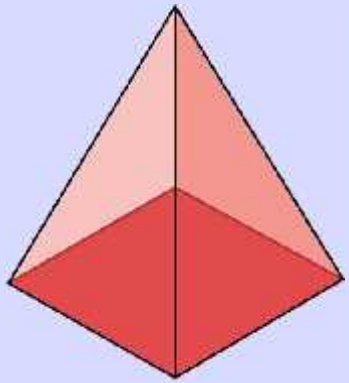
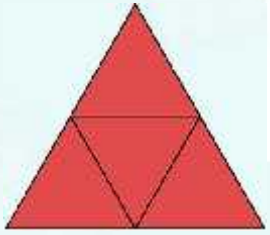
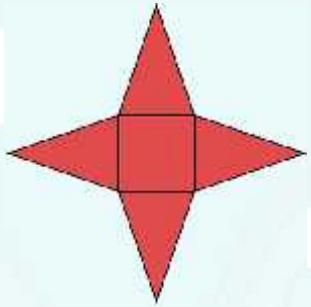
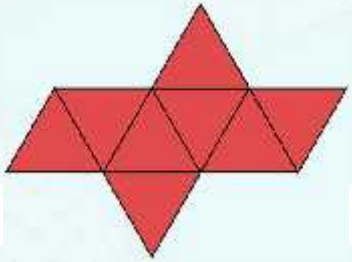






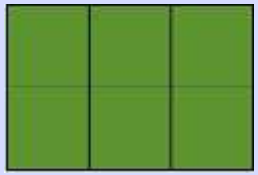


Untrue Nets

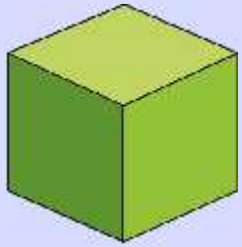
A 2D shape net must accurately represent the unfolded 3D object.

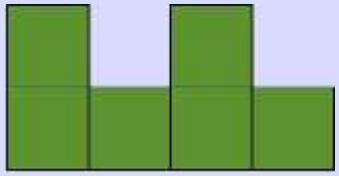
The faces of the 3D object must be in the correct position.

These are **untrue** shape nets for a cube.



untrue





untrue

Like a cube, they have 6 square faces but they **will not** fold up to make a cube.

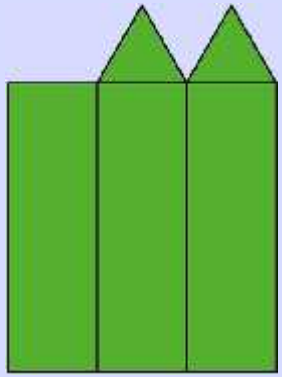
Can you explain why they are untrue?

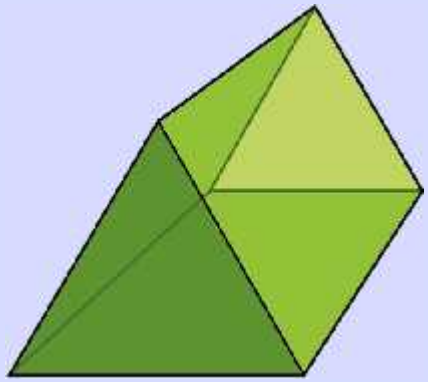
Untrue Nets

A 2D shape net must accurately represent the unfolded 3D object.
The faces of the 3D object must be in the correct position.

Why is this an **untrue net**?

Untrue net



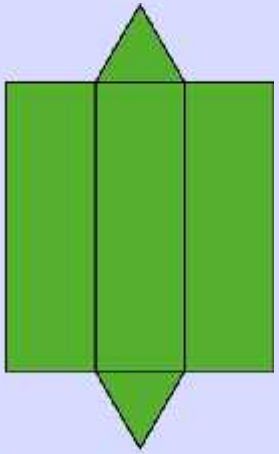


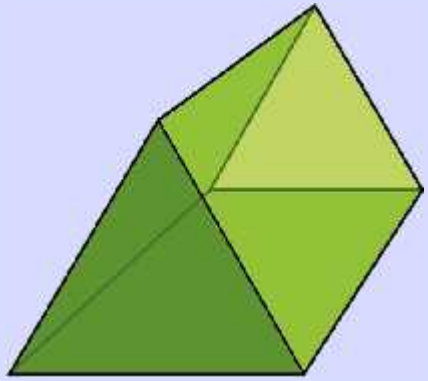
What needs to be changed to make it correct?

Untrue Nets

A 2D shape net must accurately represent the unfolded 3D object.
The faces of the 3D object must be in the correct position.

True net





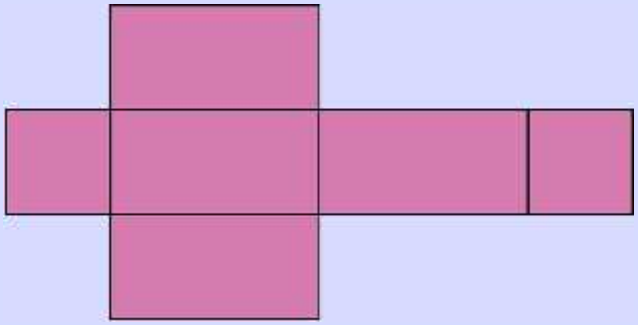
Was your answer correct?

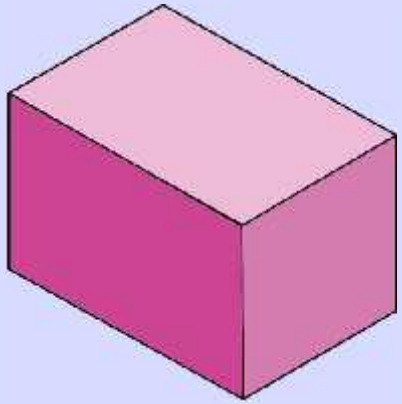
Untrue Nets

A 2D shape net must accurately represent the unfolded 3D object.
The faces of the 3D object must be in the correct position.

Why is this an **untrue net**?

Untrue net



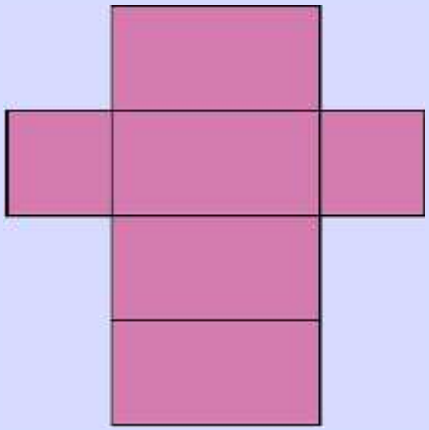


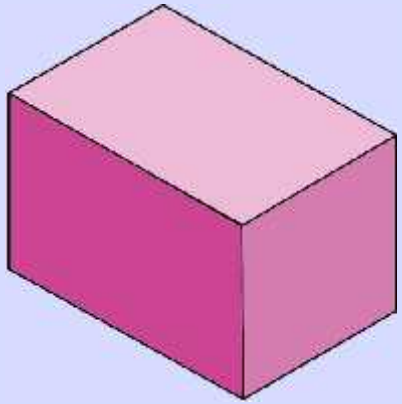
What needs to be changed to make it correct?

Untrue Nets

A 2D shape net must accurately represent the unfolded 3D object.
The faces of the 3D object must be in the correct position.

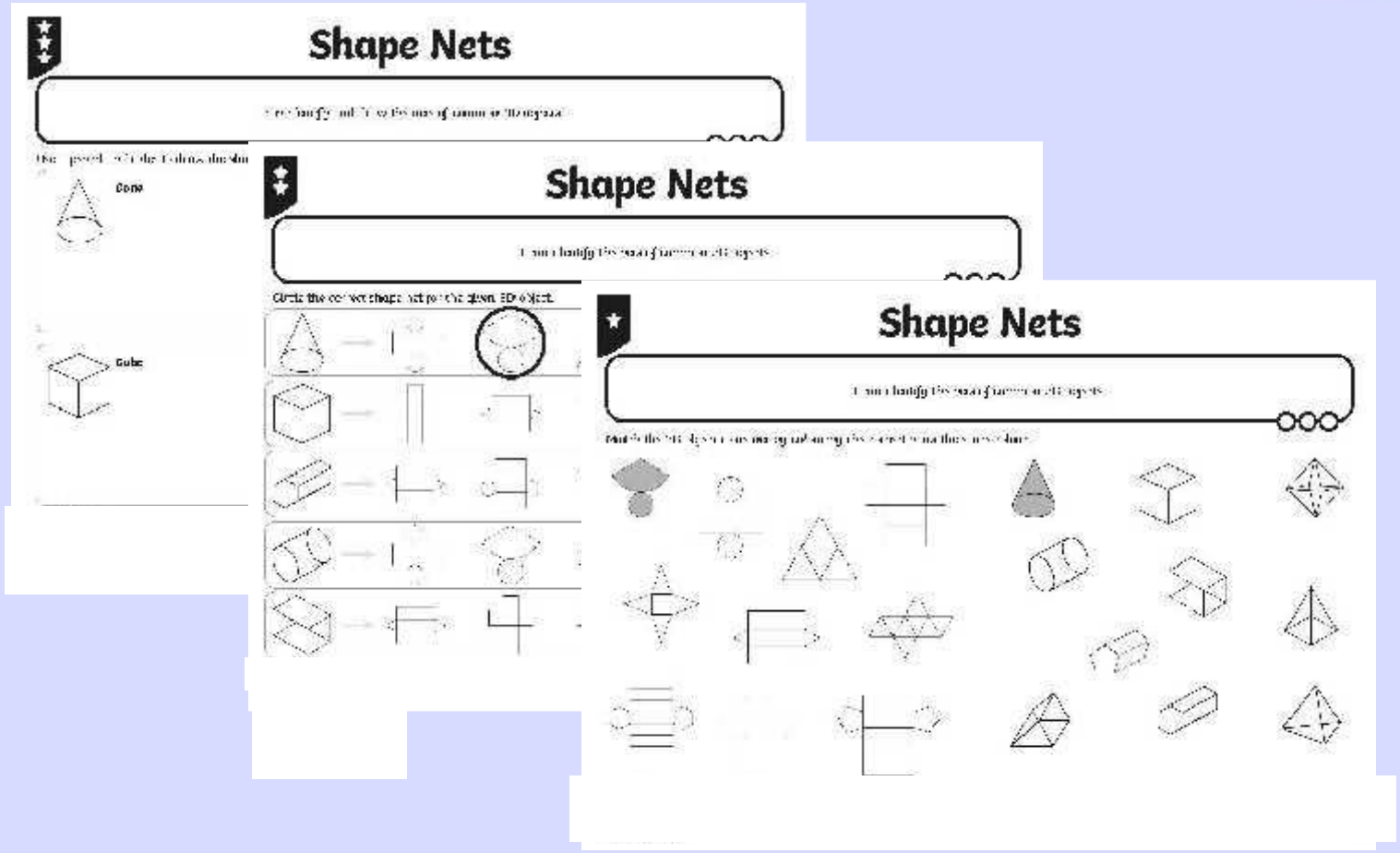
True net



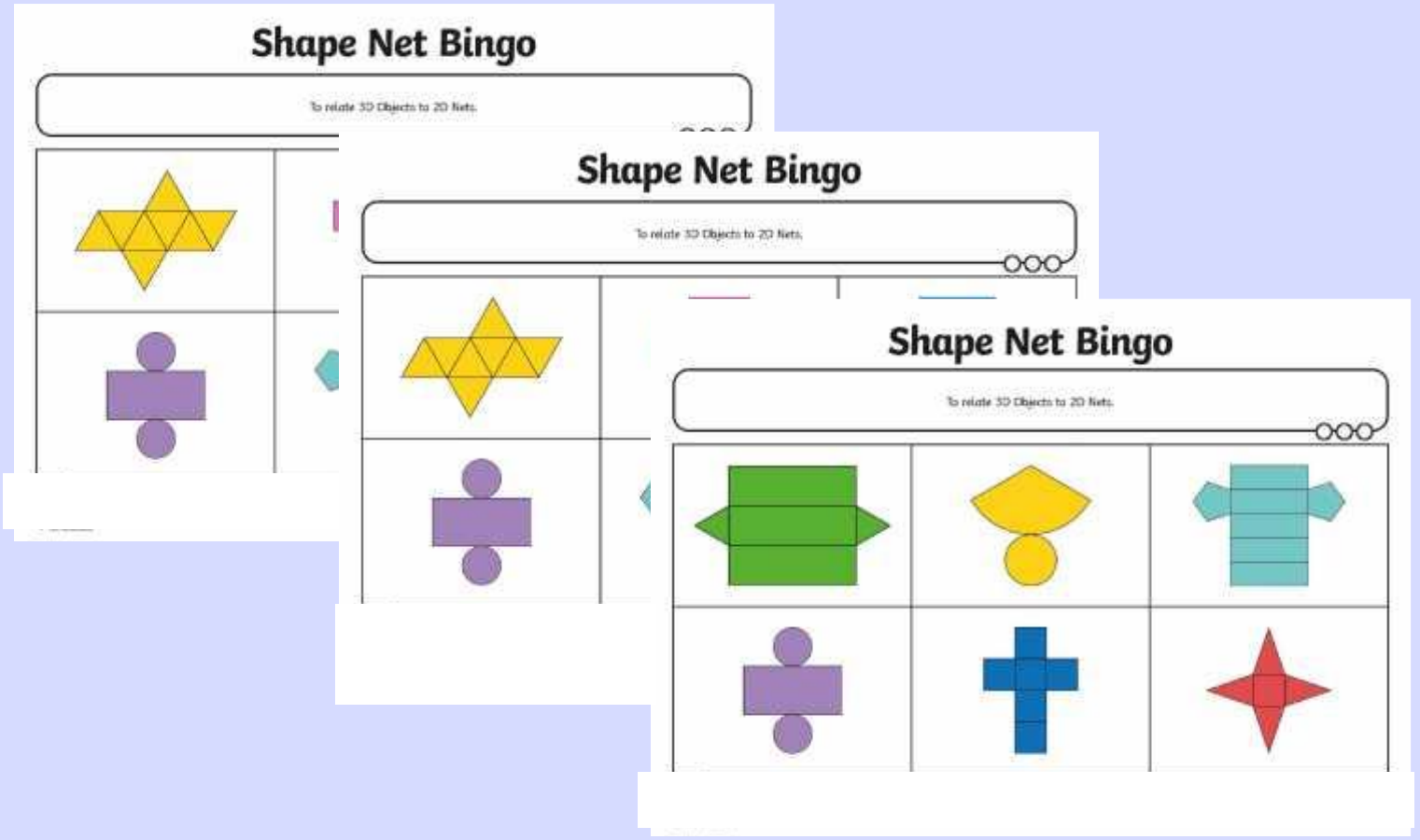


Was your answer correct?

Shape Nets Activity Sheets



Shape Net Bingo

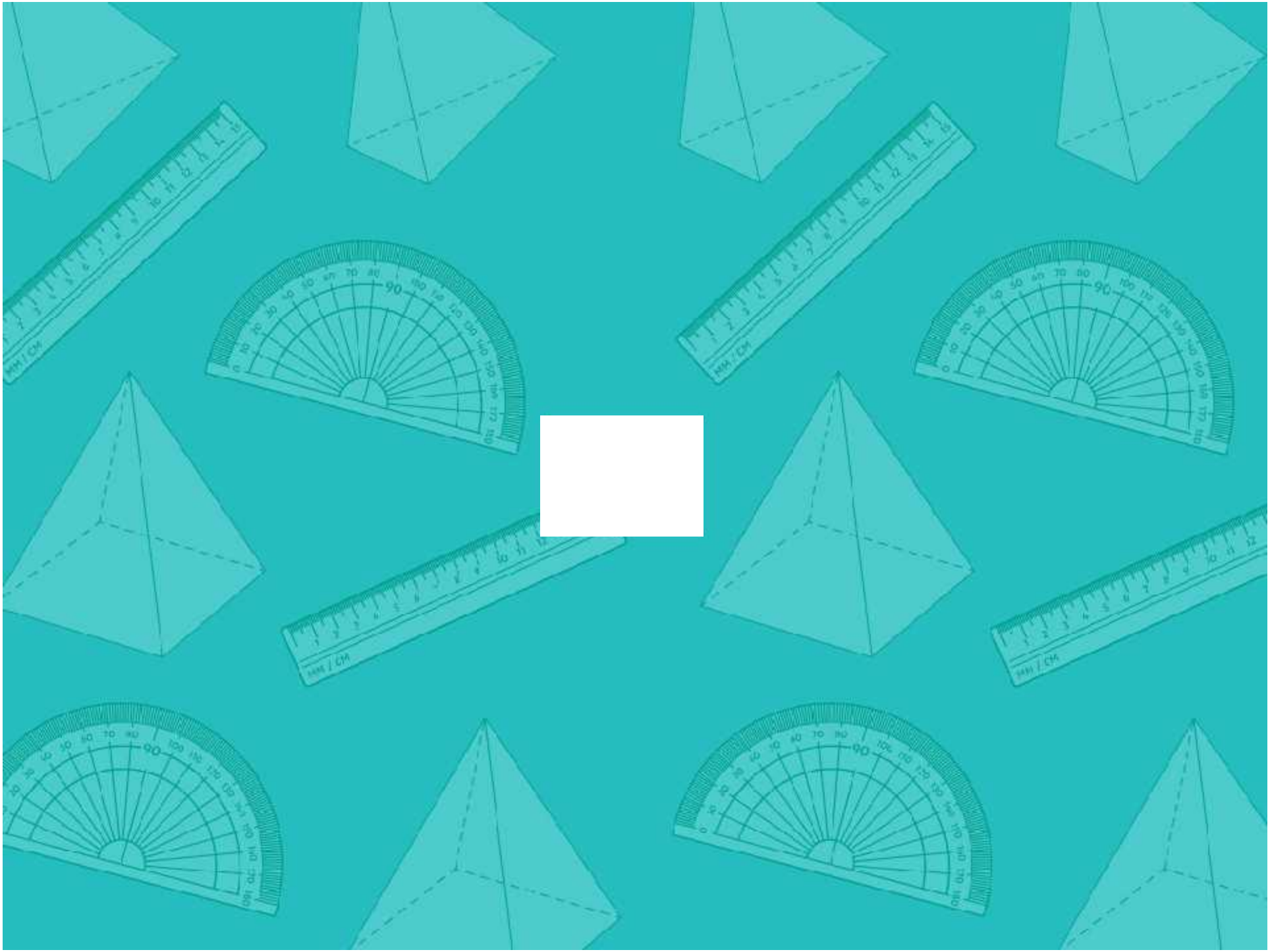


Aim

- To relate 3D objects to 2D nets.

Success Criteria

- I can describe the 2D faces of 3D objects.
- I can identify the nets of common 3D objects.



Aim: To relate 3D objects to 2D nets.				**Date:**					
				Delivered By:			**Support:**		
Success Criteria	**Me**	**Friend**	**Teacher**	**T**	**PPA**	**S**	**I**	**AL**	**GP**
I can describe the 2D faces of 3D objects.				**Notes/Evidence**					
I can identify the nets of common 3D objects.									
Next Steps) _____) _____									

T	Teacher	**I**	Independent
PPA	Planning, Preparation and Assessment	**AL**	Adult Led
S	Supply	**GP**	Guided Practice

Aim: To relate 3D objects to 2D nets.				**Date:**					
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Success Criteria	**Me**	**Friend**	**Teacher**	**T**	**PPA**	**S**	**I**	**AL**	**GP**
I can describe the 2D faces of 3D objects.				**Notes/Evidence**					
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Next Steps) _____) _____									

T	Teacher	**I**	Independent
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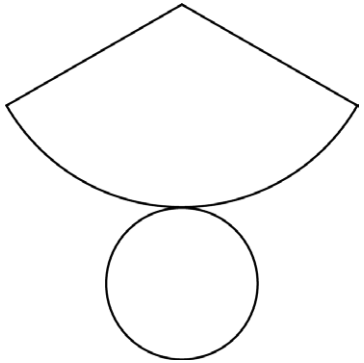
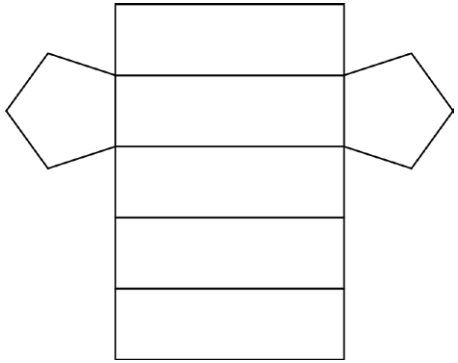
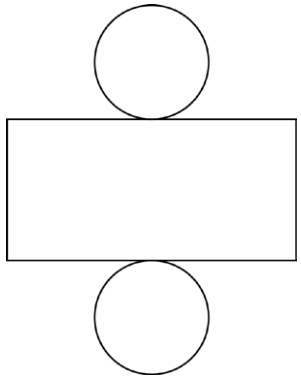
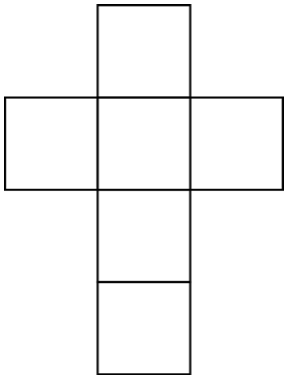
Shape Net Bingo

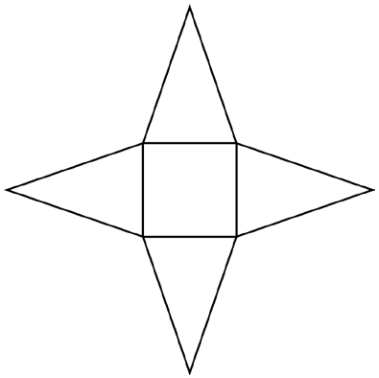
To relate 3D Objects to 2D Nets.





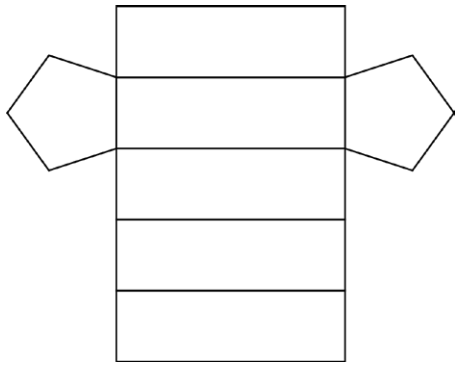


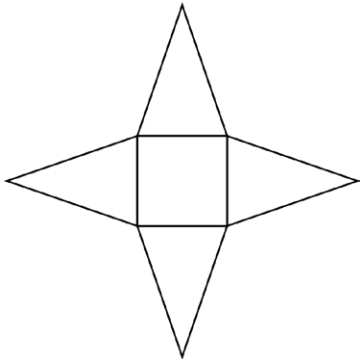


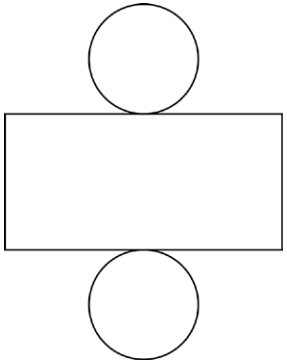


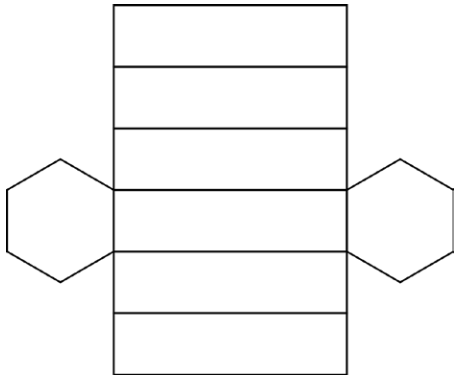
Shape Net Bingo

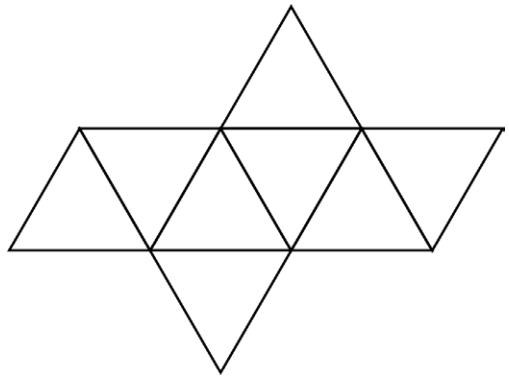
To relate 3D Objects to 2D Nets.





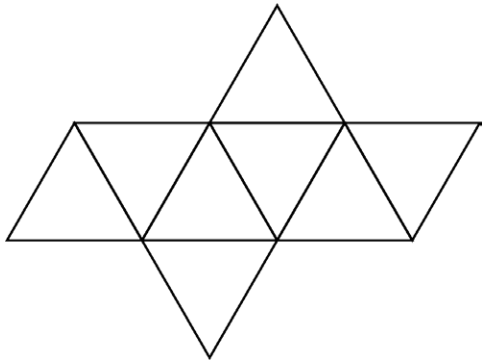


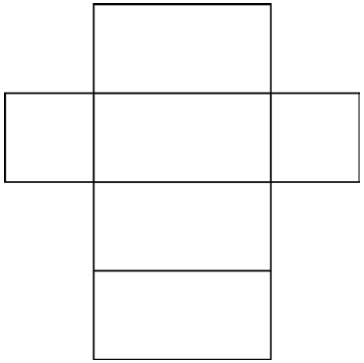


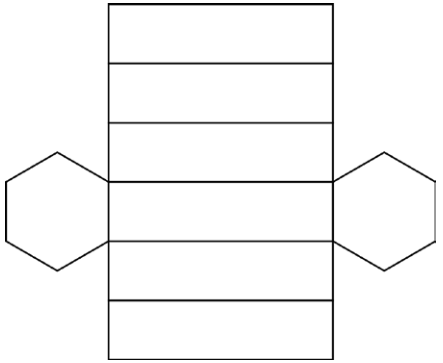


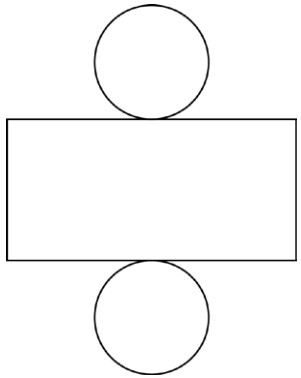
Shape Net Bingo

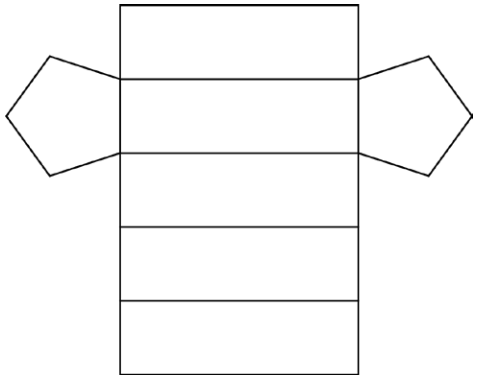
To relate 3D Objects to 2D Nets.

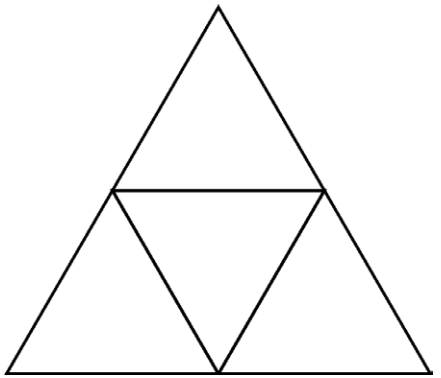












Shape Net Bingo

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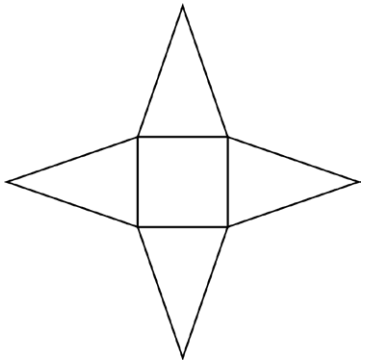
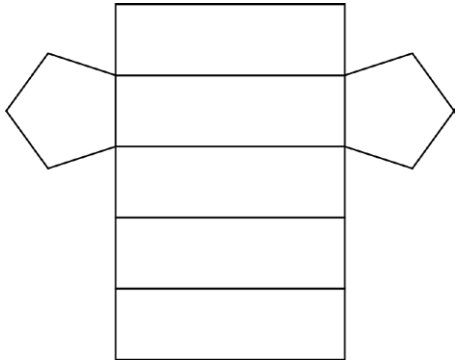
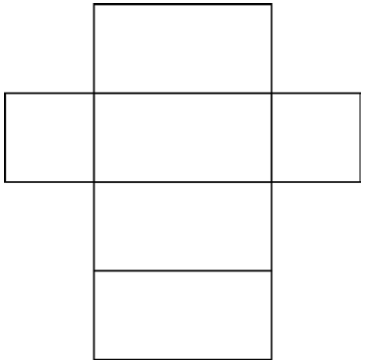
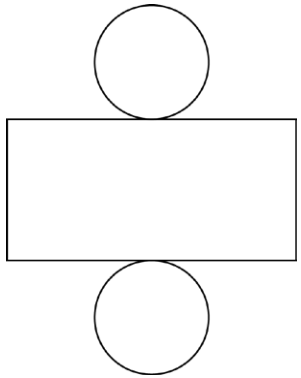
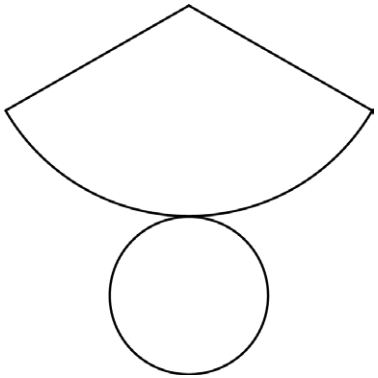
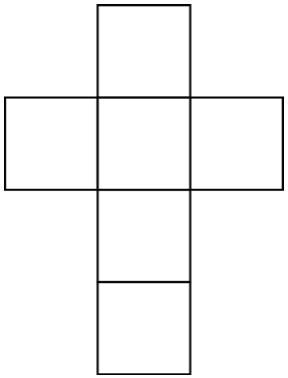






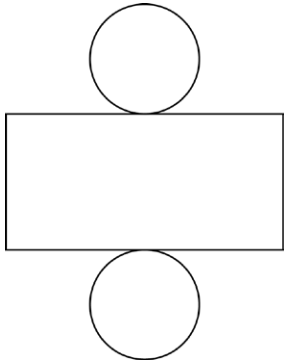
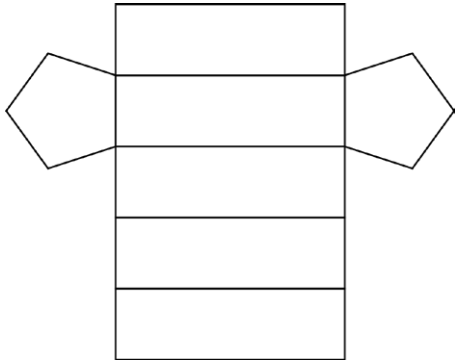
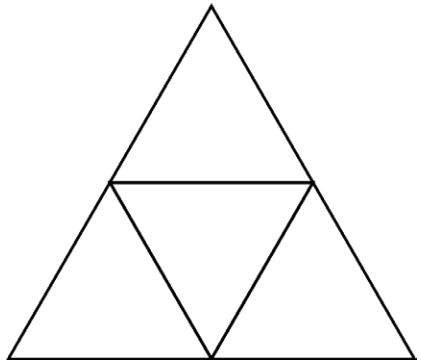
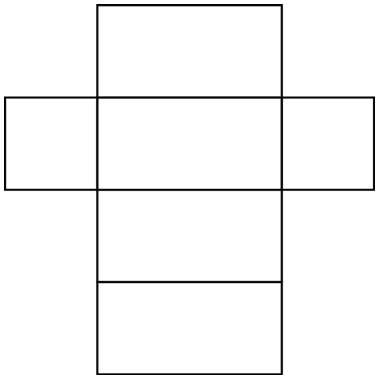
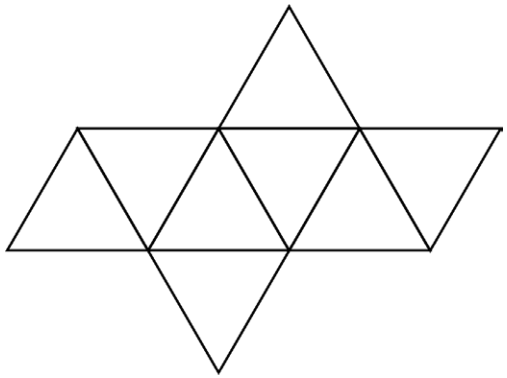
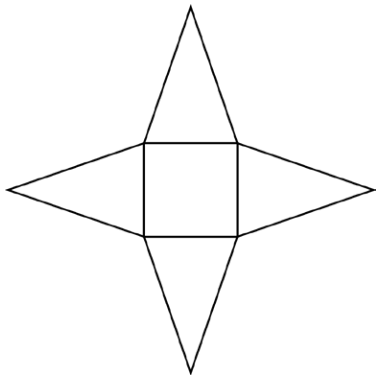






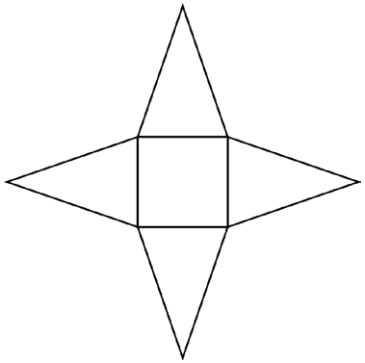
Shape Net Bingo

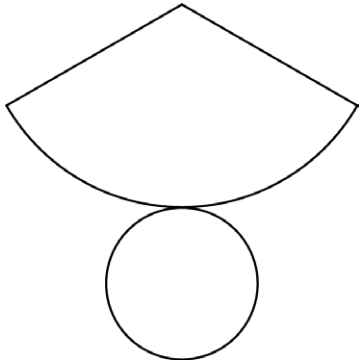
To relate 3D Objects to 2D Nets.

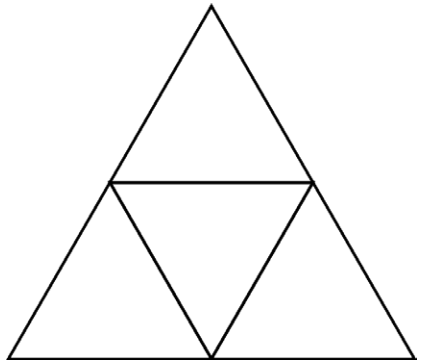
		
		

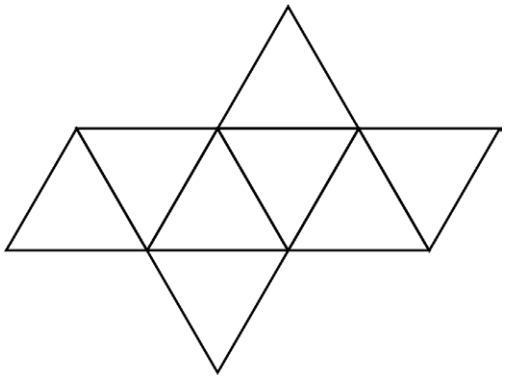
Shape Net Bingo

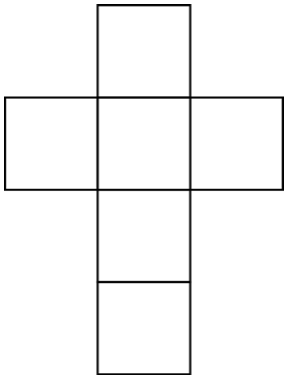
To relate 3D Objects to 2D Nets.











Shape Net Bingo

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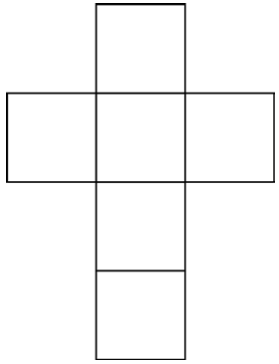
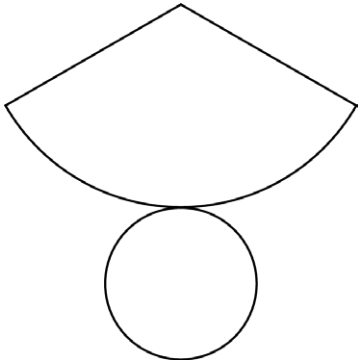
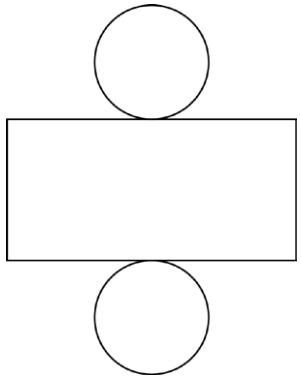
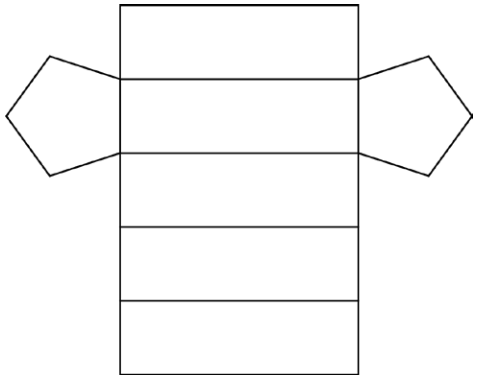
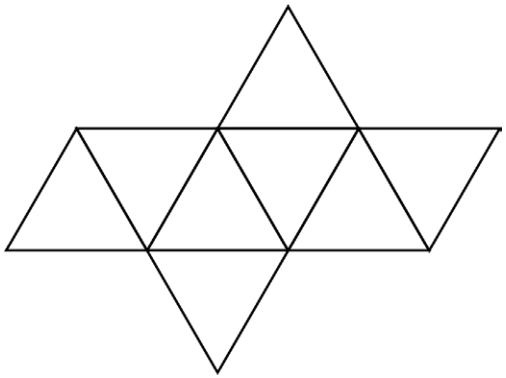
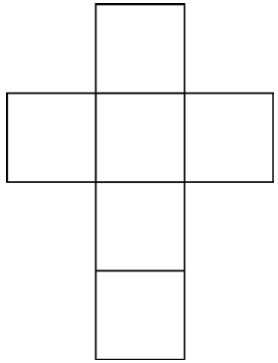
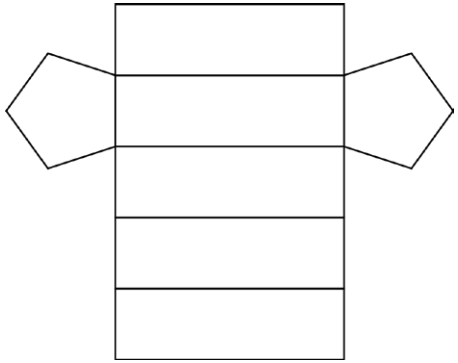
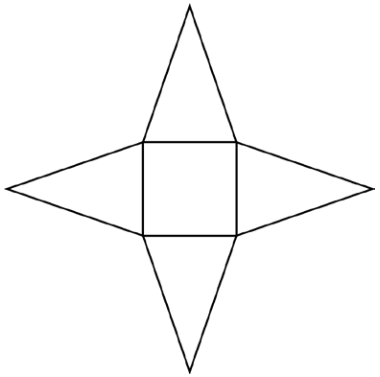
		
		

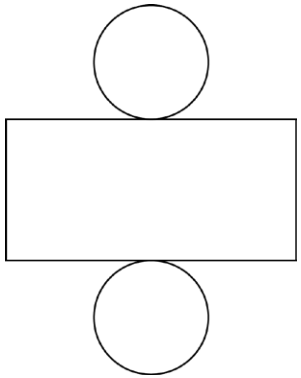
Shape Net Bingo

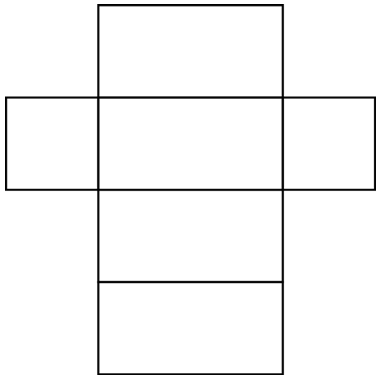
To relate 3D Objects to 2D Nets.



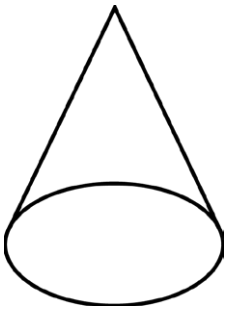
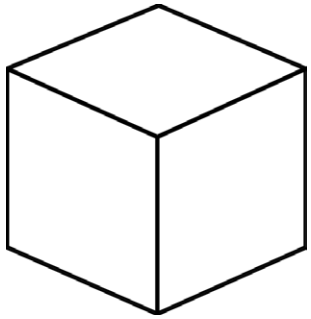
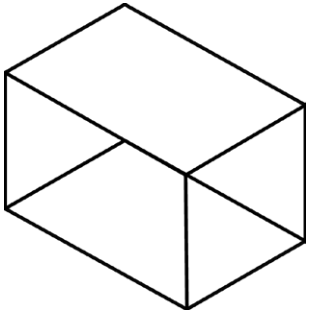
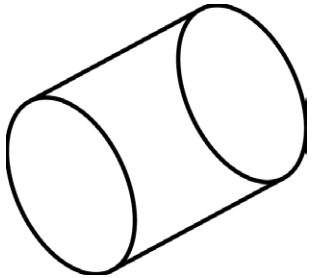
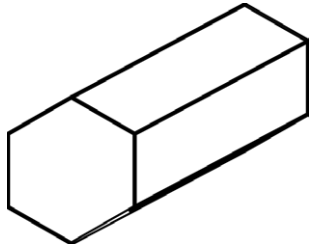
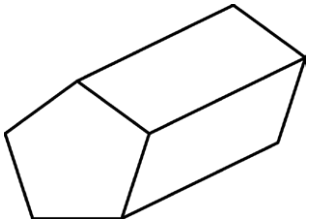
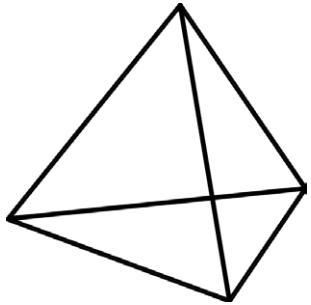
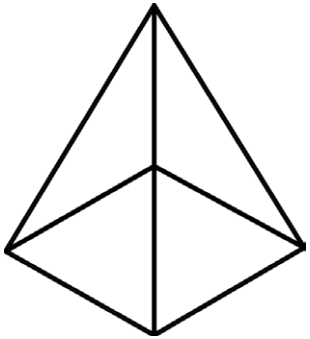
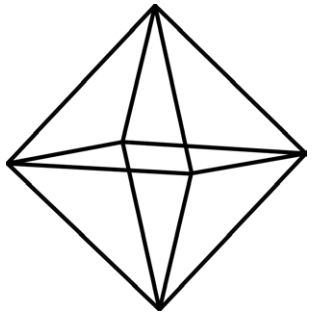
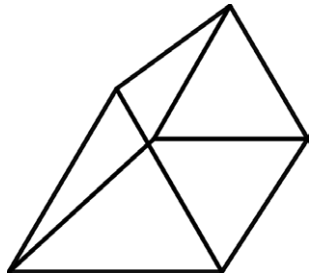






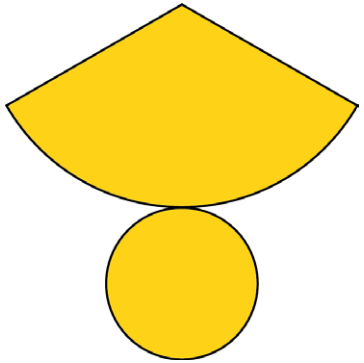


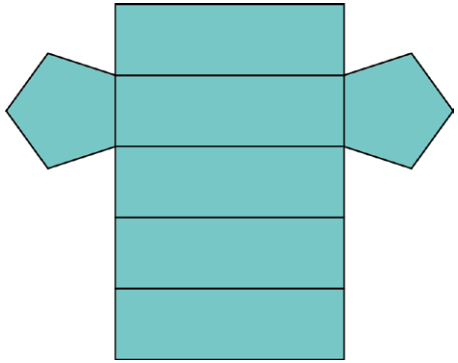
Calling Cards

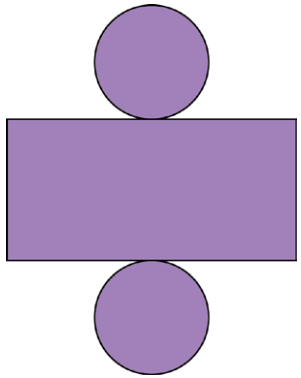
				
				

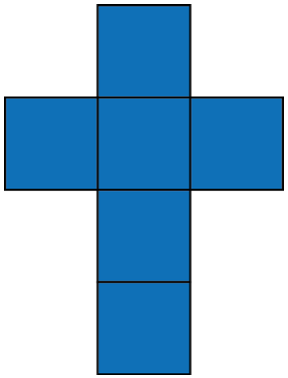
Shape Net Bingo

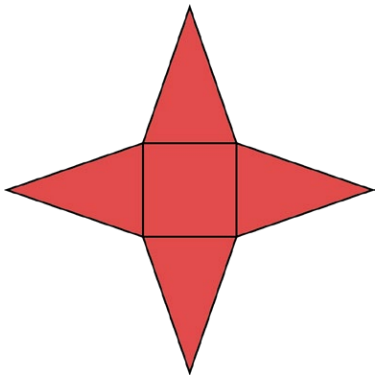
To relate 3D Objects to 2D Nets.





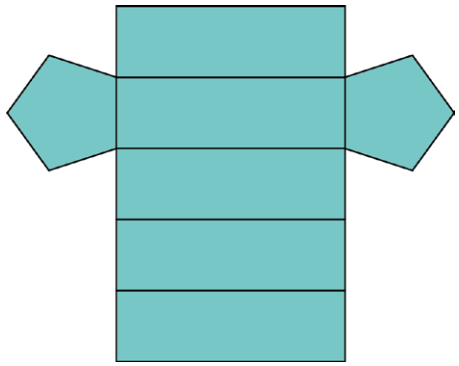


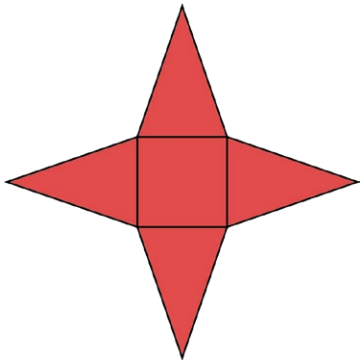


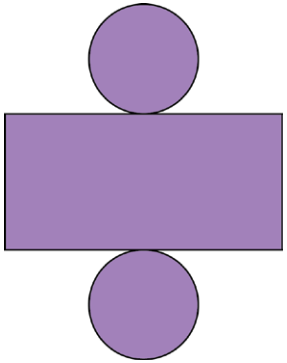


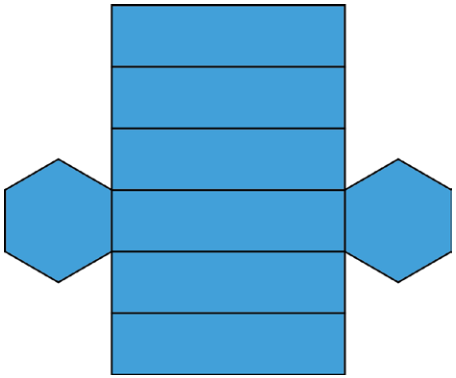
Shape Net Bingo

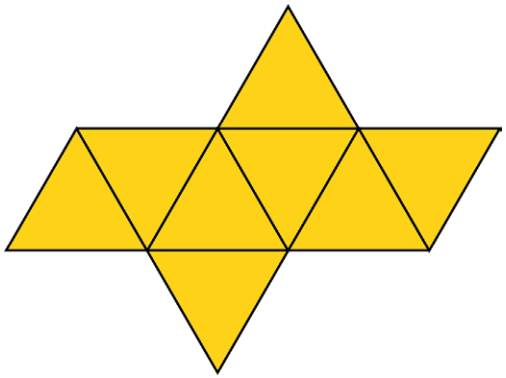
To relate 3D Objects to 2D Nets.





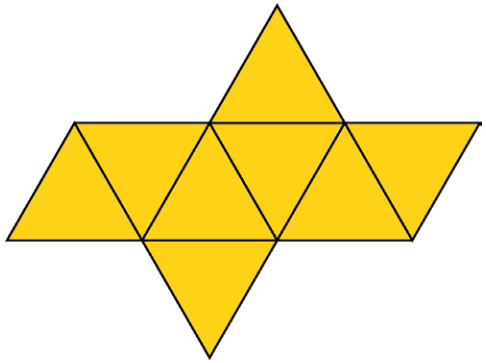


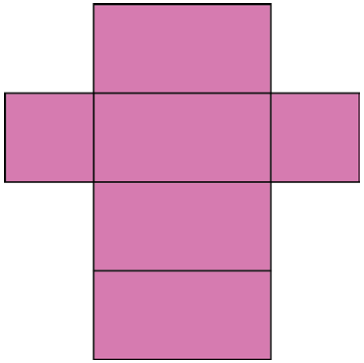


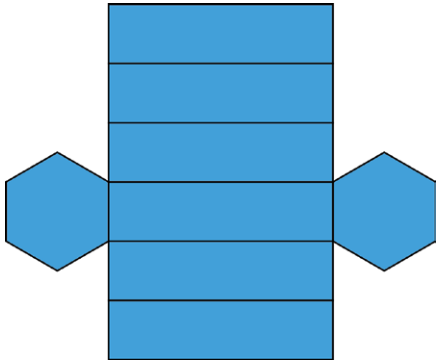


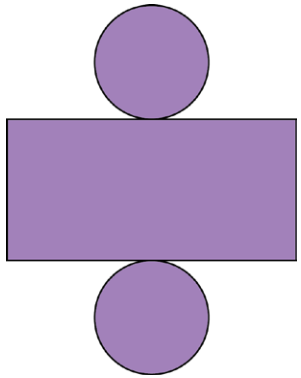
Shape Net Bingo

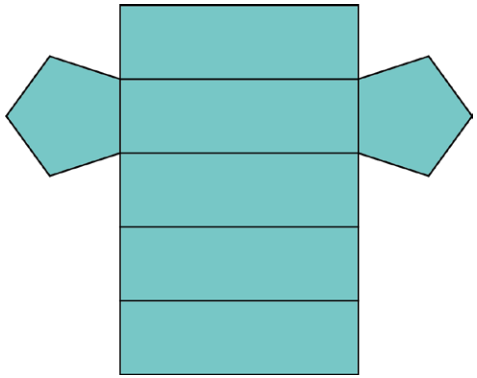
To relate 3D Objects to 2D Nets.

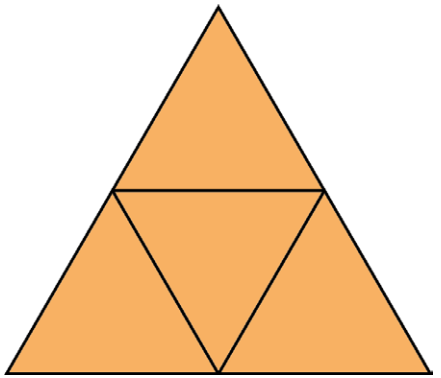






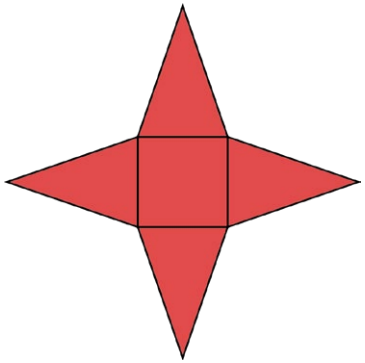
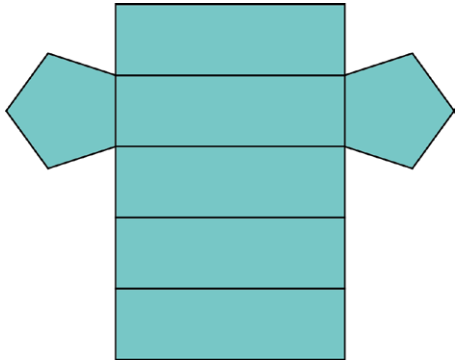
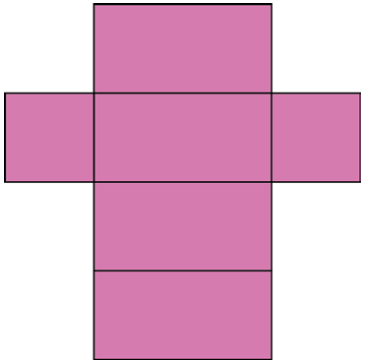
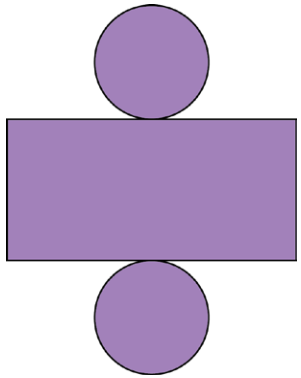
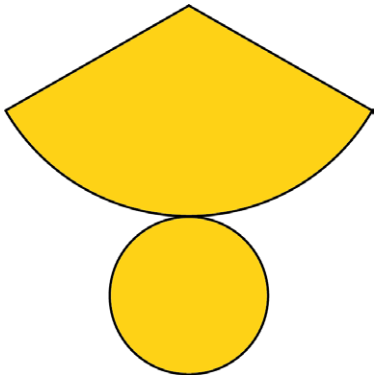
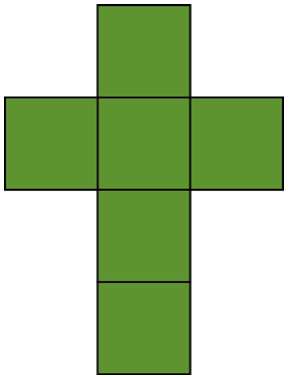






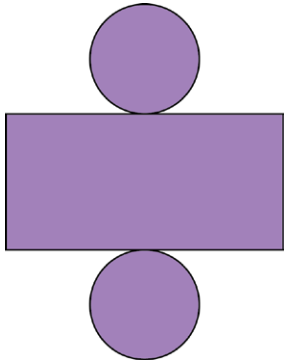
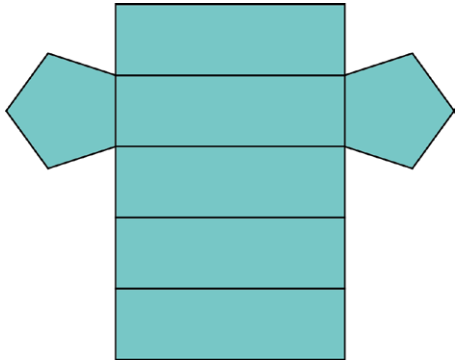
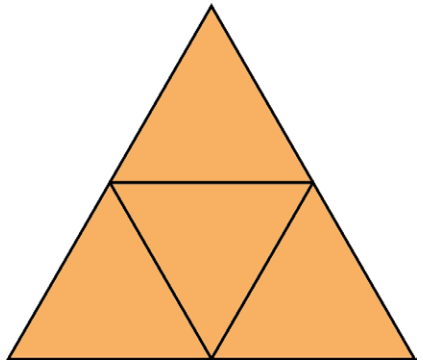
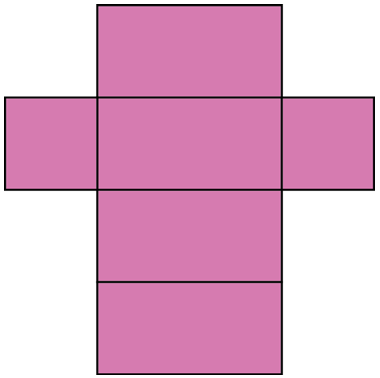
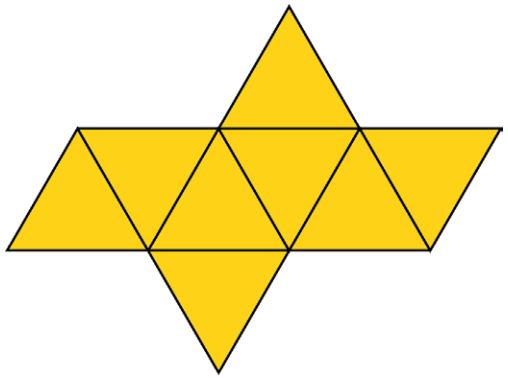
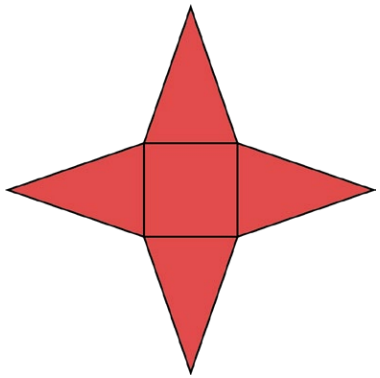
Shape Net Bingo

To relate 3D Objects to 2D Nets.

Shape Net Bingo

To relate 3D Objects to 2D Nets.

Shape Net Bingo

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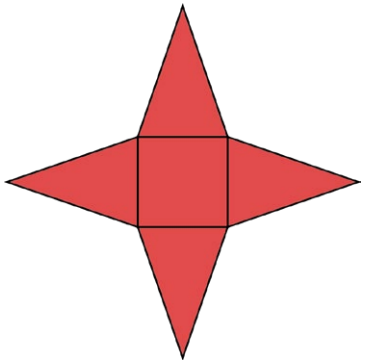
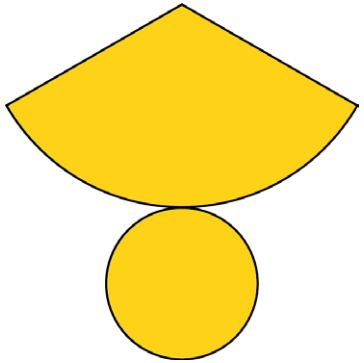
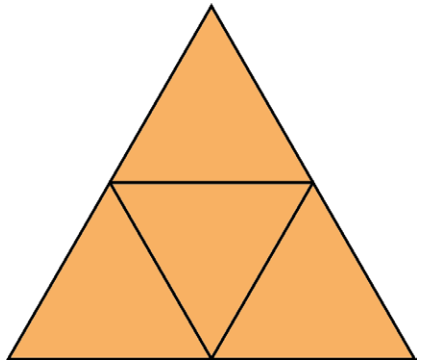
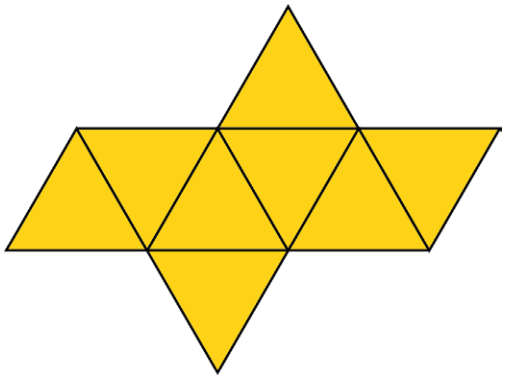
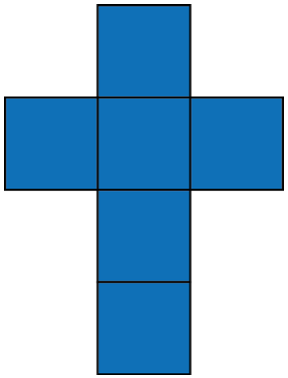




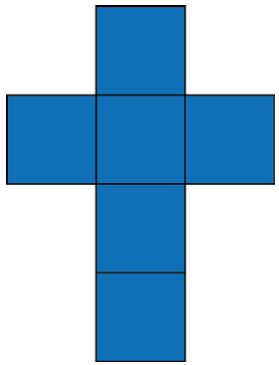


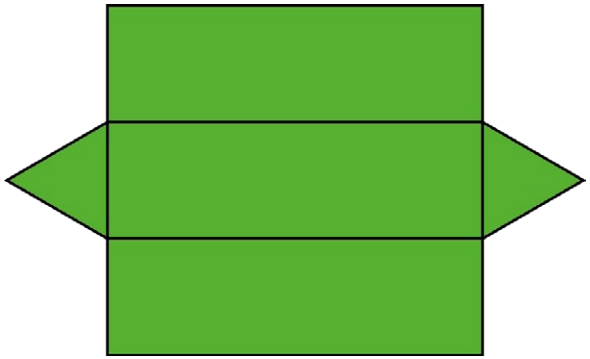


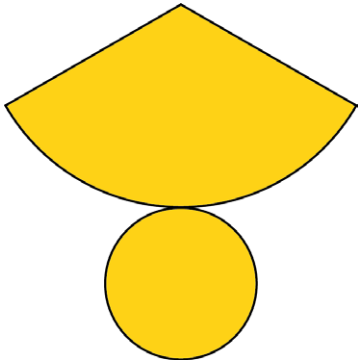


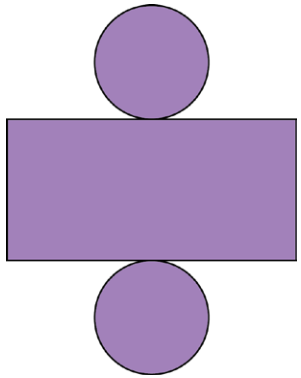
Shape Net Bingo

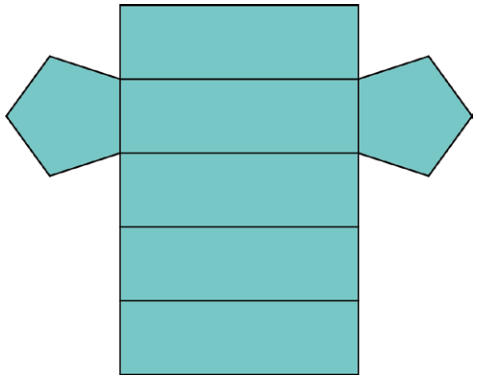
To relate 3D Objects to 2D Nets.

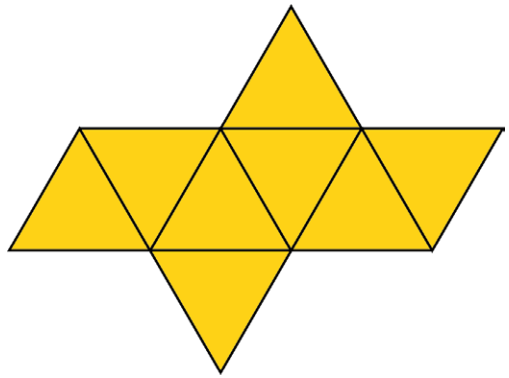












Shape Net Bingo

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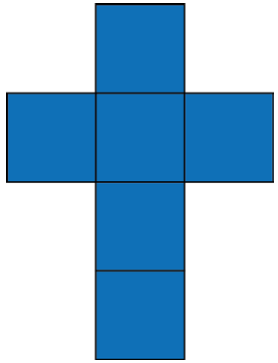
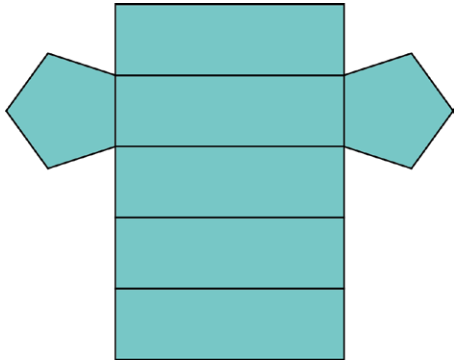
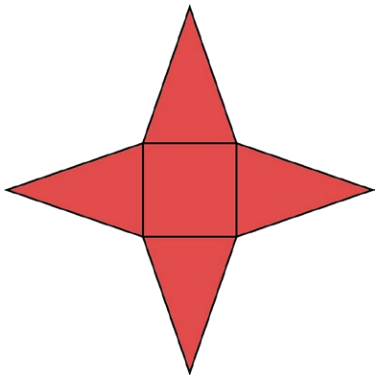
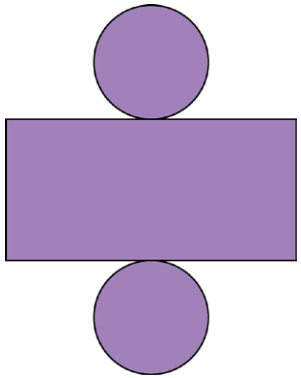
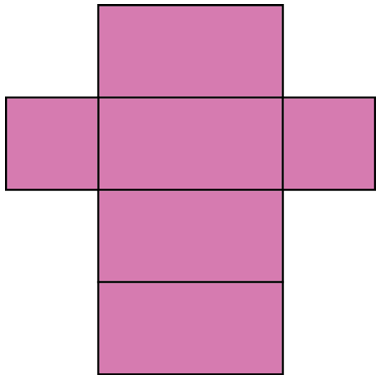


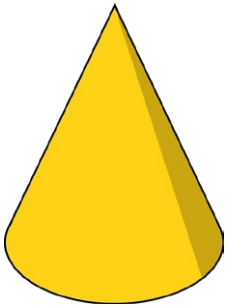
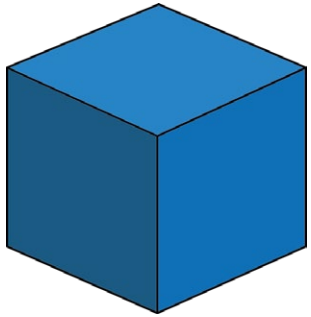
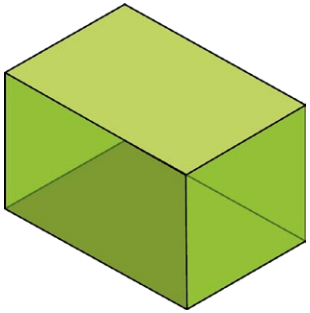
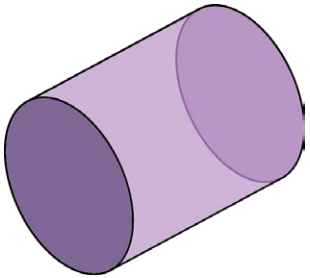
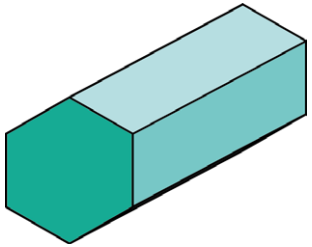
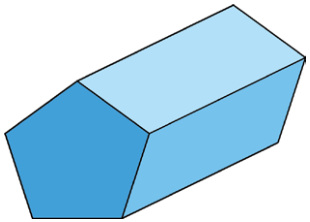
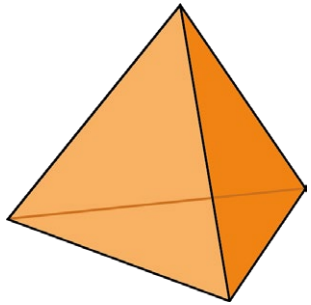
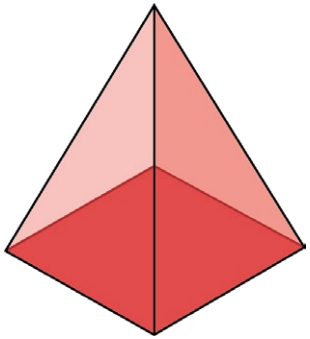
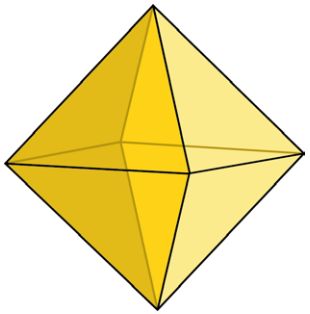
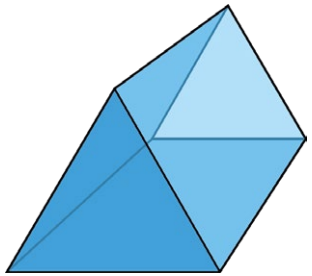








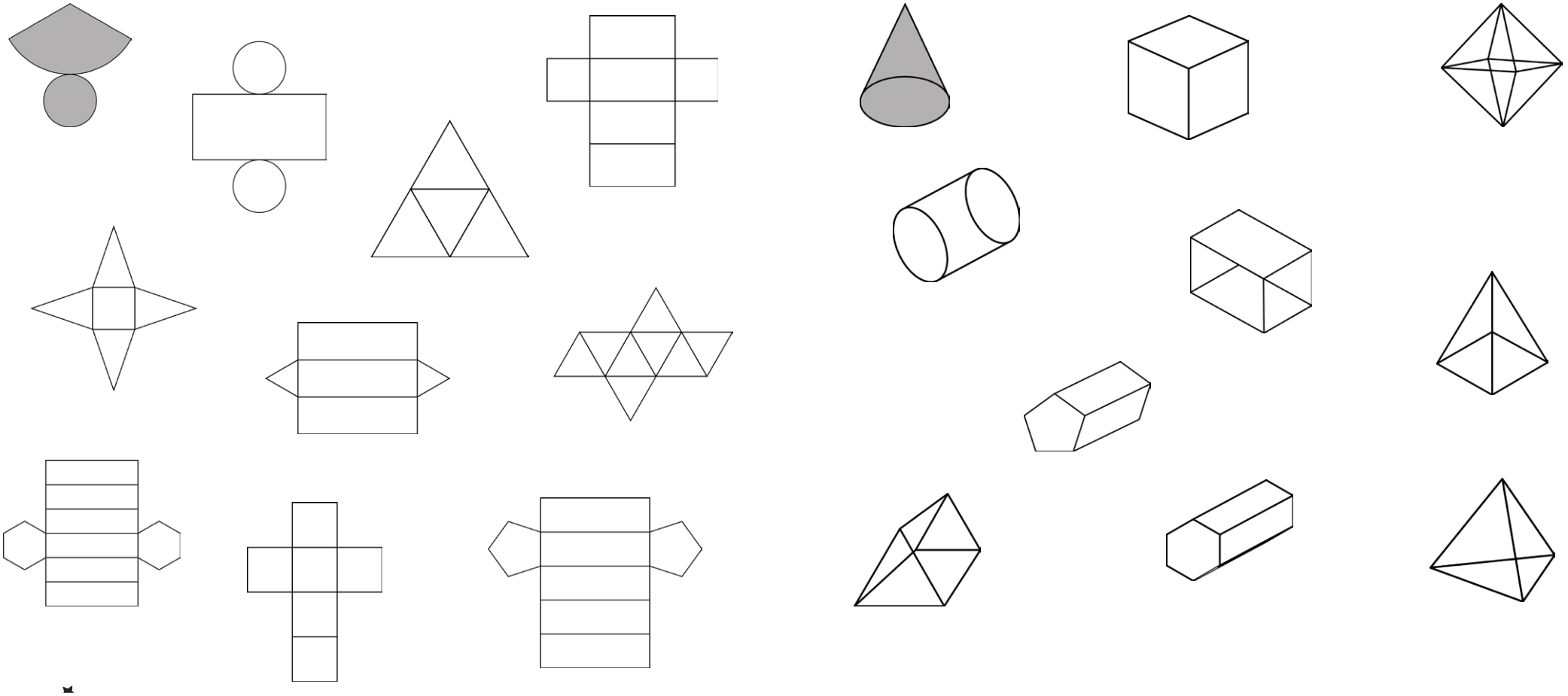
Calling Cards

Shape Nets

I can identify the nets of common 3D objects.

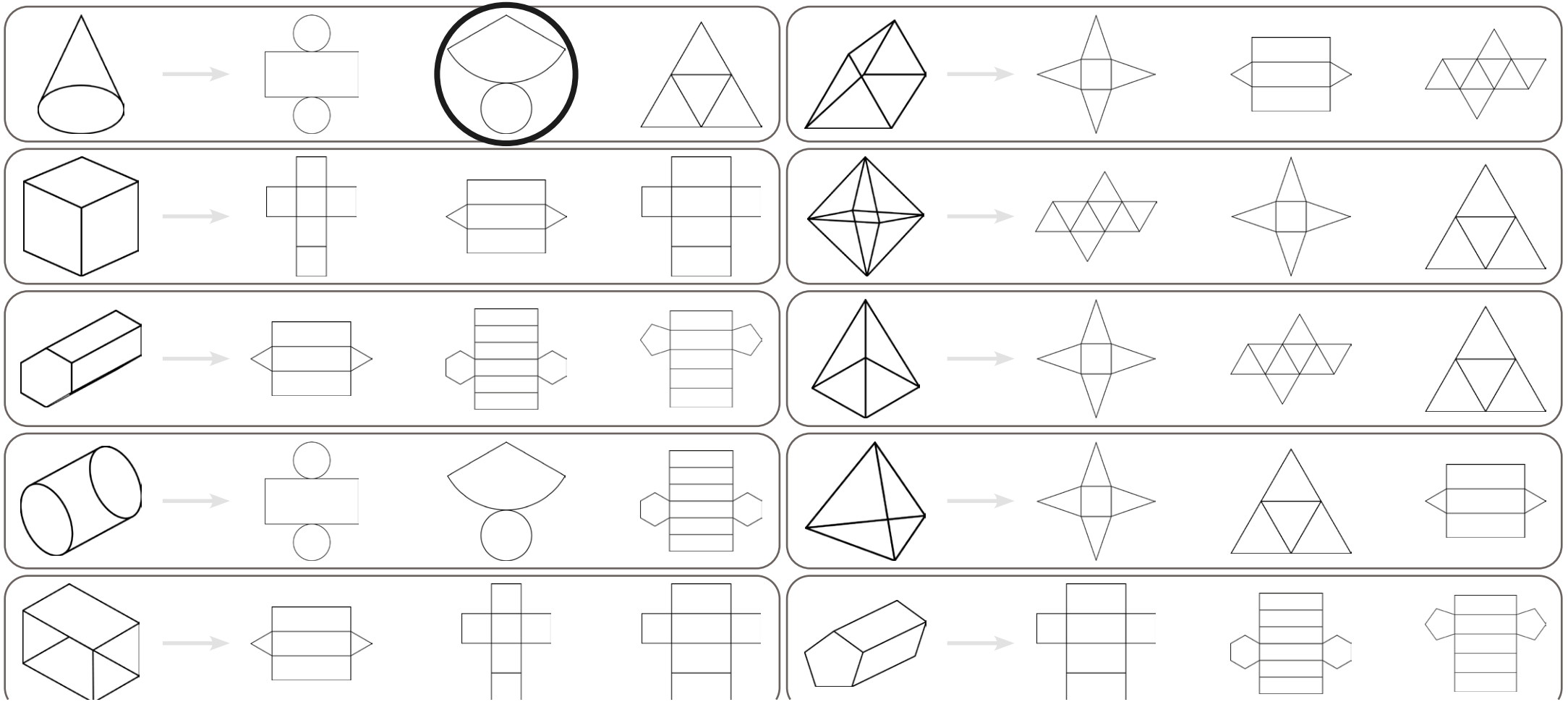
Match the 3D object to its net by colouring the correct pairs the same colour.



Shape Nets

I can identify the nets of common 3D objects.

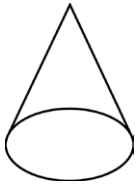
Circle the correct shape net for the given 3D object.



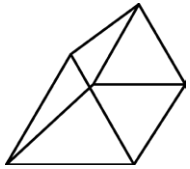
Shape Nets

I can identify and draw the nets of common 3D objects.

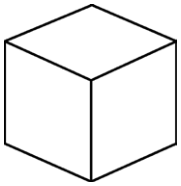
Use a pencil and ruler to draw the shape net of the given 3D object.



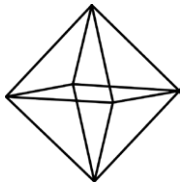
Cone



Triangular Prism



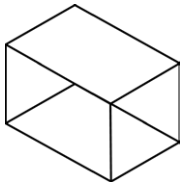
Cube



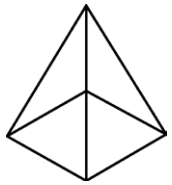
Octahedron

Use a pencil and ruler to draw the shape net of the given 3D object.

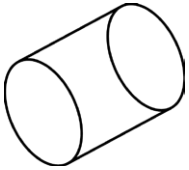
Cuboid



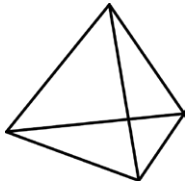
Square-Based Pyramid



Cylinder

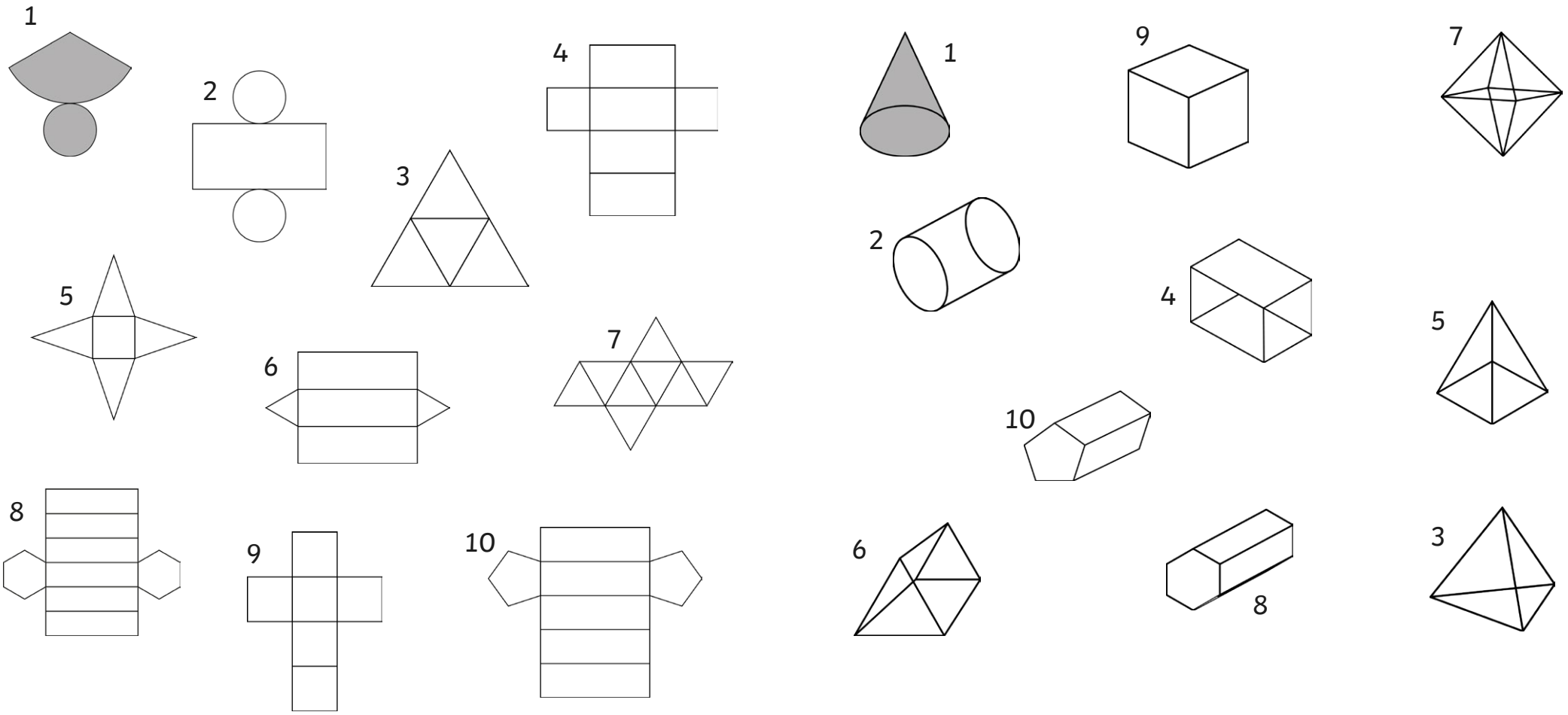


Tetrahedron



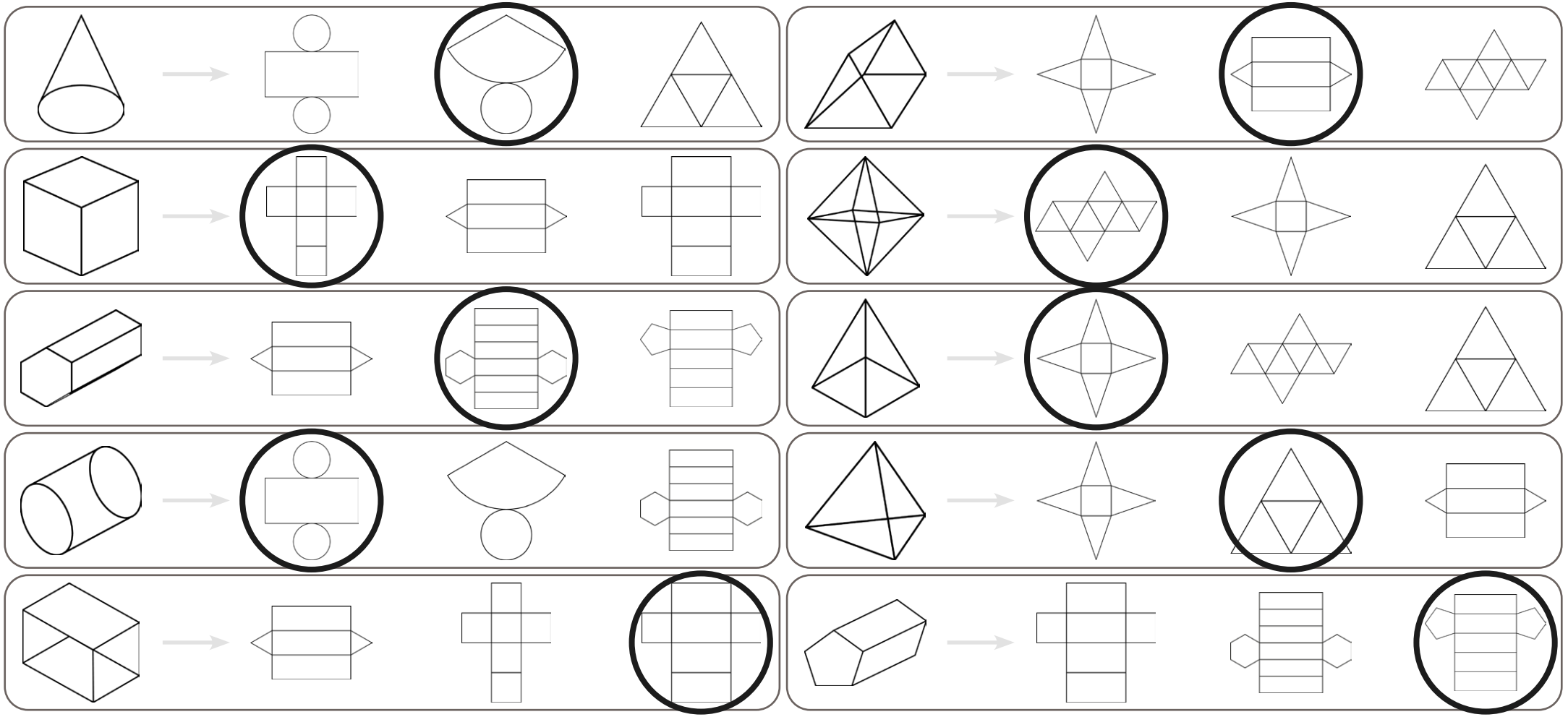
Shape Nets Answers

Match the 3D object to the correct net by colouring the correct pairs the same colour.



Shape Nets Answers

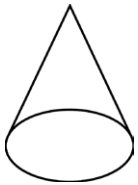
Circle the correct shape net for the given 3D object.

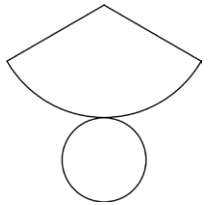


Shape Nets Answers

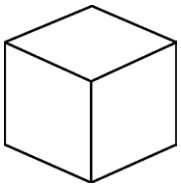
Use a pencil and ruler to draw the shape net of the given 3D object.

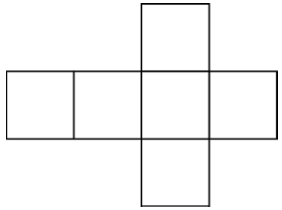
Cone



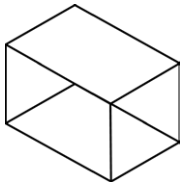


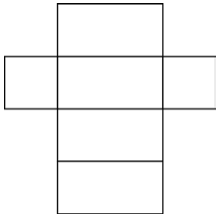
Cube



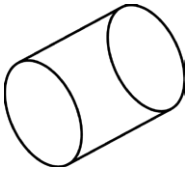


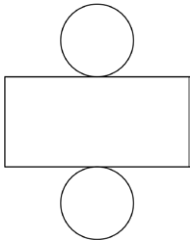
Cuboid



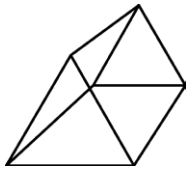


Cylinder

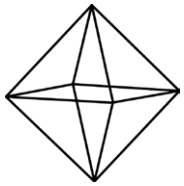


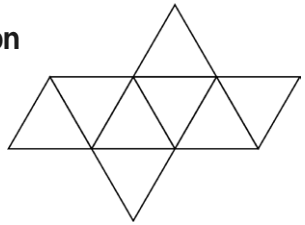


Triangular Prism



Octahedron





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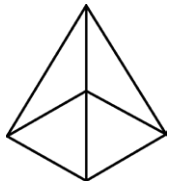
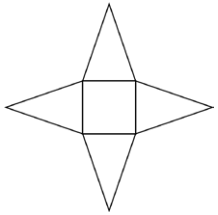
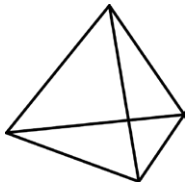
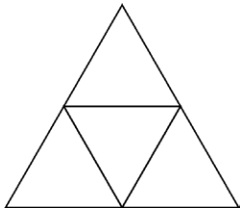




Tetrahedron





Measurement and Geometry | Understanding Nets

To relate 3D objects to 2D nets.		
I can describe the 2D faces of 3D objects.		
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