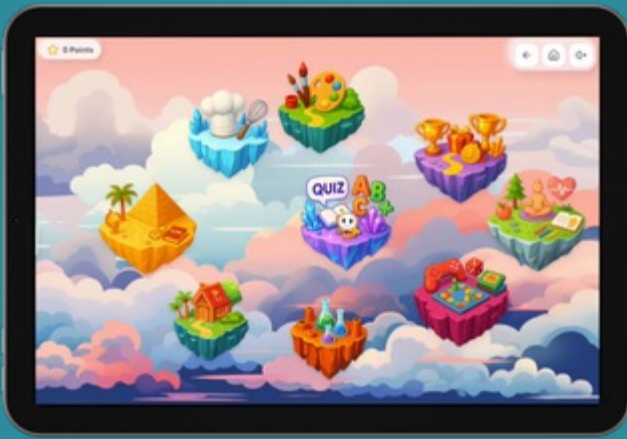


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3D Objects Year 3

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3D Object Feature Toolkit

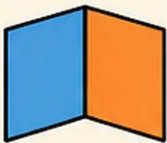
⇒ Faces, edges, vertices and curved surfaces ⇒

KEY VOCABULARY



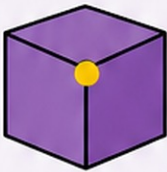
Face

a flat or curved surface



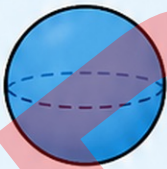
Edge

where two faces meet



Vertex

a corner or point



Curved surface

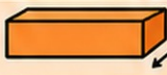
a surface that bends

DIMENSION WORDS

length



width



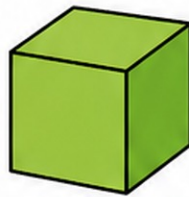
height



depth

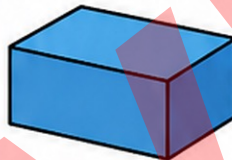


3D OBJECT EXAMPLES



Cube

- 6 faces
- 12 edges
- 8 vertices



Rectangular prism

- 6 faces
- 12 edges
- 8 vertices



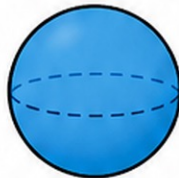
Cylinder

- 2 flat faces
- 1 curved surface
- 2 edges
- 0 vertices



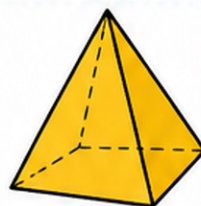
Cone

- 1 flat face
- 1 curved surface
- 1 edge
- 1 vertex



Sphere

- 1 curved surface
- 0 edges
- 0 vertices



Pyramid

- flat base, triangular faces, 1 apex



Tip: Count carefully. Turn the object and check every face, edge and vertex.

Prisms and Pyramids Guide

Name the base. Check the faces.

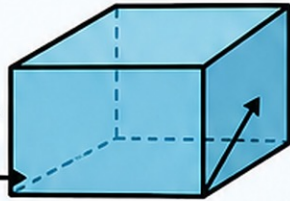
Prisms

A prism has two matching, parallel faces. The other faces join the matching faces.

rectangular prism

– rectangle ends

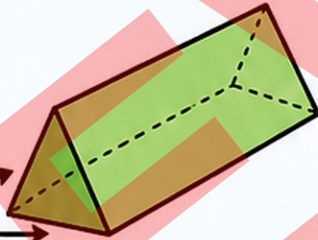
rectangle ends



triangular prism

– triangle ends

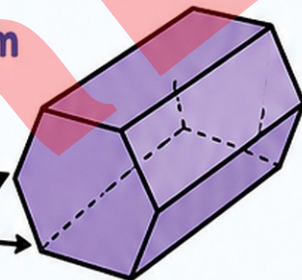
triangle ends



pentagonal prism

– pentagon ends

pentagon ends



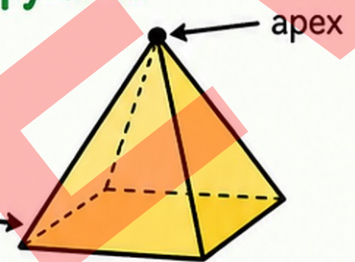
Pyramids

A pyramid has one base. The side faces are triangles that meet at an apex.

square-based pyramid

– square base

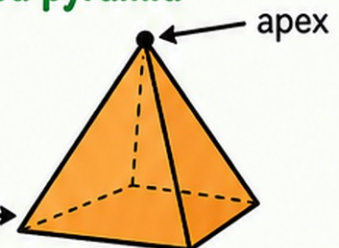
square base



triangular-based pyramid

– triangle base

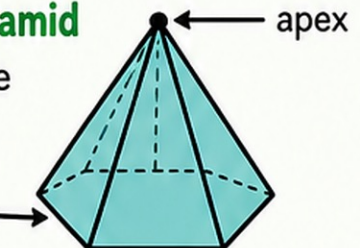
triangle base



pentagonal pyramid

– pentagon base

pentagon base



STRATEGY

- 1 Find the base shape.
- 2 Look for matching faces or an apex.
- 3 Use the base shape to help name the object.

TRY IT!

How do you know?



3D Object Feature Hunt Cards



Cut out the cards. Find or draw an object that matches each clue.

1. Find a cube.



2. Find a rectangular prism.



3. Find a cylinder.



4. Find a cone.



5. Find a sphere.



6. Find a pyramid.



7. Find an object with 6 flat faces.



8. Find an object with a curved surface.



9. Find an object with no vertices.



10. Find an object with one apex.



11. Find an object shaped like a triangular prism.



12. Find an object that has both flat and curved surfaces.



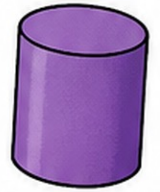
Record your findings on the recording mat.





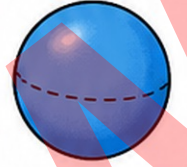
3D Object

Feature Hunt Recording Mat

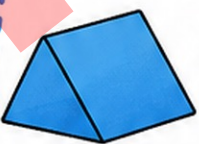


Name: _____

Choose **six** hunt cards. Record what you found and explain the features you noticed.



Card clue	Object I found or drew	Faces	Edges	Vertices	How I know



Reflection:

Which clue was the easiest? _____

Which clue made you think carefully? _____

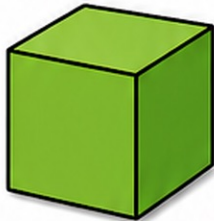
I Have, Who Has? 3D Object Features

Cards 1-6

Cut out the cards. Read your card when you hear the matching clue.

Card 1

I have
a cube.



Who has an object
with one curved surface
and no edges?

Card 2

I have
a sphere.



Who has an object
with two circular faces?

Card 3

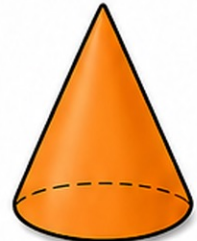
I have
a cylinder.



Who has an object
with one vertex and
one circular face?

Card 4

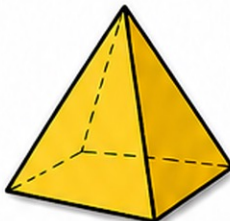
I have
a cone.



Who has a pyramid
with a square base?

Card 5

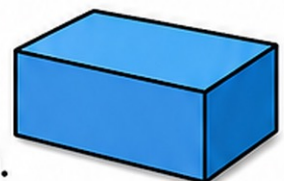
I have
a square-based
pyramid.



Who has a box-shaped
object with six
rectangular faces?

Card 6

I have
a rectangular prism.



Who has a prism
with two triangle ends?

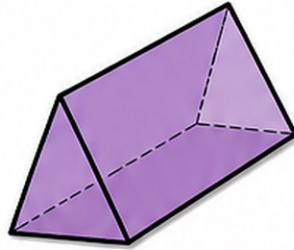
I Have, Who Has? 3D Object Features

Cards 7-12

Cut out the cards. Keep the cards in order only if you want a quick check.

Card 7

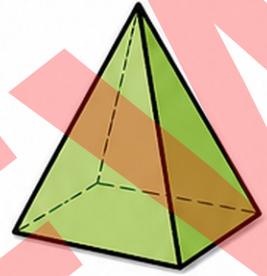
I have
a triangular
prism.



Who has a pyramid
with a triangle base?

Card 8

I have
a triangular-
based pyramid.



Who has a prism
with pentagon ends?

Card 9

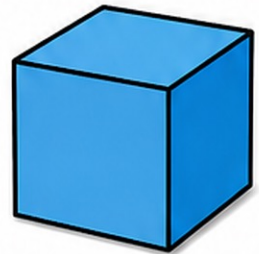
I have
a pentagonal
prism.



Who has an object
with six square faces?

Card 10

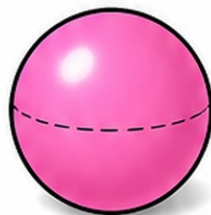
I have
a cube.



Who has an object
with no vertices?

Card 11

I have
a sphere.



Who has an object
with exactly two edges?

Card 12

I have
a cylinder.



Who has an object
with one apex?

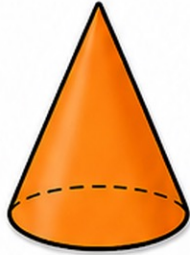
I Have, Who Has? 3D Object Features

Cards 13-18

Cut out the cards. Listen carefully for the feature clue.

Card 13

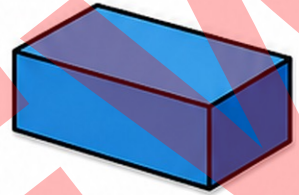
I have
a cone.



Who has a prism
with six rectangle
faces?

Card 14

I have
a rectangular
prism.



Who has a pyramid
with five faces?

Card 15

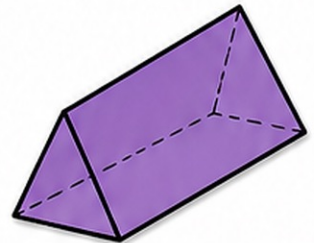
I have
a square-based
pyramid.



Who has a prism
with two triangle
faces?

Card 16

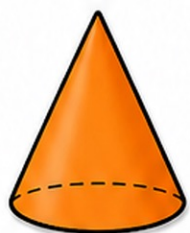
I have
a triangular
prism.



Who has an object
with one curved surface
and one flat face?

Card 17

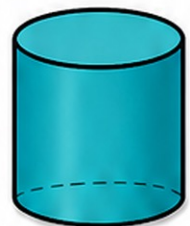
I have
a cone.



Who has an object
with one curved surface
and two flat faces?

Card 18

I have
a cylinder.



Who has an object
with only a curved
surface?

I Have, Who Has? 3D Object Features

Cards 19-24

Cut out the cards. The last clue links back to Card 1.

Card 19

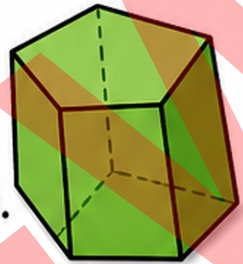
I have
a sphere.



Who has a prism
with pentagon ends?

Card 20

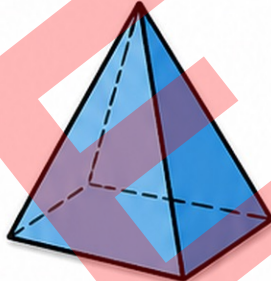
I have
a pentagonal prism.



Who has a pyramid
with a square base?

Card 21

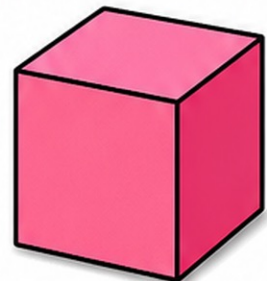
I have
a square-based
pyramid.



Who has an object
with 6 faces, 12 edges
and 8 vertices?

Card 22

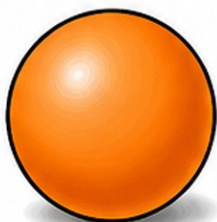
I have
a cube.



Who has an object
with no flat faces?

Card 23

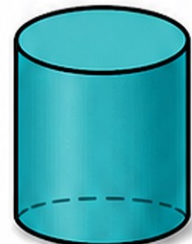
I have
a sphere.



Who has an object
with flat and curved
surfaces?

Card 24

I have
a cylinder.



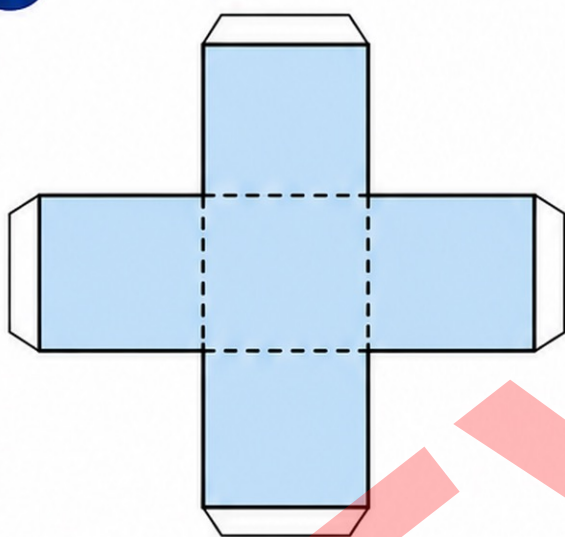
Who has an object
with six square faces?

Build and Describe 3D Objects - Nets

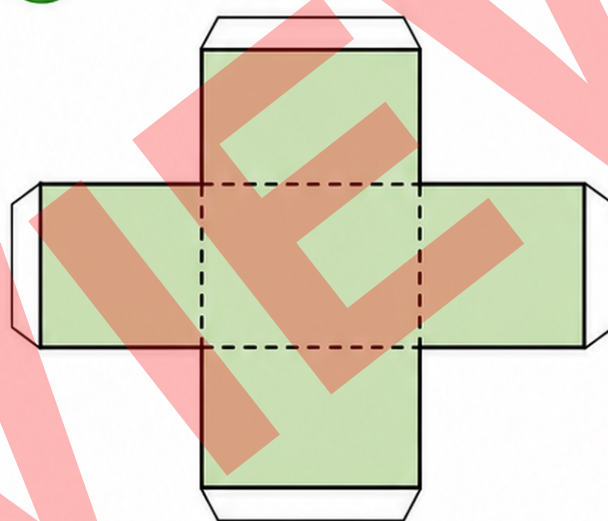
★ Name: _____

Choose a net. Cut, fold and tape it to build a 3D object.
Then complete an Object ID Card.

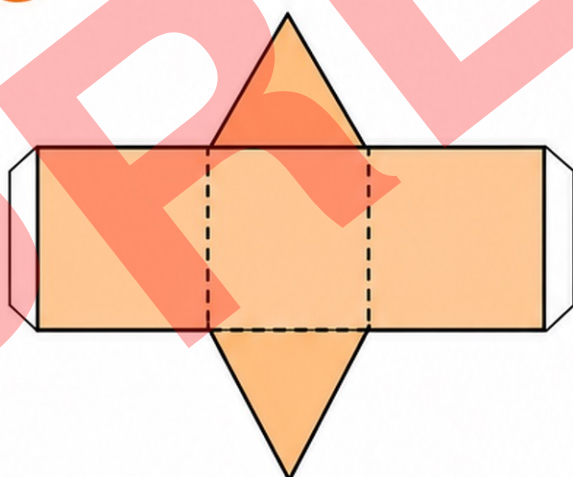
1 Cube net



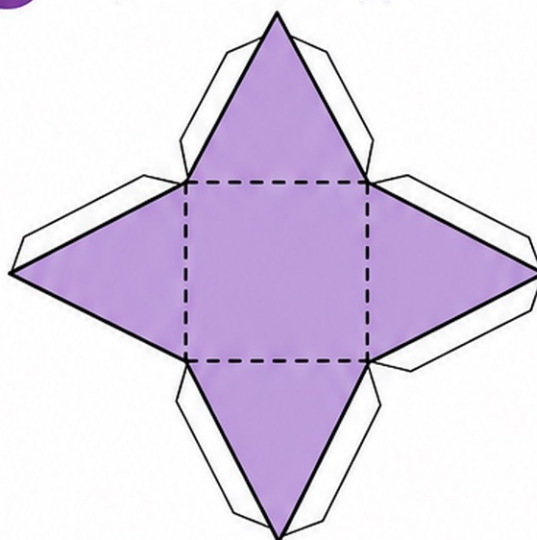
2 Rectangular prism net



3 Triangular prism net



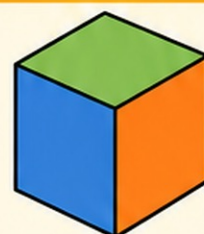
4 Square-based pyramid net

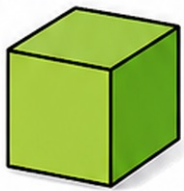


----- Fold on dashed lines.

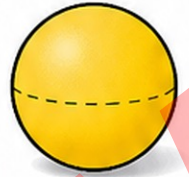
Tape the tabs.

Check the faces, edges and vertices.





Build and Describe 3D Objects -



Object ID Card

Name: _____

Use this card after you build a net or inspect a real 3D object.

3D object name: _____

Sketch my object:

Number of faces:



Number of edges:



Number of vertices:



Flat faces I can see:

Curved surfaces I can see:

Real-world examples:

My object could be used as:

I know this object is a _____ because:

CHECKLIST



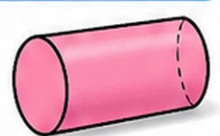
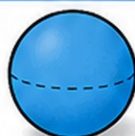
I counted carefully.



I turned the object around.



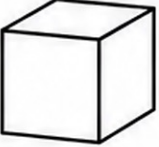
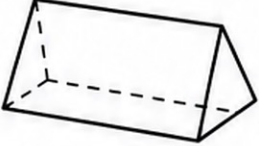
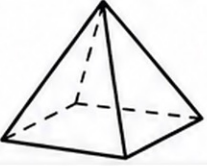
I used feature words in my explanation.



Count the Features

Name: _____

Count the faces, edges and vertices for each 3D object.

3D object	Name	Faces	Edges	Vertices
	cube			
	rectangular prism			
	triangular prism			
	square-based pyramid			
	triangular-based pyramid			
	cylinder			
	cone			
	sphere			

Challenge: Choose two objects from the table.

Write one way they are alike and one way they are different.

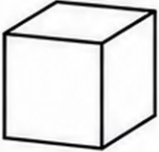
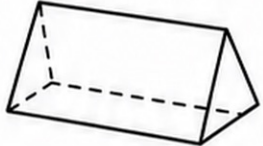
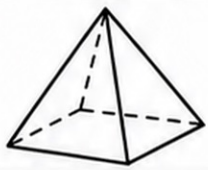
Alike: _____

Different: _____

Count the Features

Name: **ANSWERS**

Count the faces, edges and vertices for each 3D object.

3D object	Name	Faces	Edges	Vertices
	cube	6	12	8
	rectangular prism	6	12	8
	triangular prism	5	9	6
	square-based pyramid	5	8	5
	triangular-based pyramid	4	6	4
	cylinder	3	2	0
	cone	2	1	1
	sphere	1	0	0

Challenge: Choose two objects from the table.

Write one way they are alike and one way they are different.

Alike: Both have flat faces.

Different: They have different numbers of edges.

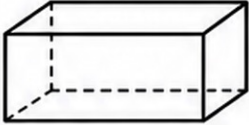
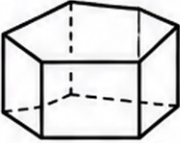
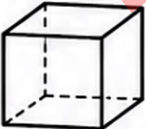
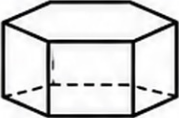
Prisms or Pyramids?

Name: _____

Look at each 3D object. Decide if it is a prism or a pyramid.
Then name the base shape.

Prism: two matching,
parallel faces

Pyramid: one base and
triangular faces that
meet at an apex

Object	Prism or pyramid?	Base shape	Full name
1. 			
2. 			
3. 			
4. 			
5. 			
6. 			
7. 			
8. 			

A cube is a special type of _____.

A pyramid has triangular faces that meet at an _____.

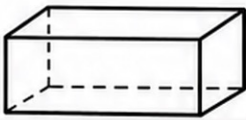
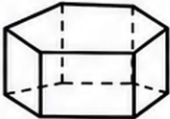
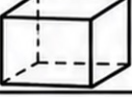
Prisms or Pyramids?

Name: _____ **ANSWERS**

Look at each 3D object. Decide if it is a prism or a pyramid.
Then name the base shape.

Prism: two matching,
parallel faces

Pyramid: one base and
triangular faces that
meet at an apex

Object	Prism or pyramid?	Base shape	Full name
1. 	Prism	rectangle	rectangular prism
2. 	Prism	triangle	triangular prism
3. 	Prism	pentagon	pentagonal prism
4. 	Pyramid	square	square-based pyramid
5. 	Pyramid	triangle	triangular-based pyramid
6. 	Pyramid	pentagon	pentagonal pyramid
7. 	Prism	square	cube
8. 	Prism	hexagon	hexagonal prism

A cube is a special type of **prism**.

A pyramid has triangular faces that meet at an **apex**.

Nets and Objects Match

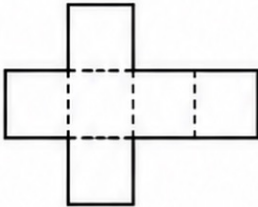
Name: _____

A net is a flat pattern that can fold into a 3D object.

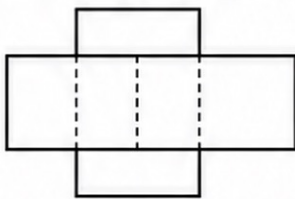
Match each net to the object it could make.

Nets

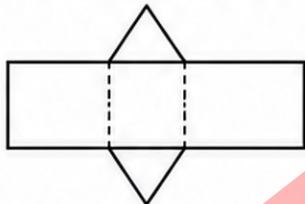
1.



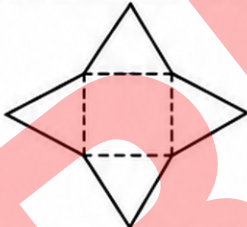
2.



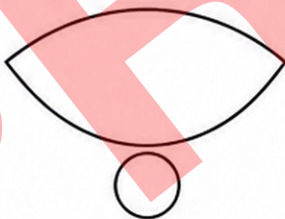
3.



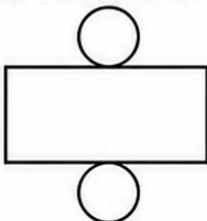
4.



5.



6.

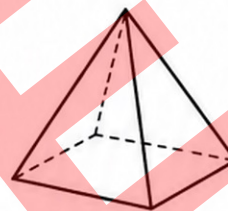


3D objects

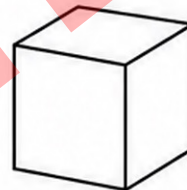
A.



B.



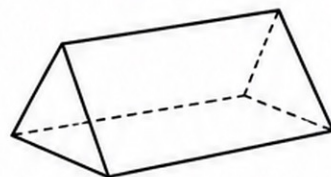
C.



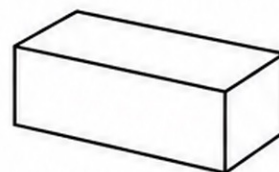
D.



E.



F.



Explain: How can a net help you understand a 3D object?

Nets and Objects Match

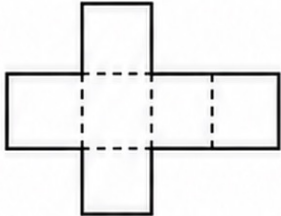
Name: ANSWERS

A net is a flat pattern that can fold into a 3D object.

Match each net to the object it could make.

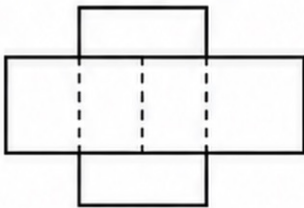
Nets

1.



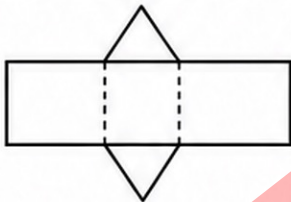
C

2.



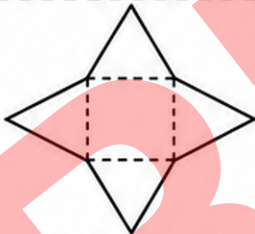
F

3.



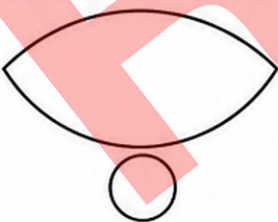
E

4.



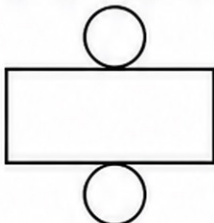
B

5.



D

6.



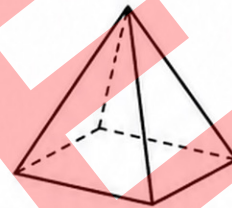
A

3D objects

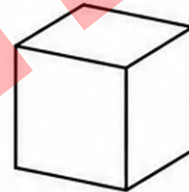
A.



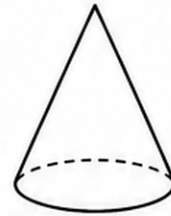
B.



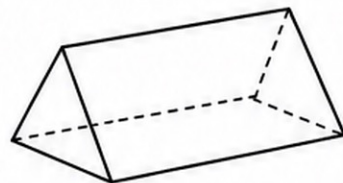
C.



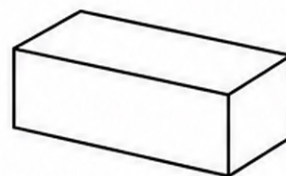
D.



E.

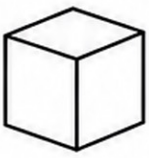


F.

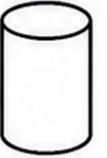


Explain: How can a net help you understand a 3D object?

A net shows the faces and how they fold to make the object.



3D Object Clues



Name: _____

Read each clue. Write the 3D object name and one reason for your answer.

WORD BANK:

cube | sphere | cylinder | cone | rectangular prism
triangular prism | square-based pyramid | triangular-based pyramid

1 I have 6 square faces.

Object: _____

Reason: _____

2 I have no edges and no vertices.

Object: _____

Reason: _____

3 I have 2 circular faces and 1 curved surface.

Object: _____

Reason: _____

4 I have 1 circular face and 1 vertex.

Object: _____

Reason: _____

5 I have 2 triangle faces and 3 rectangle faces.

Object: _____

Reason: _____

6 I have 6 rectangle faces.

Object: _____

Reason: _____

7 I have a square base and triangular faces that meet at an apex.

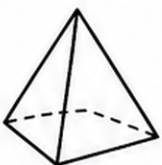
Object: _____

Reason: _____

8 I have 4 triangle faces and 4 vertices.

Object: _____

Reason: _____

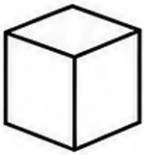


CHALLENGE: Write your own clue for a 3D object.

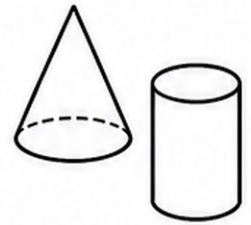
My clue: _____

Object: _____





3D Object Clues



Name: **ANSWERS**

Read each clue. Write the 3D object name and one reason for your answer.

WORD BANK:

cube | sphere | cylinder | cone | rectangular prism
triangular prism | square-based pyramid | triangular-based pyramid

1 I have 6 square faces.

Object: **cube**

Reason: **6 square faces.**

2 I have no edges and no vertices.

Object: **sphere**

Reason: **no edges or vertices.**

3 I have 2 circular faces and 1 curved surface.

Object: **cylinder**

Reason: **2 circular faces and 1 curved surface.**

4 I have 1 circular face and 1 vertex.

Object: **cone**

Reason: **1 circular face and 1 vertex.**

5 I have 2 triangle faces and 3 rectangle faces.

Object: **triangular prism**

Reason: **2 triangle faces.**

6 I have 6 rectangle faces.

Object: **rectangular prism**

Reason: **6 rectangle faces.**

7 I have a square base and triangular faces that meet at an apex.

Object: **square-based pyramid**

Reason: **square base and apex.**

8 I have 4 triangle faces and 4 vertices.

Object: **triangular-based pyramid**

Reason: **4 triangle faces.**

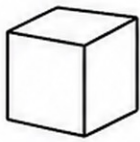


CHALLENGE: Write your own clue for a 3D object.

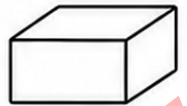
My clue: **I have 6 faces, 12 edges and 8 vertices.**

Object: **cube or rectangular prism**





Compare and Classify 3D Objects



Name: _____

Sort and compare the objects using their features.

Part A: Sort the objects

cube, sphere, cone, cylinder, rectangular prism,
triangular prism, square-based pyramid, triangular-based pyramid

Only flat faces

Flat and curved surfaces

Only curved surface

Part B: Compare two objects

Choose one pair. Tick your pair:



cube and rectangular prism



cone and cylinder



triangular prism and square-based pyramid

One way they are alike: _____

One way they are different: _____

Feature words I used: _____

Part C: Classify by clue

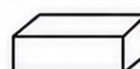
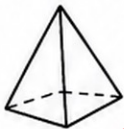
Write the object name.

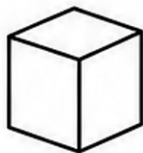
1. It has 6 faces, 12 edges and 8 vertices. _____

2. It has 2 circular faces and 1 curved surface. _____

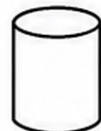
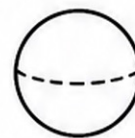
3. It has 1 curved surface and no edges. _____

4. It has triangular faces that meet at an apex. _____





Compare and Classify 3D Objects



Name: **ANSWERS**

Sort and compare the objects using their features.

Part A: Sort the objects

cube, sphere, cone, cylinder, rectangular prism, triangular prism, square-based pyramid, triangular-based pyramid

Only flat faces

cube
rectangular prism
triangular prism
square-based pyramid
triangular-based pyramid

Flat and curved surfaces

cone
cylinder

Only curved surface

sphere

Part B: Compare two objects

Choose one pair. Tick your pair:



cube and rectangular prism



cone and cylinder



triangular prism and square-based pyramid

One way they are alike: **both have 6 faces, 12 edges and 8 vertices.**

One way they are different: **cube faces are squares; rectangular prism faces are rectangles.**

Feature words I used: **faces, edges, vertices.**

Part C: Classify by clue

Write the object name.

1. It has 6 faces, 12 edges and 8 vertices. **cube or rectangular prism**

2. It has 2 circular faces and 1 curved surface. **cylinder**

3. It has 1 curved surface and no edges. **sphere**

4. It has triangular faces that meet at an apex. **pyramid**

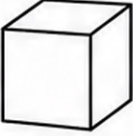
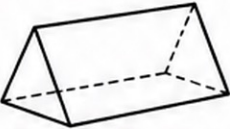
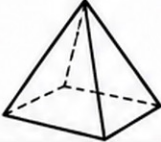


3D Object Check-Up - Page 1

Name: _____

Show what you know about 3D objects and their features.

1 Count the features

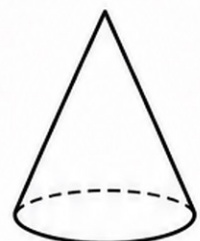
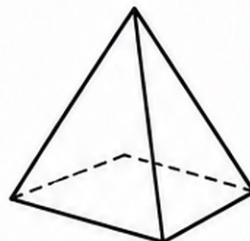
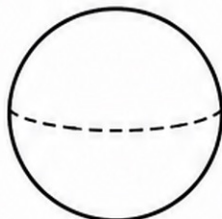
Object	Name	Faces	Edges	Vertices
A. 				
B. 				
C. 				
D. 				
E. 				

2 Choose the correct word

- a. A sphere has edges / no edges.
- b. A prism / pyramid has two matching, parallel faces.
- c. A pyramid has faces that meet at an apex / edge.
- d. A cylinder has flat and curved surfaces / only flat faces.

3 Name the object

Write the name of each object under the diagram.



3D Object Check-Up - Page 2

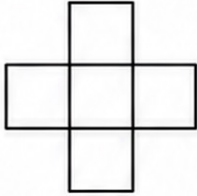
Name: _____

Use feature words to explain your thinking.

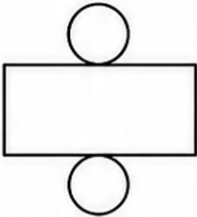
4 Match each net

Write the matching letter.

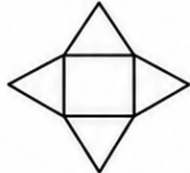
1.



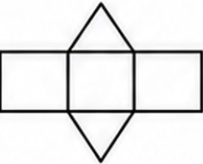
2.



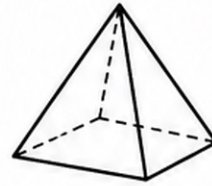
3.



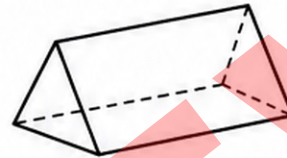
4.



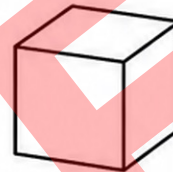
A.



B.



C.



D.



1. _____ 2. _____ 3. _____ 4. _____

5 Real-world examples

Write a real-world example for each object.

Cube: _____

Cylinder: _____

Rectangular prism: _____

Sphere: _____

6 Explain your thinking

How are a cone and a cylinder alike? How are they different?

Alike: _____

Different: _____

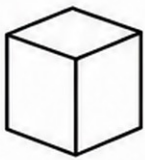
Use at least two feature words: face, edge, vertex, curved surface.

7 Make a classification rule

Write a rule for sorting 3D objects into two groups.

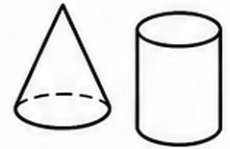
My rule: _____

Group 1: _____ Group 2: _____



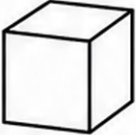
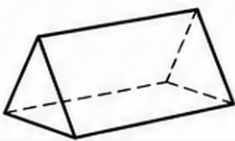
3D Object Check-Up - Page 1

Name: **ANSWERS**



Show what you know about 3D objects and their features.

1 Count the features

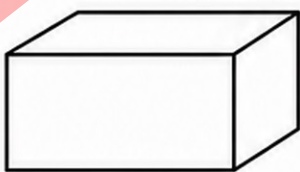
Object	Name	Faces	Edges	Vertices
A. 	cube	6	12	8
B. 	cylinder	3	2	0
C. 	cone	2	1	1
D. 	triangular prism	5	9	6
E. 	square-based pyramid	5	8	5

2 Choose the correct word

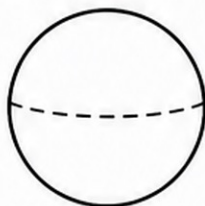
- A sphere has edges / no edges.
- A prism / pyramid has two matching, parallel faces.
- A pyramid has faces that meet at an apex / edge.
- A cylinder has flat and curved surfaces / only flat faces.

3 Name the object

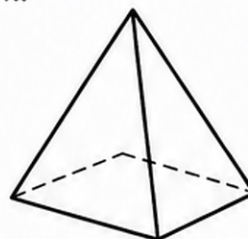
Write the name of each object under the diagram.



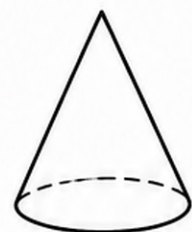
rectangular prism



sphere



triangular-based pyramid



cone

3D Object Check-Up - Page 2

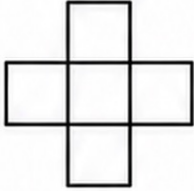
Name: ANSWERS

Use feature words to explain your thinking.

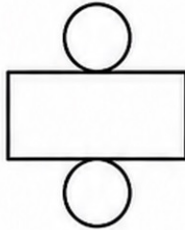
4 Match each net

Write the matching letter.

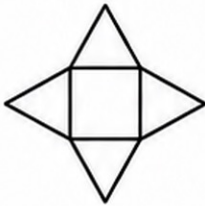
1.



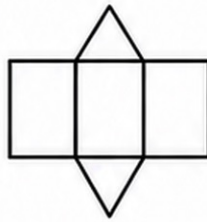
2.



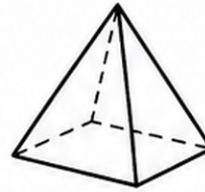
3.



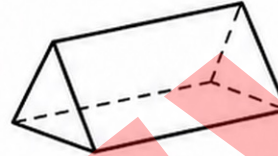
4.



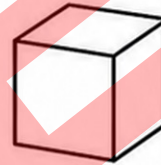
A.



B.



C.



D.



Write the matching letter.

1. C

2. D

3. A

4. B

5 Real-world examples

Write a real-world example for each object.

Cube: dice

Cylinder: can

Rectangular prism: cereal box

Sphere: ball

6 Explain your thinking

How are a cone and a cylinder alike? How are they different?

Alike: both have a circular face and curved surface.

Different: cone has 1 vertex; cylinder has 0 vertices.

Use at least two feature words: face, edge, vertex, curved surface.

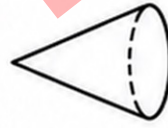
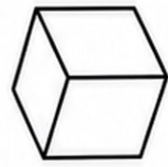
7 Make a classification rule

Write a rule for sorting 3D objects into two groups.

My rule: curved surfaces.

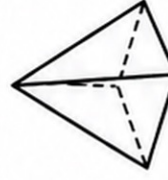
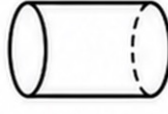
Group 1: no curved surfaces

Group 2: has curved surfaces



3D Objects Year 3 Rubric

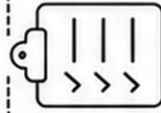
AC9M3SP01 - 3D object features, classification and reasoning



CRITERIA	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
1. Names common 3D objects	Needs support to name common 3D objects.	Identifies familiar 3D objects with support.	Accurately names common 3D objects.	Names many 3D objects and describes them.	Names and describes 3D objects, including less familiar ones.
2. Counts faces, edges and vertices	Counts with help and needs support.	Counts some features with support.	Accurately counts faces, edges and vertices for common objects.	Counts accurately and checks answers, correcting some errors.	Counts accurately and explains how they checked, with consistent accuracy.
3. Classifies prisms, pyramids and curved objects	Needs support to classify 3D objects.	Sorts objects into groups with prompts.	Classifies prisms, pyramids and curved objects correctly.	Compares and classifies objects using features.	Applies feature reasoning to unfamiliar objects and justifies classifications independently.
4. Matches nets to 3D objects	Needs support to match nets to objects.	Matches some nets to simple 3D objects.	Matches simple nets to the correct 3D objects.	Matches most nets accurately and explains choices.	Matches complex nets accurately and explains why they work.
5. Explains thinking with feature words	Provides limited explanation and uses few feature words.	Uses some feature words with support, explanation is basic.	Uses feature words (face, edge, vertex, curved surface) to explain thinking.	Explains thinking clearly using feature words and evidence, corrects errors.	Explains thinking in detail using precise feature words and justifies reasoning independently.

TEACHER NOTES:

Evidence can include worksheets, assessment responses, discussion, construction tasks and game/activity observations.



3D Objects

Year 3



Learning Goal

We can identify, compare and classify 3D objects using their features.



What Is a 3D Object?

A 3D object is solid. It has length, width, height and depth.



Feature Words

Faces are surfaces. Edges are where faces meet. Vertices are corners or points.



Flat and Curved Surfaces

Some objects have flat faces. Some have curved surfaces. Some have both.



Counting Features

Turn the object as you count. Check every face, edge and vertex carefully.



Cubes and Rectangular Prisms

Both have 6 faces, 12 edges and 8 vertices. A cube has square faces.



Prisms

A prism has two matching, parallel faces. The base shape helps name the prism.



Pyramids

A pyramid has one base. Triangular faces meet at one vertex called an apex.



Nets

A net is a flat pattern that folds to make a 3D object.



Real-World Examples

Boxes, cans, balls, cones, dice and tents can help us spot 3D objects around us.



Classify and Compare

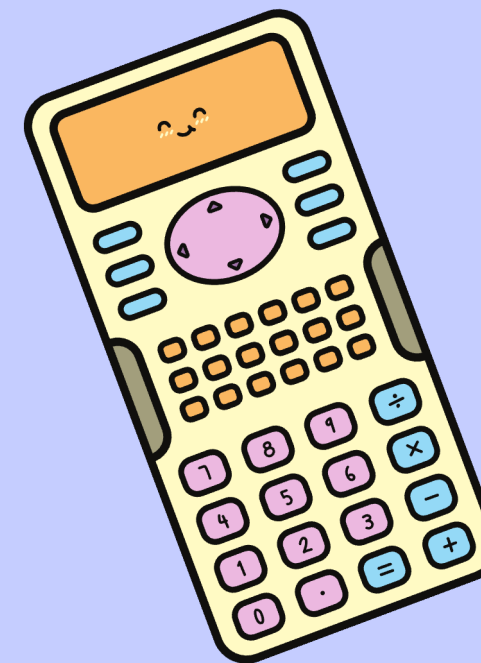
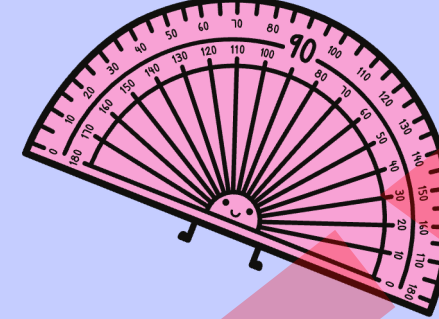
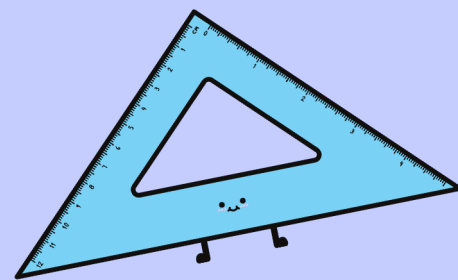
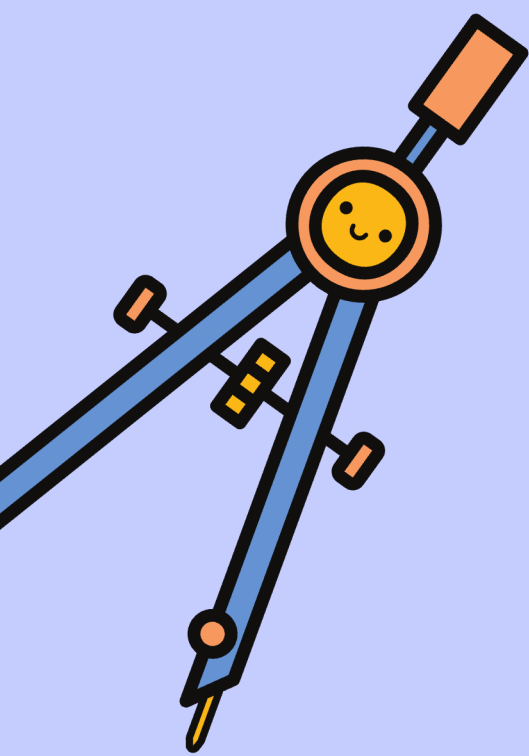
Sort objects by flat faces, curved surfaces, edges, vertices, prisms and pyramids.



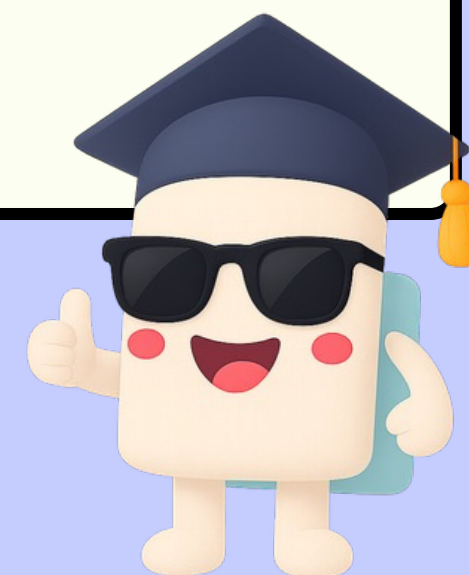
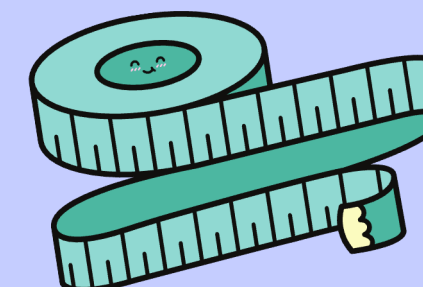
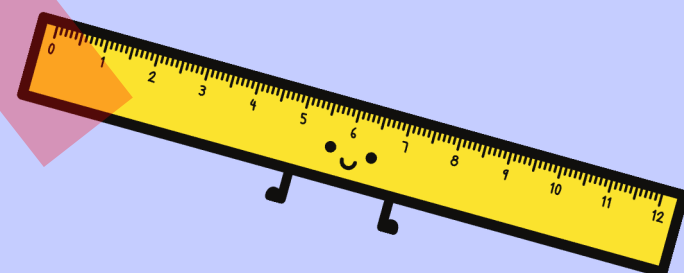
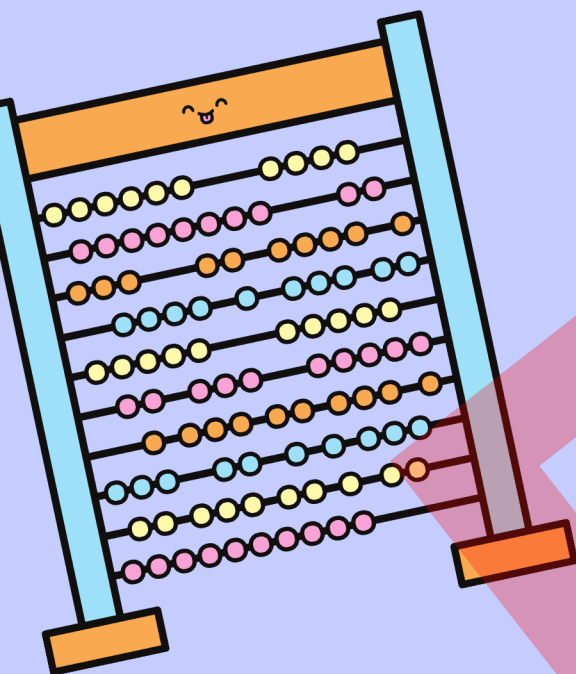
Review

Name the object, count its features, then explain how you know.





Great Work!



3D Objects Year 3 Quiz



Question 1

Question 1

Which object has no edges and no vertices?

- A. cube
- B. sphere
- C. cylinder
- D. rectangular prism



Answer 1

Answer 1

B. sphere



Question 2

Question 2

True or false: A cylinder has two circular faces and one curved surface.



Answer 2

Answer 2

True.



Question 3

Question 3

What 3D object has 6 square faces?



Answer 3

Answer 3

A cube.



Question 4

Question 4

Which object has a square base and triangular faces that meet at an apex?

- A. cone
- B. square-based pyramid
- C. triangular prism
- D. sphere



Answer 4

Answer 4

B. square-based pyramid



Question 5

Question 5

How many vertices does a rectangular prism have?



Answer 5

Answer 5

A rectangular prism has 8 vertices.



Question 6

Question 6

True or false: A prism has two matching, parallel faces.



Answer 6

Answer 6

True.



Question 7

Question 7

Which object could be made from a net with one rectangle and two circles?

A. cylinder

B. cone

C. cube

D. triangular prism



Answer 7

Answer 7

A. cylinder



Question 8

Question 8

What is an apex?



Answer 8

Answer 8

An apex is the top vertex where a pyramid's triangular faces meet.



Question 9

Question 9

True or false: A cone has no flat faces.



Answer 9

Answer 9

False. A cone has one flat circular face.



Question 10

Question 10

Which object has two triangle faces and three rectangle faces?

- A. rectangular prism
- B. triangular prism
- C. sphere
- D. square-based pyramid

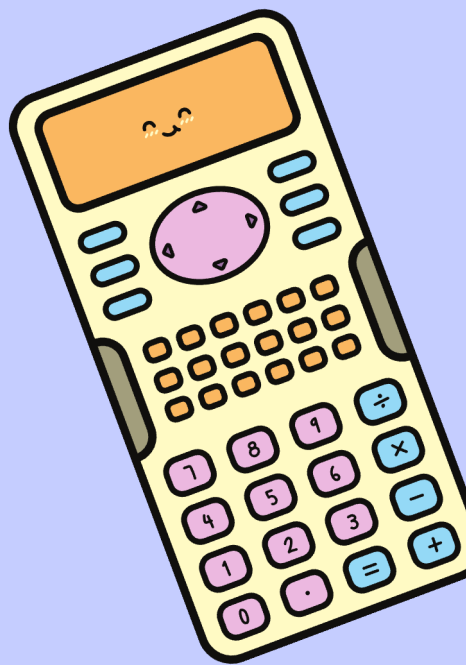
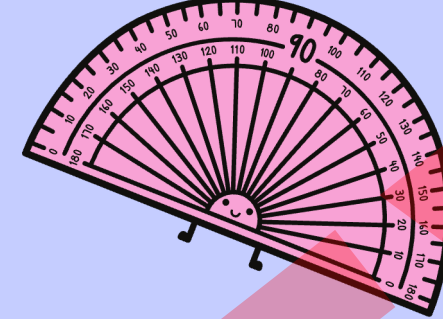
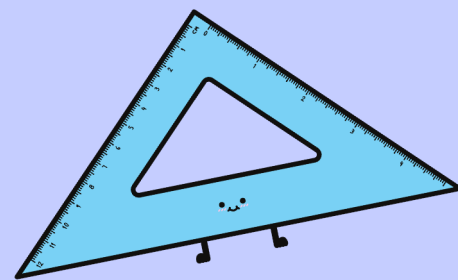
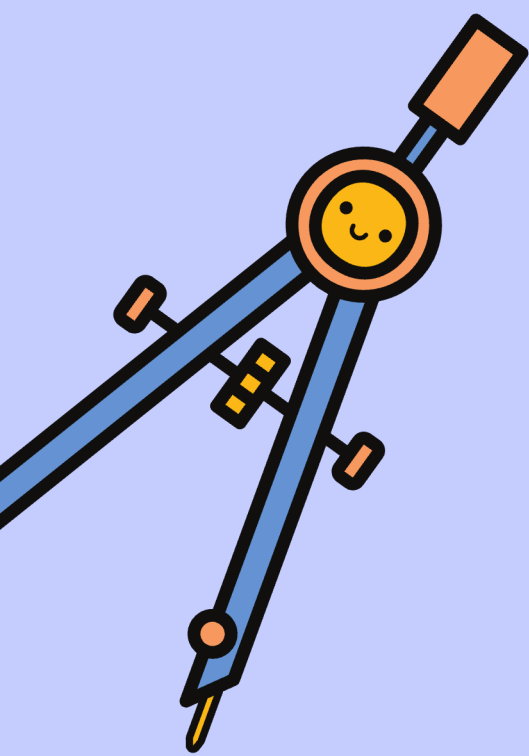


Answer 10

Answer 10

B. triangular prism





Well Done!

