

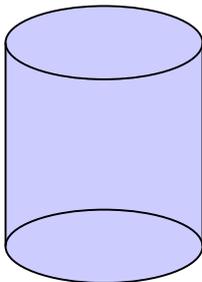


Worksheet 41: 3D Objects — Properties

Year 6 Mathematics — Space & Geometry — Name: _____

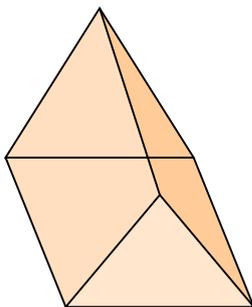
Section 1: Fluency — Naming 3D Shapes

Question 1: Name this 3D shape.



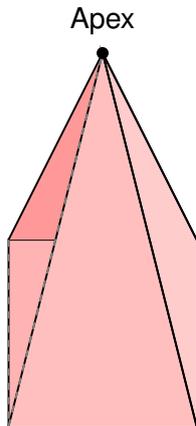
Answer: _____

Question 2: Name this 3D shape.



Answer: _____

Question 3: Name this 3D shape.



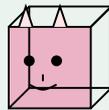
Answer: _____

Question 4: Is a cylinder a prism? Why or why not?

Answer: _____

Question 5: What is the difference between a prism and a pyramid?

Answer: _____



Cube Cat Champion!

*Why did the cube go to school?
To improve its shape and become well-rounded!*

Section 2: Reasoning — Faces, Edges, Vertices



Question 6: How many faces does a cube have?

Answer: _____

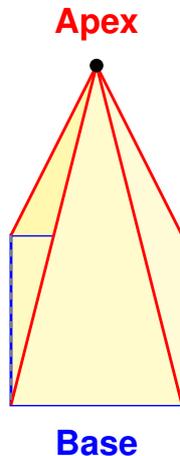
Question 7: How many vertices (corners) does a cube have?

Answer: _____

Question 8: How many edges does a cube have?

Answer: _____

Question 9: Count the edges on this square pyramid.



Answer: _____

Question 10: A triangular prism has how many faces?

Answer: _____



Question 11: A rectangular prism (box shape) has how many vertices?

Answer: _____



Prism Puppy Power!

*What's a 3D shape's favourite type of music?
Hip-hop... because it has all the right angles!*

Section 3: Challenge — Euler's Rule

Question 12: Euler's Rule states that for any 3D shape:

$$F + V - E = 2$$

where

= Faces,

F

= Vertices,

V

E

= Edges. Test this for a cube. A cube has 6 faces, 8 vertices, and 12 edges.
Calculate:

$$6 + 8 - 12 = ?$$

Does it equal 2?

Answer: _____



Question 13: Test Euler's Rule for a square pyramid (5 faces, 5 vertices, 8 edges). Show your working.

Answer: _____

Question 14: A mystery shape has 5 faces and 5 vertices. What shape is it?

Answer: _____

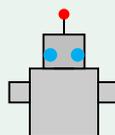
Question 15: A triangular prism has 5 faces and 9 edges. How many vertices does it have? Use Euler's Rule:

$$F + V - E = 2$$

Answer: _____

Question 16: Why is Euler's Rule useful for checking if you've counted correctly?

Answer: _____



Euler Explorer!

*What did the pyramid say to the prism?
You're so two-faced!*



Great work! Check your answers on the next page.





Worksheet 41: Answer Key

Section 1: Fluency — Naming 3D Shapes

Question 1: Cylinder

Question 2: Triangular Prism

Question 3: Square Pyramid (or Pyramid)

Question 4: No, a cylinder is not a prism because it has curved surfaces (not flat faces)

Question 5: A prism has two identical bases and rectangular sides. A pyramid has one base and triangular sides that meet at a point (apex).

Section 2: Reasoning — Faces, Edges, Vertices

Question 6: 6 faces

Question 7: 8 vertices

Question 8: 12 edges

Question 9: 8 edges (4 around the base, 4 from corners to apex)

Question 10: 5 faces (2 triangular ends, 3 rectangular sides)

Question 11: 8 vertices

Section 3: Challenge — Euler's Rule

Question 12:

$$6 + 8 - 12 = 2$$

Yes, it equals 2!

Question 13:

$$5 + 5 - 8 = 2$$

Yes, it works!

Question 14: Square Pyramid

Question 15: 6 vertices (

$$5 + V - 9 = 2$$

, so

$$V = 2 - 5 + 9 = 6$$

)



Question 16: It helps verify that you've counted faces, vertices, and edges correctly (or any reasonable explanation about checking work)



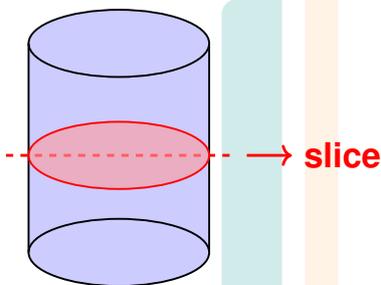


Worksheet 42: Cross-sections & Nets

Year 6 Mathematics — Space & Geometry — Name: _____

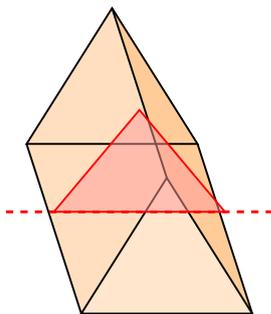
Section 1: Fluency — Identifying Cross-sections

Question 1: If you slice a cylinder parallel to its base (horizontally), what 2D shape do you see?



Answer: _____

Question 2: If you slice a triangular prism parallel to its base, what 2D shape do you see?



Answer: _____

Question 3: What shape is the cross-section of a cube when sliced parallel



to one of its faces?

Answer: _____

Question 4: A rectangular prism (like a box) is sliced parallel to its base. What shape is the cross-section?

Answer: _____

Question 5: True or False: When you slice a prism parallel to its base, the cross-section is always the same shape as the base.

Answer: _____

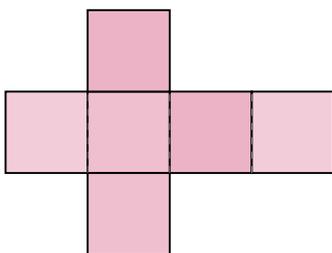


Slice Superstar!

*Why did the bread go to school?
To become a little breader!*

Section 2: Reasoning — Nets of 3D Shapes

Question 6: This is the net (unfolded version) of which 3D shape?

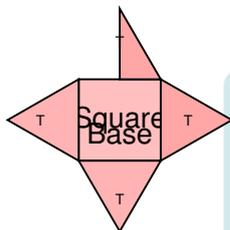




Answer: _____

Question 7: Draw a simple net for a cylinder. *Hint:* You need two circles and one rectangle.

Question 8: Which 3D shape does this net make?



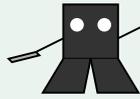
Answer: _____

Question 9: How many faces does the net in Question 8 have? Count them.

Answer: _____

Question 10: Why are nets useful?

Answer: _____

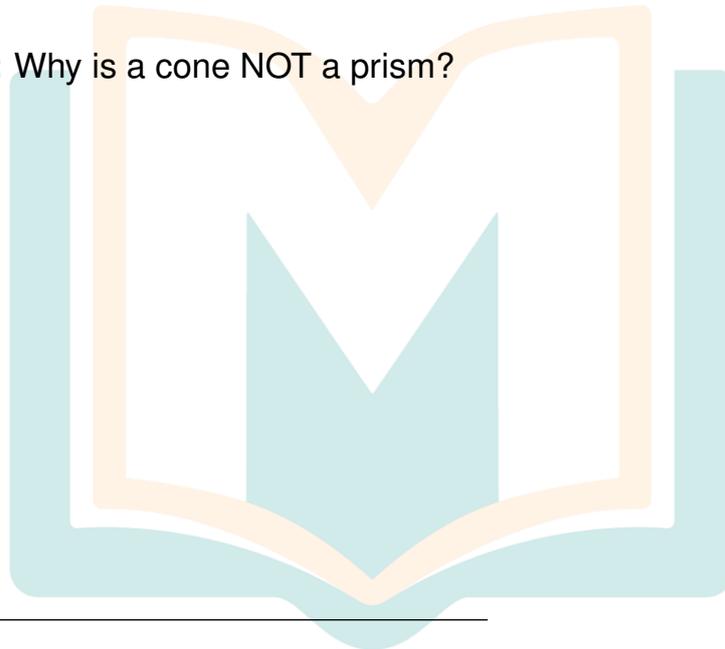
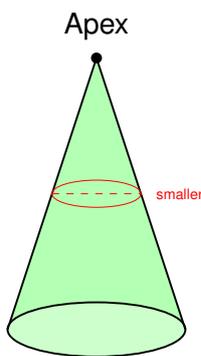


Net Ninja Master!

*What do you call a 3D shape that tells jokes?
A pun-tahedron!*

Section 3: Challenge — Understanding Prisms

Question 11: Why is a cone NOT a prism?



Answer: _____

Question 12: Imagine a loaf of bread. When you slice it, every slice is the same shape and size. Does this mean a loaf of bread is like a prism? Explain.

Answer: _____

Question 13: A sphere (ball) is sliced in half. What shape is the cross-section?

Answer: _____



Question 14: What is special about the cross-section of a right prism?

Answer: _____

Question 15: A hexagonal prism is sliced parallel to its base. What shape is the cross-section?

Answer: _____

Question 16: Challenge: If you slice a cube diagonally (corner to corner), what shape might you get? *Hint:* Think about how many corners you pass through.

Answer: _____



Dimension Detective!

*Why are 3D shapes terrible at hide and seek?
Because they always stand out!*

Fantastic effort! Check your answers on the next page.



Worksheet 42: Answer Key

Section 1: Fluency — Identifying Cross-sections

Question 1: Circle

Question 2: Triangle

Question 3: Square

Question 4: Rectangle

Question 5: True

Section 2: Reasoning — Nets of 3D Shapes

Question 6: Cube

Question 7: Student should draw two circles and a rectangle (accept reasonable sketches showing these three components)

Question 8: Square Pyramid

Question 9: 5 faces (1 square base and 4 triangular sides)

Question 10: Nets help us visualize how 3D shapes are constructed / They show us what shapes fold to make 3D objects / They're useful for making models (accept any reasonable explanation)

Section 3: Challenge — Understanding Prisms

Question 11: A cone is not a prism because its cross-section changes size as you move from base to apex / It tapers to a point / It doesn't have a uniform cross-section

Question 12: Yes, a loaf of bread is like a prism because each slice (cross-section) is the same shape and size (accept reasonable explanations about uniform cross-sections)

Question 13: Circle

Question 14: The cross-section is uniform / It stays the same shape as the base throughout the entire length of the prism

Question 15: Hexagon

Question 16: Triangle or Rectangle (depending on the diagonal cut - accept either answer with reasonable explanation)