Slices of 3D solids: cross-sections worksheet – Grade 7

Grade 7 · Mixed level · Mastery worksheet · 25 questions · **Version X35515**

Name: _____ Date: _____ Score: ___ / 25

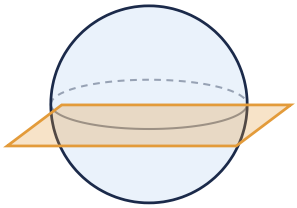
Scan to check answers + earn stars

Done the worksheet? Scan the code (or enter version X35515 on this skill's page at themathmeridian.com) to check your answers online and earn stars.

A Fill in the answer

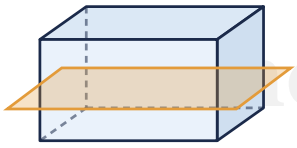
Work out each answer and write it on the line.

1. A sphere is sliced straight across, as shown. What shape is the cross-section?



Answer: _____

2. A rectangular prism is sliced parallel to its base, as shown. What shape is the cross-section?



Answer: _____

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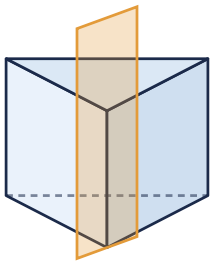
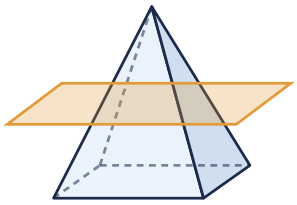
3. A triangular prism is sliced straight down through its middle, as shown. What shape is the cross-section?



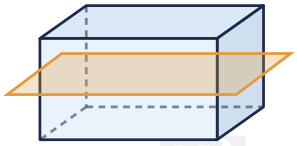
Answer: _____

4. A square pyramid has a base 4 cm by 4 cm. It is sliced parallel to the base, exactly halfway up. What is the area of the cross-section, in cm^2?



Answer: _____ cm^2

5. A loaf of bread is a rectangular prism 27 cm long, 8 cm wide and 7 cm tall. You cut one slice flat, parallel to the bottom. What is the area of the cut face, in cm^2?



Answer: _____ cm^2

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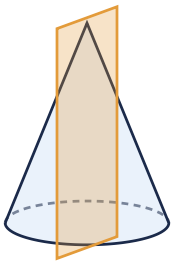
B Choose the answer

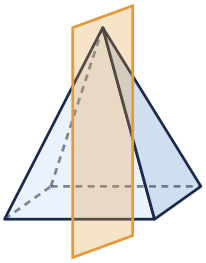
Circle the letter of the right answer.

6. A cone is sliced straight down through its middle, as shown. What shape is the cross-section?



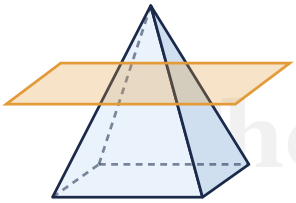
A. triangle **B.** rectangle **C.** trapezoid **D.** hexagon

7. You cut a glass paperweight (a square pyramid) straight down through the middle. What shape is the cut face?



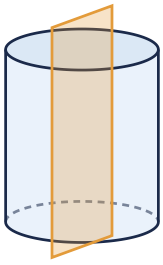
A. square **B.** rectangle **C.** triangle **D.** circle

8. A square pyramid is sliced parallel to its base, as shown. What shape is the cross-section?



A. triangle **B.** circle **C.** square **D.** trapezoid

9. A cylinder-shaped log has radius 8 cm and length 11 cm. It is cut lengthwise, straight through its centre. What is the area of the cut face, in cm^2?



A. 167 **B.** 86 **C.** 185 **D.** 176

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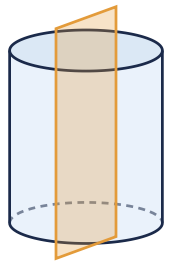
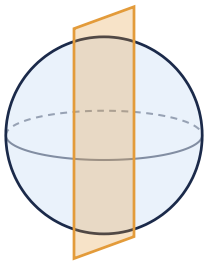
10. You cut a can of soup (a cylinder) straight down through the middle. What shape is the cut face?



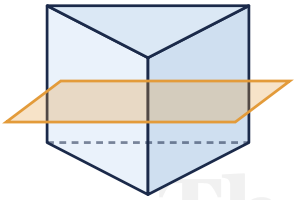
A. trapezoid **B.** hexagon **C.** circle **D.** rectangle

11. You cut a ball of clay (a sphere) straight down through the middle. What shape is the cut face?



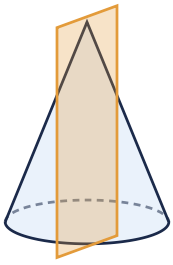
A. square **B.** rectangle **C.** circle **D.** hexagon

12. You slice a triangle-shaped candle (a triangular prism) straight across, parallel to its base. What shape is the cut face?



A. hexagon **B.** square **C.** triangle **D.** circle

13. You cut a cone of sand (a cone) straight down through the middle. What shape is the cut face?



A. square **B.** hexagon **C.** circle **D.** triangle

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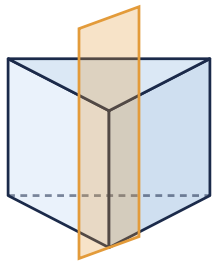
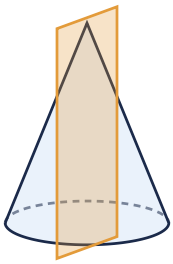
14. You cut a triangular block of cheese standing on its triangle (a triangular prism) straight down through the middle. What shape is the cut face?



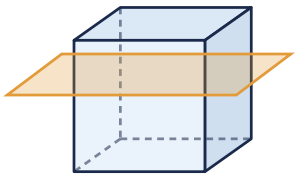
A. triangle **B.** trapezoid **C.** rectangle **D.** hexagon

15. You cut a traffic cone (a cone) straight down through the middle. What shape is the cut face?



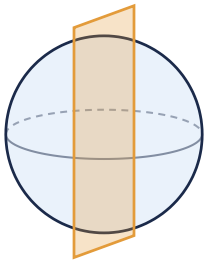
A. triangle **B.** hexagon **C.** trapezoid **D.** circle

16. A cube is sliced parallel to its base, as shown. What shape is the cross-section?



A. square **B.** hexagon **C.** circle **D.** rectangle

17. A sphere is sliced straight down through its middle, as shown. What shape is the cross-section?



A. circle **B.** hexagon **C.** triangle **D.** trapezoid

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D True or false

Check each answer. Tick True or False for every row.

18. Is each answer correct? Tick True or False.

	True	False
Which solid can NOT have a rectangle as a cross-section? Answer: sphere	☐	☐
Which solid can NOT have a circle as a cross-section? Answer: rectangular prism	☐	☐
Which solid can NOT have a triangle as a cross-section? Answer: triangular prism	☐	☐

19. Is each answer correct? Tick True or False.

	True	False
A cube is sliced by a plane that cuts off one corner, passing through the three corners next to it. What shape is the cross-section? Answer: triangle	☐	☐
A cube is sliced by a tilted plane through the midpoints of six of its edges, so it crosses all six faces. How many sides does the cross-section have? Answer: 6	☐	☐
Which solid can NOT have a circle as a cross-section? Answer: sphere	☐	☐

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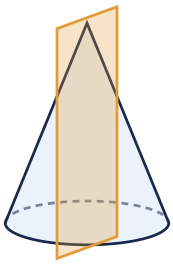
E Spot the mistake

Decide if the answer is right, then explain how you know.

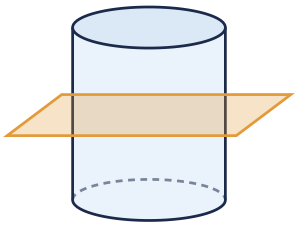
20. A cone has base radius 7 cm and height 7 cm. It is sliced straight down through its tip. What is the area of the triangle cross-section, in cm^2? Priya says the answer is 53. Is Priya right? Explain how you know.



A. Yes **B.** No

BECAUSE...

21. A cylinder is sliced parallel to its base, as shown. What shape is the cross-section? Sofia says the answer is circle. Is Sofia right? Explain how you know.



A. Yes **B.** No

BECAUSE...

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F Match

Solve each problem, then tick the letter of its answer.

22. Answers to choose from:

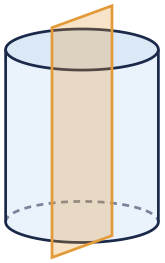
A sphere **B** triangular prism **C** cube **D** cone

	A	B	C	D
Which solid can NOT have a rectangle as a cross-section?	☐	☐	☐	☐
Which solid can NOT have a triangle as a cross-section?	☐	☐	☐	☐
Which solid can NOT have a circle as a cross-section?	☐	☐	☐	☐
Which solid can NOT have a circle as a cross-section?	☐	☐	☐	☐

H Use the picture

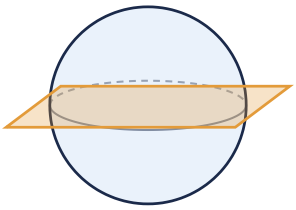
Read the picture carefully, then answer.

23. A cylinder is sliced straight down through its middle, as shown. What shape is the cross-section?



Answer: _____

24. An orange is a sphere with radius 7 cm. You cut it exactly through the centre. Using $\pi \approx 3.14$, what is the area of the cut face, in cm^2?



Answer: _____ cm^2

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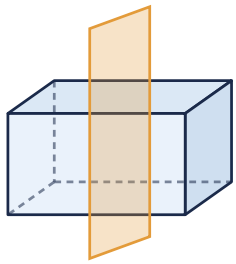
J Challenge

A harder problem. Take your time.

25. A loaf of bread is a rectangular prism 23 cm long, 12 cm wide and 10 cm tall. You cut one slice straight down, across the loaf. What is the area of the cut face, in cm²?



SHOW YOUR WORK

Answer: _____ cm²

Score by section: A ___/5 · B ___/12 · D ___/2 · E ___/2 · F ___/1 · H ___/2 · J ___/1

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