Geometry 12.1
Investigate cross-sections of 3-D figures
cross-section
plane figure (2-D) circle square
3-D figure solid sphere cube

Play-doh?

Real-World Example 3 Identify Cross Sections of Solids

PYRAMIDS Scientists are able to use computers to study cross sections of ancient artifacts and structures. Determine the shape of each cross section of the pyramid below.

The horizontal cross section is a square. The angled cross section is a trapezoid. The vertical cross section is a triangle.

hemisphere

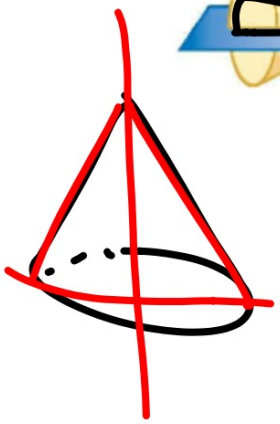
GuidedPractice

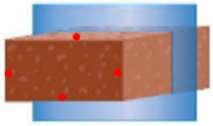
3. CAKES Ramona has a cake pan shaped like half of a sphere, as shown at the right. Describe the shape of the cross sections of cakes baked in this pan if they are cut horizontally and vertically.

Describe each cross section.

6.

7.





Describe each cross section.

16. 

17. 

18. 

19. 

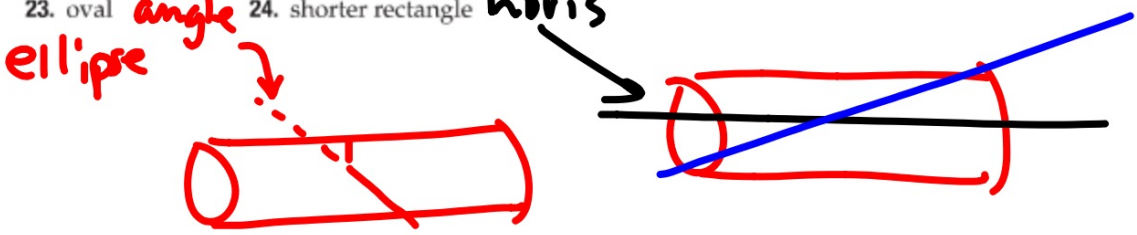
COOKIES Describe how to make a cut through a roll of cookie dough in the shape of a cylinder to make each shape.

21. circle vert.

22. longest rectangle diag.

23. oval angle ellipse

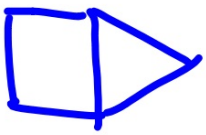
24. shorter rectangle horiz

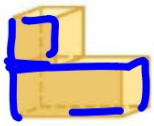


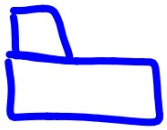
Composite

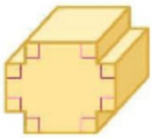
CCSS TOOLS Sketch the cross section from a vertical slice of each figure.

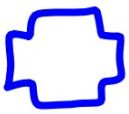
25. 



26. 



27. 

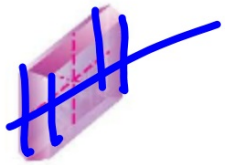


28. **EARTH SCIENCE** Crystals are solids in which the atoms are arranged in regular geometrical patterns. Sketch a cross section from a horizontal slice of each crystal. Then describe the rotational symmetry about the vertical axis.

a. tetragonal

b. hexagonal

c. monoclinic



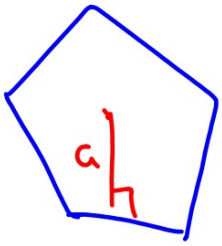
$A = \frac{1}{2}ap$ ← perimeter
↑ apothem

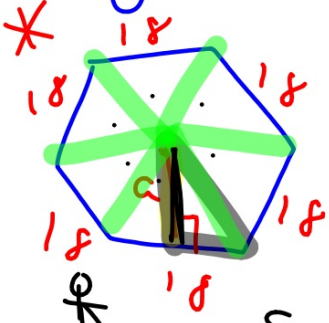
Regular polygon area

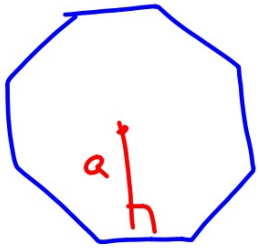
↑

≅ sides & ≅ angles

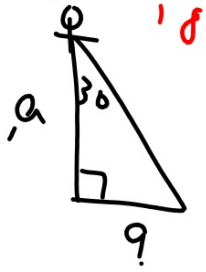
$A = \frac{1}{2}(15.6)(108) = 8424$







$q = a(0.5774)$



SohCahTOA

$\tan 30 = \frac{q}{a}$ $q = 0.5774a$

$a = 15.6$

12.1

15-29 all

44-50 all