Unit #9: Geometry: Surface Area and Volume
Resources: Big Ideas Chapter 8
Common Core Standards: 7.G.3; 7.G.4; 7.G.6

Number	Learning Targets	Common Core Standard	Resources
1	I can find the surface area of rectangular and triangular prisms.	7.G.6	9.1
2	I can find the surface area of pyramids.	7.G.6	9.2
3	I can find the surface area of cylinders.	7.G.4; 7.G.6	9.3
4	I can find the volume of prisms.	7.G.6	9.4
5	I can find the volume of pyramids.	7.G.6	9.5
6	I can describe the intersections of planes and solids	7.G.3	9.5 Extension
	IN THE PACKET		

My Practice:

Number	Pre-test:	Exit slip scores	Day #2 Homework	Extra Targeted Practice	Post-test:
1	_____/3				_____/9
2	_____/3				_____/9
3	_____/2				_____/6
4	_____/2				_____/5
5	_____/2				_____/6
6	_____/1				_____/2

My Final Pretest Score: _____ /13   My Final Pretest Percent _____ %

My Final Posttest Score: _____ /40   My Final Posttest Percent: _____ %

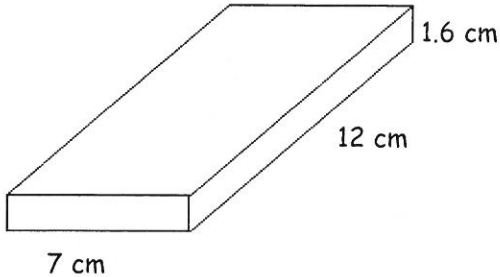Between the Pre and Post test scores, I increased by _____ % !!

6th Grade CCA Unit 9: Surface Area & Volume Pre-Test

Total: _____ /13

Directions: Carefully read and follow the directions for each section. Remember to <u>SHOW YOUR WORK</u> and write your answers on the lines provided.

1 Point **LT1** **Score:**	1.) Find the surface area of the figure below. 1.6 cm 12 cm 7 cm 1.) _____
1 point **LT1** **Score:**	2.) Find the surface area of the figure. 10 m 9 m 8 m 15 m 3 m 2.) _____
1 point **LT1** **Score:**	3.) Katie is frosting a cake for her birthday. The cake is 13 inches long and 9 inches wide. It is 3 inches tall. How much frosting does she need to cover the cake? 3.) _____
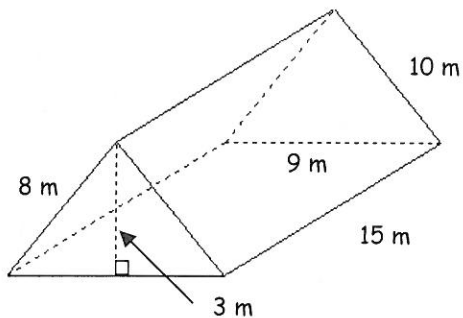
Learning Target #1 Score: Add points from 1-3: _____ /3

1 point **LT2** **Score**	**4.)** Find the surface area of the pyramid. 8 cm 5.2 cm 6 cm 6 cm 6 cm 4.) _____
1 point **LT2** **Score:**	**5.)** Find the surface area of the pyramid. (12 ft is the slant height) 12 ft 6 ft 10 ft 10 ft 5.) _____
1 point **LT2** **Score**	**6.)** A playhouse is in the shape of a regular octagonal pyramid with a side length of 3 feet and a slant height of 12 feet. The wood used to build the walls of the playhouse costs $3 per square foot. What is the cost of the wood for the walls of the playhouse? 6.) _____
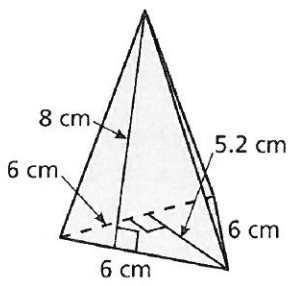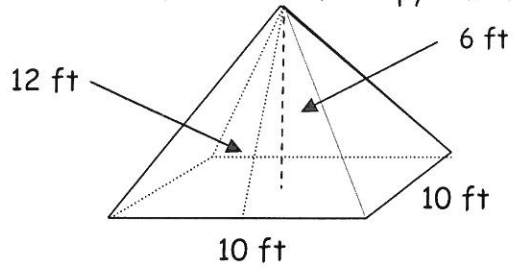
Learning Target #2 Score: Add points from 4-6: _____ /3

1 point **LT3** **Score:**	**7.)** Find the surface area of the cylinder. Use 3.14 for π. 3 m 5 m 7.) _____
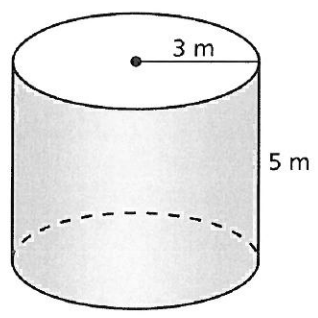
1 point LT3 Score	8.) A soup can is in the shape of a cylinder with a radius of 1 inch and a height of 3 inches. How much paper is used for the label of the soup can, which covers the lateral surface area of the soup can? 8.) _____

Learning Target #3 Score: Add points from 7-8: _____ /2

1 point LT4 Score:	9.) Find the volume of the figure. 10 m 9 m 8 m 15 m 3 m 9.) _____
1 point LT4 Score:	10.) What happens to the volume of a rectangular prism when the length is doubled but the width and height both stay the same? (You may use an example to explain your reasoning.)
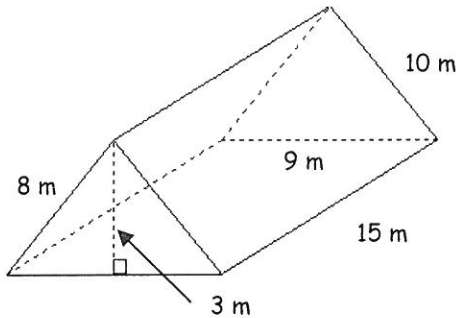
Learning Target #4 Score: Add points from 9-10: _____ /2

1 point LT5 Score:	11.) Find the volume of the pyramid. (12 ft is the slant height) 12 ft 6 ft 10 ft 10 ft 11.) _____
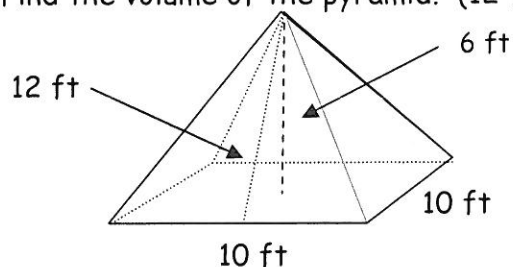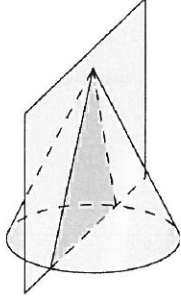
1 points LT5 Score:	12.) A paperweight is in the shape of a pyramid. The base is a square with sides of 1.5 centimeters. The height of the paperweight is 3 centimeters. Find the volume of the paperweight. 12.) _____

Learning Target #5 Score: Add points from 11-12: _____ /2

1 point LT6 Score:	13.) Describe the shape the intersection makes between the plane and the solid.

Learning Target #6 Score: Points from 13: _____ /1

Section 9.1: Surface Areas of Prisms Notes

POD: Find the area of the combined figure.
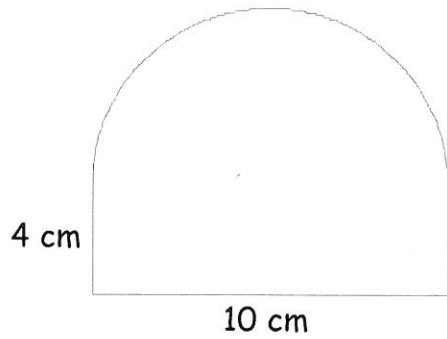
4 cm

10 cm

Objective: Students will be able to find the surface area of rectangular and triangular prisms.

Surface Area of A Prism – the sum of the areas of the bases and the lateral faces.

Finding the Surface Area of Prisms:
1. Calculate the area of each face.
2. Add the areas of the faces.

	base	w	
lateral face	lateral face	lateral face	lateral face
	base		

1.)

9 m

5 m

12 m

2.)

9 in

7 in

9 in

15 in

4 in

3.)

8 in.   9 in.

14 in.

7 in.

11 in.

4.)

6 m

3 m

10 m
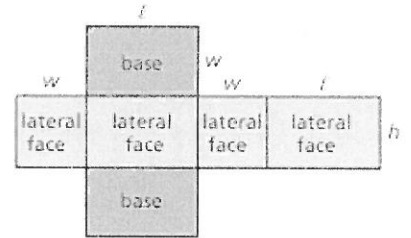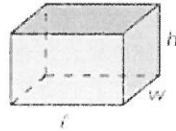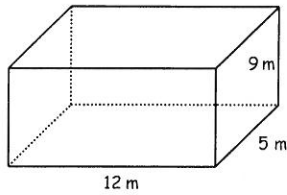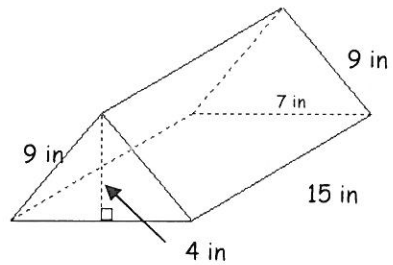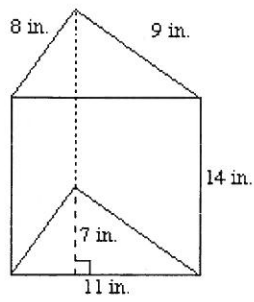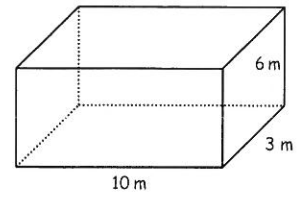
5a.) You are painting a room that is 18 ft long, 14 ft wide and 8 ft high. Find the area of the walls that you are going to paint.

5b.) If the paint costs $6.50 a gallon and each gallon covers 128 ft² of wall, how much will it cost to paint the room?

Section 9.2: Surface Areas of Pyramids Notes

POD: Find the surface area.

1.)

9 m

5 m

12 m

2.)

12in

15in

2in

6in
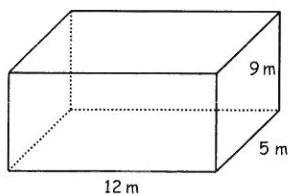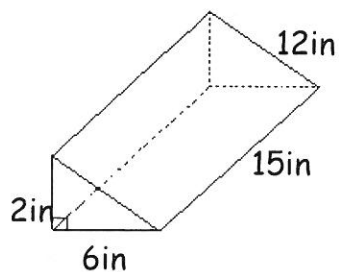
**Objective:** Students will be able to find the surface area of pyramids.

Surface Area of a Pyramid- the sum of the areas of the base and the lateral faces

Steps for Finding the Surface Area of Prisms:
1. Calculate the area of the base
2. Calculate the area of the faces
3. Add the areas that were calculated

lateral faces

slant height

base

lateral faces

Day 1:
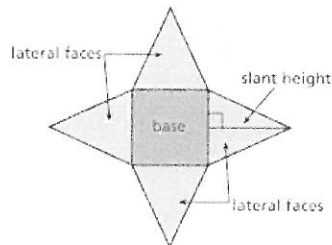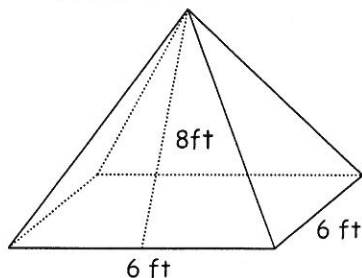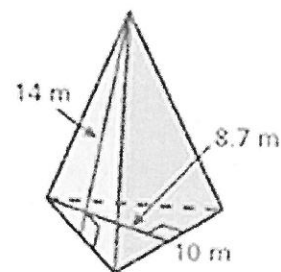
1.)	2.)
8ft 6 ft 6 ft	14 m 8.7 m 10 m
3.) A roof is shaped like a square pyramid. One bundle of shingles covers 25 square feet. How many bundles should you buy to cover the roof? 15 ft 18 ft	4.) 10 ft 6 ft 5.2 ft
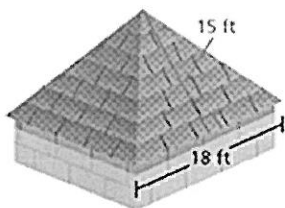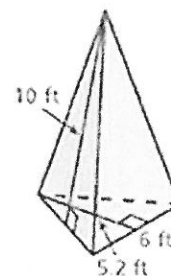
Section 9.3: Surface Areas of Cylinders Notes

POD: Find the area of each circle.

1.)

5 m

2.)

40 in.
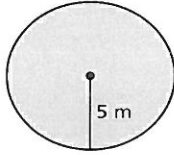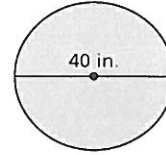
Objective: Students will be able to find the surface area of cylinders.

Surface Area of a Cylinder – the sum of the areas of the circular bases and the lateral surface.

base

$2\pi r$

lateral surface h

base

Steps for Finding the Surface Area of Prisms:
1. Calculate the area of each circle
2. Find the lateral area. (circumference · height of the cylinder)
3. Add the area of the circles and the lateral area
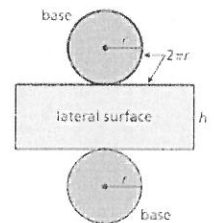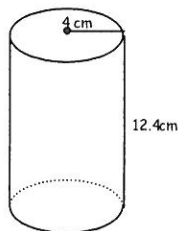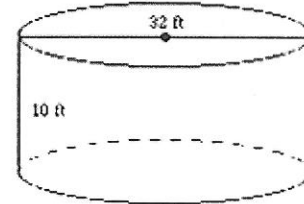
1.)	2.)
4 cm 12.4cm	32 ft 10 ft
3.) The diameter of the base of a soda can is 4 inches. The height of the can is 6.5 in. Find the can's surface area to the nearest tenth.	4.) A soup can has a radius of 2 in. and a height of 5 in. If the company wants to wrap a label around the can, how much paper will be used for the label? Johnson's TOMATO SOUP

POD: Find the surface area.

1.)

3 cm
4 cm
10 cm

2.)

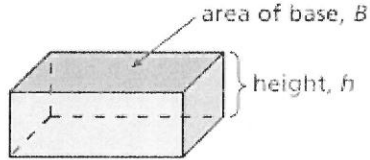

5 in   5 in
2 in.
3 in.
5 in.
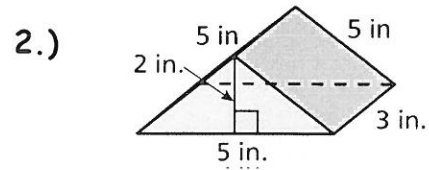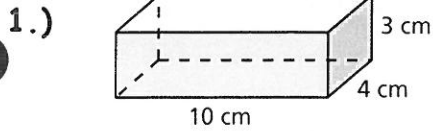
Objective: I can find the volume of prisms.
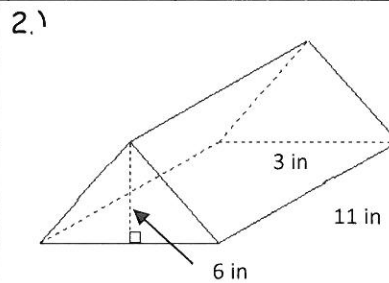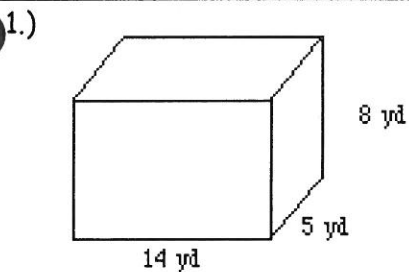
Vocabulary:

Volume: The measure of the <u>amount of</u> space a three-dimensional space occupies
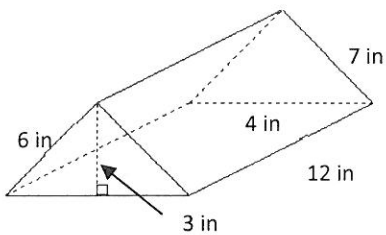
Volume Formulas for Prisms: $V = Bh$ where "B" is the area of the base and "h" is the height

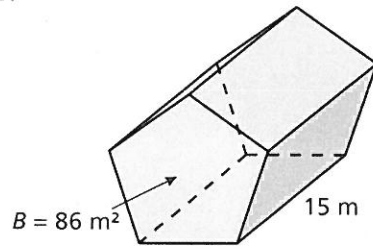area of base, B
height, h

area of base, B
height, h

Day 1:
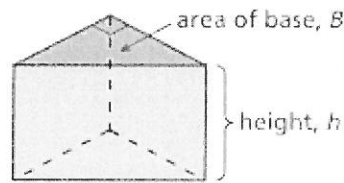
1.) 8 yd 5 yd 14 yd	2.) 3 in 11 in 6 in
3.) Find volume. 7 in 6 in 4 in 12 in 3 in	4.) If the volume of a rectangular prism is 336in^3, the base is 12in, and the width is 7in, what is the height?

5.) Find volume.

$B = 86\ m^2$ 15 m

6.) A water jug is in the shape of a rectangular prism. The length of the jug is 15 inches, the width is 10 inches and the height is 20 inches. How many gallons of water will the water jug hold? (1 gal = 231 in³). Round your answer to the nearest gallon.
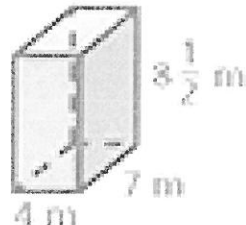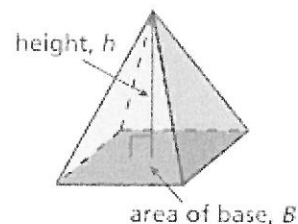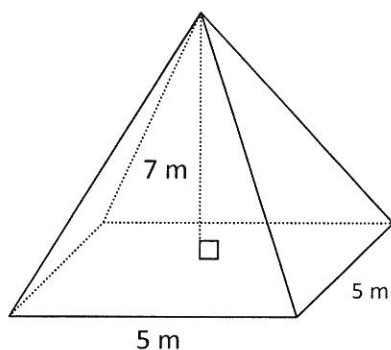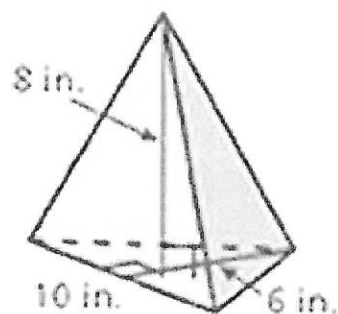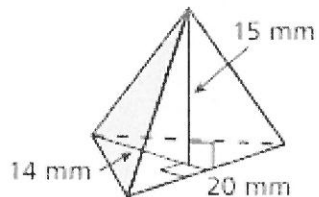
Section 9.5: Volumes of Pyramids Notes

POD: Find the volume of each shape.

1.)

8 cm

12 cm

6 cm

2.)

$3\frac{1}{2}$ m

7 m

4 m
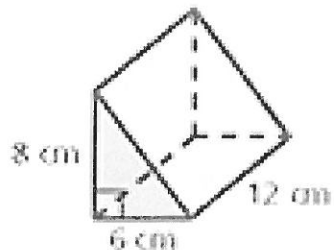
Objective: I can find the volume of pyramids.

Vocabulary:

Volume: The measure of the amount of space a three-dimensional space occupies

Volume Formula for Pyramids:

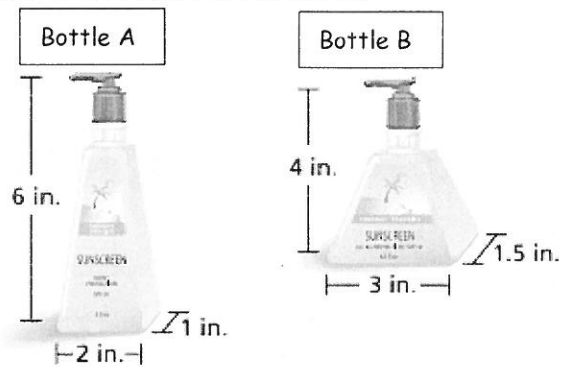$V = \frac{1}{3}Bh$ where "B" is the area of the base and "h" is the height

height, h

area of base, B

1.) Find volume.

7 m

5 m

5 m

2.) Find volume.

8 in.

10 in.

6 in.

3.) Find volume.

15 mm

14 mm

20 mm

4.) The volume of sunscreen in Bottle B is about how many times the volume in Bottle A?

Bottle A

Bottle B

6 in.

1 in.

⊢2 in.⊣

4 in.

1.5 in.

⊢ 3 in. ⊣

5.) Find the volume of the combined figure.


4 ft

3 ft

6 ft

6 ft
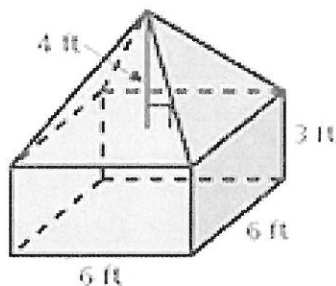
6.) A glass paper weight is made in the shape of a pyramid. The base of the paper weight is a triangle with a base of 2 inches and a height of 3 inches. The height of the paperweight is 5 inches. The glass costs $3 per cubic inch. What is the cost of the paperweight?
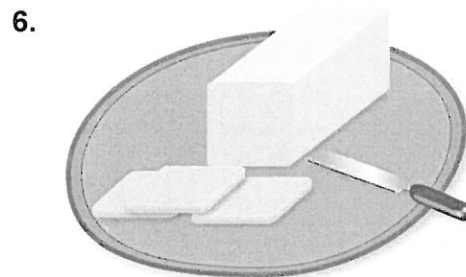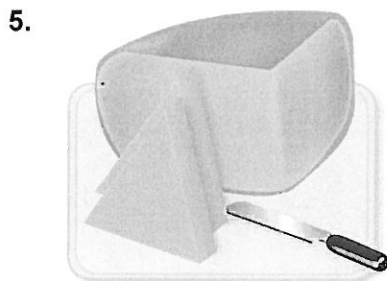
Name _____ Date _____

Extension 9.5 **Practice**
For use after Extension 9.5

9.5 Extension

Describe the intersection of the plane and the solid.

1.

2.

3.

4.

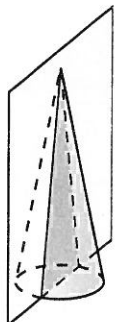**Describe the shape that is formed by the cut made in the food shown.**
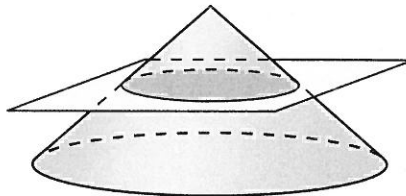
5.

6.
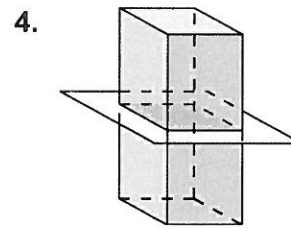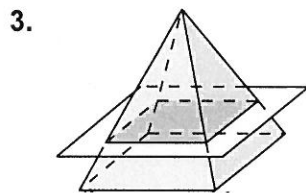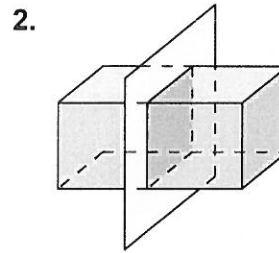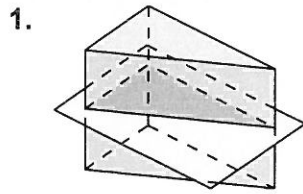
Extension 9.5 **Practice** (continued)

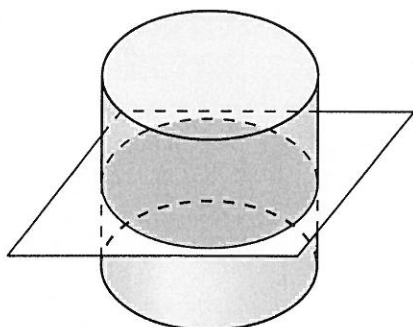**Describe the intersection of the plane and the solid.**

7.

8.

9.

10.

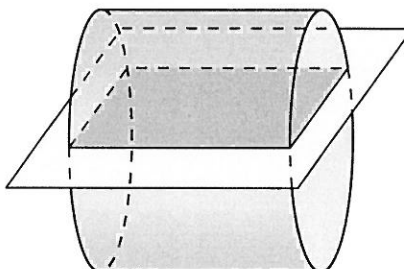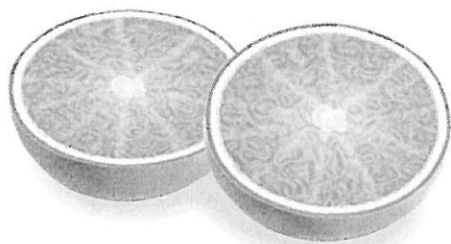**Describe the shape that is formed by the cut made in the food shown.**

11.

12.