Differentiated Volume Activity
Name_____________________________

Group B

For each problem, identify the shape and the formula. Determine the volume. Explain how you solved each problem.

1. Determine the volume of a baseball if the diameter is 1.4 inches.

2. Determine the volume of the watering can if its radius is 4 inches and its height is 15 inches.

3. Determine the volume of the pyramid whose height is 481 feet and the base length is 756 feet.
4. Determine the volume of a cone that has a diameter of 6 inches and a slant height of 5 inches.

5. Determine the volume of the composite figure.
Day 17

Volume Station Review

Name___________________

Arc Length and Area of Sector Station

1. Find the length of arc AB.

2. What is the length of arc CD?

3. Find the area of the sector formed by \(\angle ACB\)

4. What is the area of the shaded part of the circle?

Using Formulas to determine Volume.

5. Determine the volume of the triangular pyramid.

6. Determine the volume of the cone.

7. Determine the volume of the prism.

8. Determine the volume of the cylinder.
9. Determine the volume of the sphere.

**Slant Height Stations**

10. Determine the volume of the cone. Be sure to find the height using the Pythagorean theorem.

11. Find the volume of a cone with a slant height of 17 feet and a diameter of 16 feet.

12. Determine the volume of the square pyramid. Be sure to find the height using the Pythagorean theorem.
Composite Figures Station

Complete the PlayPosit titled Volume of Composite figures 2, or complete the following.

Determine the volume of each Composite figure

1. 

2. 

3. 

4. 
Applied Problems Station

Complete the PlayPosit titled Applied Volume Station, or complete the following.

5. The Atlanta aquarium is filling one of their rectangular tanks up with water. The tank is 75 yards long, 40 yards wide, and 15 yards tall. They want to fill the tank three-fourths of the way up to leave room for the fish. How much water is needed to fill the tank? (1 cubic yard is 201.97 gallons)

6. A contractor is moving a conical shaped pile of dirt. The pile is 20 feet in diameter and 9 feet tall. A dump truck can carry 10 cubic yards of dirt per load. How many loads will it take to move all of the dirt?

7. The coach at Coastal High School is concerned about keeping her athletes hydrated during practice. She can either buy a case of 24 quart-sized drinks or fill a cylindrical cooler with water and a powder mix. The dimensions of the cylindrical cooler are given below and one quart is equal to 57.75 cubic inches. Which option provides the most drinks for her athletes?

8. A gas company needs to refill one of their spherical gas tanks before the tank runs dry. It measures 10 meters in diameter. The tank is still 1/5 full of gas. How many gallons of gas will the company need in order to fill the tank? (1 meter is 3.3 feet, and 1 gallon is 0.134 cubic feet)
Golf balls have a diameter of approximately 4.25 cm. Use 3.14 as an approximation of pi as needed for this activity.

Company M ships golf balls in cartons that have least volume needed to hold 24 golf balls. Each carton is in the shape of a rectangular prism. The base of a carton is 17cm long and 8.5cm wide.

1. Use tools to create a carton that will hold the 24 golf balls and have a base that is 17cm by 8.5cm. (determine the height)

2. What is the volume of your carton? Show and explain your work.

3. What is the volume of the 24 golf balls? Show and explain your work.

4. What percent of the total volume of the carton do the golf balls fill? Show and explain your work.
Day 20

1. Find the volume of a sphere whose diameter is 8 cm
   A 4/3 \pi (8)^3
   B 4/3 \pi (8)^2
   C 4/3 \pi (4)^3
   D 4/3 \pi (4)^2

2. Determine the volume of the square pyramid
   A \frac{1}{3} (36)(5)
   B \frac{1}{3} (6)(5)
   C (6)(5)
   D (36)(5)

3. Find the volume of the cone.
   A \frac{1}{3} \pi (12)^2(10)
   B \frac{1}{3} \pi (6)(10)
   C \frac{1}{3} (6)(10)
   D \frac{1}{3} \pi (6)^2(10)

4. Find the volume of the cylinder whose radius is 8 yards and height of 14 yards.
   A \frac{1}{3} \pi (8)^2(14)
   B \pi (8)^2(14)
   C \pi (4)^2(14)
   D \frac{1}{3} \pi (4)^2(14)

5. What is the volume of the cylinder?
   A \pi (15)^2(5)
   B \pi (7.5)^2(5)
   C \pi (5)^2(15)
   D \pi (5)(15)

6. What is the volume of the hemisphere?
   A \frac{4}{3} \pi (7)^3
   B \frac{4}{3} \pi (14)^2
   C 4/3 \pi (7)^2 + 2
   D 4/3 \pi (7)^2 + 2

7. Find the volume of a cone whose diameter is 20 inches and height is 8 inches.
   A \frac{1}{3} \pi (20)^2(8)
   B \frac{1}{3} \pi (10)^2(8)
   C \frac{1}{3} \pi (8)^2(10)
   D \frac{1}{3} \pi (20)^2(8)

8. A food manufacturer sells yogurt in cone shaped cups with dimensions shown. To the nearest tenth, how many fluid ounces of yogurt does the cup hold? (hint 1 cm³ = 0.034 fl oz)
   A 22.8 fl oz
   B 5.7 fl oz
   C 17.1 fl oz
   D 0.6 fl oz

9. Find the volume of the composite figure. Round to the nearest tenth.
   A 12.6 cm³
   B 28.0 cm³
   C 75.4 cm³
   D 88.0 cm³
10. Jason constructed two cylinders using solid metal washers. The cylinders have the same height, but one cylinder is slanted as shown. Which statement is true about Jason’s cylinders?

A The cylinders have different volumes because that have different radii
B The cylinders have different volumes because that have different surface areas
C The cylinders have the same volume because each of the washers have the same height
D The cylinders have the same volume because that have the same cross-sectional area at every plane parallel to the bases

11. In the triangle shown, Segment GH is parallel to segment DF. What is the length of segment GE?

A 8.0
B 7.5
C 4.5
D 2.0

12. In the coordinate plane, segment PQ is the result of a dilation of segment XY by a scale factor of 1/2. Which point is the center of dilation?

A (0, -4)
B (-4, 0)
C (4, 0)
D (0, 4)

13. In this diagram, segment CD is the perpendicular bisector of segment AB. The two column proof shows that segment AC is congruent to segment BC. Which theorem would justify Step 2?

A ASA
B AAS
C SSS
D SAS

14. A circular cake that has a diameter of 8 inches is cut into 10 equal slices. Jayson will frost the top of one slice of the cake. To the nearest foot, what is the area on the top of one slice of the cake?

A 5 in
B 20 in
C 25 in
D 125 in

15. In the triangle below, \( \sin y = \frac{10}{14} \). Which of the following is true?

A \( \cos y = \frac{10}{14} \)
B \( \tan y = \frac{14}{10} \)
C \( \cos (90-y) = \frac{10}{14} \)
D \( \sin (90 - y) = \frac{10}{14} \)

16. A snowman is created from two spherical snowballs. Given the circumference of each sphere determine the radius of the both snowballs.

A radius of smaller snow ball is 7 inches and the radius of the larger snow ball is 14 inches
B radius of smaller snow ball is 14 inches and the radius of the larger snow ball is 28 inches
C radius of smaller snow ball is 3.7 inches and the radius of the larger snow ball is 5.3 inches
D radius of smaller snow ball is 7.4 inches and the radius of the larger snow ball is 10.6 inches

17. A snowman is created from two spherical snowballs. Given the circumference of each sphere determine the volume of the both snowballs.

A the volume of the small snow ball is 11494 in\(^3\) and the volume of the larger snow ball is 91952.3 in\(^3\)
B the volume of the small snow ball is 212.2 in\(^3\) and the volume of the larger snow ball is 623.6 in\(^3\)
C the volume of the small snow ball is 1436.8 in\(^3\) and the volume of the larger snow ball is 11494 in\(^3\)
D the volume of the small snow ball is 623.6 in\(^3\) and the volume of the larger snow ball is 4988.9 in\(^3\)

18. A snowman is created from two spherical snowballs. Given the circumference of each sphere determine the volume of the snowman.

A 103446.3 in\(^3\)
B 835.8 in\(^3\)
C 5612.5 in\(^3\)
D 12930.8 in\(^3\)