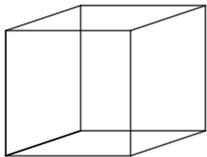
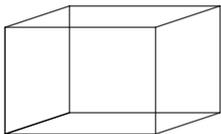
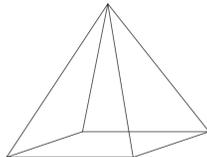
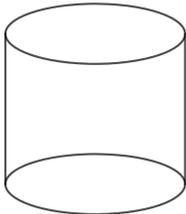
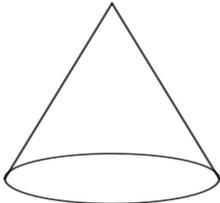


### Volume

Volume is the amount of space in solid geometry. The basic unit of volume is the  $unit^3$ . Learning to compute the volume of basic shapes used in real world applications is a useful everyday skill. Volume is a part of consumer culture. We buy things based on our needs for certain sizes of designs. Below are some basic solids.

Cube	Rectangular Prism	Square Pyramid
		
$V = s^3$	$V = lwh$	$V = \frac{1}{3}(s^2)h$

Cylinder	Cone	Sphere
		
$V = (\pi r^2)h$	$V = \frac{1}{3}(\pi r^2)h$	$V = \frac{4}{3}\pi(r^3)$

**Example #1**

A cardboard box is 8 inches by 12 inches by 3 inches. A cereal company fills the box only up to 10 inches in height. What is the volume of cereal contained in 10 boxes ?

Solution:

The volume of a single box is  $V = 8 * 12 * 3$  however the box must sit on the bottom (8 \* 3) side since the cereal is filled to a height of 10 inches. Therefore the volume of cereal in one box is  $V = (8 * 3 * 10) = 240 \text{ in}^3$ .

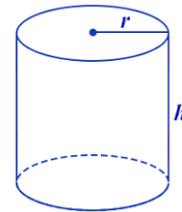
The volume of 10 boxes  $V = 10 * (240) = 2400 \text{ inches cubed}$ .

**Example #2**

What is the volume of a cylinder shaped metal juice can with a radius 3 inches and height 8 inches?

Solution:

$$\text{Volume of Cylinder} = \pi(r^2)h = \pi(3^2)8 = 72\pi.$$



$$\begin{aligned} r &= \text{radius} = 3 \text{ inches} \\ h &= \text{height} = 8 \text{ inches} \end{aligned}$$

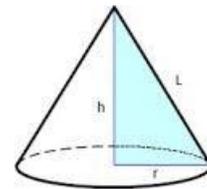
$$\text{Volume of Cylinder} = \pi(r^2)h$$

**Example #3**

A cone sits atop a cathedral tower with radius 5 meters and height 36 meters. What is the volume of the space?

Solution:

$$\text{Volume of Cone} = \frac{1}{3}\pi(r^2)h = \frac{1}{3}\pi(5^2)12 = 100\pi.$$



$$\begin{aligned} r &= \text{radius} = 5 \\ h &= \text{height} = 12 \\ l &= \text{lateral height} = 13 \end{aligned}$$

$$\text{Volume of Cone} = \frac{1}{3}\pi(r^2)h$$

**Example #4**

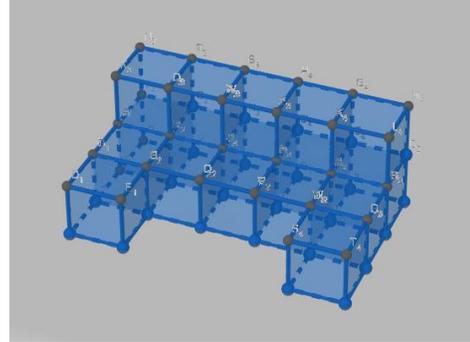
A sectional sofa is designed as shown on the right. Each cube is 2 feet on each edge. What is the volume of the sectional sofa?

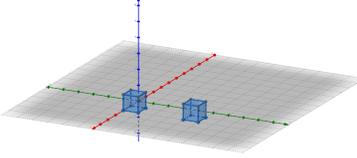
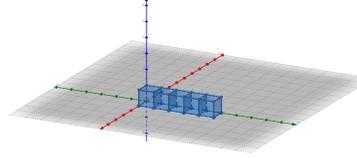
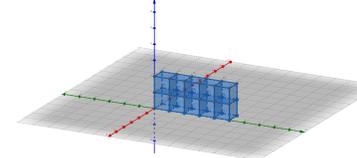
Split the volume into 3 sections.

I will count the cubes as “front, middle, back” in order. There are 2 front cubes, 5 middle cubes and 10 back cubes. There are 17 cubes total.

$$\text{Volume} = lwh = 2 * 2 * 2 = 8 \text{ cubic units per}$$

$$\text{Total Volume} = 8 * 17 \text{ cubes} = 136 \text{ cubic uni}$$



Front Cubes	Middle Cubes	Back Cubes
		
2 cubes total	5 cubes total	10 cubes total

**Example #5**

A weather balloon has a 6 foot diameter as it is filled with helium to conduct a science experiment at 90,000 feet above the ground. As it rises, the atmosphere thins to only a few millibars. This causes the balloon to expand to 20 feet in diameter! How much larger is the volume of a weather balloon at 90,000 feet versus ground level ?

$$\text{Volume of Sphere Ground Level} = \frac{4}{3}\pi(r^3) = \frac{4}{3}\pi(3^3) = 36\pi$$

$$\text{Volume of Sphere at 90,000 feet} = \frac{4}{3}\pi(r^3) = \frac{4}{3}\pi(10^3) = \frac{4000}{3}\pi$$

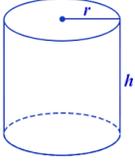
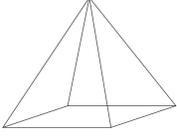
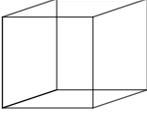
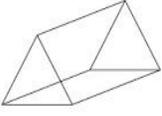
$$\text{The difference is } \frac{4000}{3}\pi - \frac{108}{3}\pi = \frac{3892}{3}\pi = 1297\frac{1}{3}\pi$$



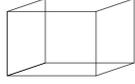
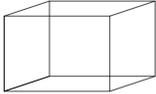
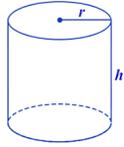
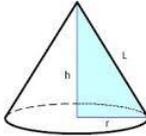
## SHSAT Lesson #18 Classwork: Volume

<p>1. The volume of a rectangular prism design will be 120 cubic feet. If the length is 12 feet and the width is 5 feet, what will its height be ?</p>	<p>A. 1 foot B. 2 feet C. 3 feet D. 4 feet E. 5 feet</p>
<p>2. What is the volume of a sphere with radius 10 cm ?</p>	<p>A. <math>\frac{4}{3}\pi(1000)</math> B. <math>\frac{4}{3}\pi(100)</math> C. <math>\frac{4}{3}\pi(10)</math> D. <math>\frac{4}{3}\pi(1)</math> E. None of these</p>
<p>3. What is the volume of a rectangular prism with length 4 units, width 4 units and depth 10 units ?</p>	<p>A. 80 units cubed B. 100 units cubed C. 120 units cubed D. 140 units cubed E. 160 units cubed</p>
<p>4. A pencil box was 8 inches by 7 inches by 2 inches. What was the volume ?</p>	<p>A. <math>28 \text{ in}^3</math> B. <math>42 \text{ in}^3</math> C. <math>56 \text{ in}^3</math> D. <math>112 \text{ in}^3</math> E. <math>168 \text{ in}^3</math></p>
<p>5. A storage closet is 5 feet wide, 8 feet deep and 10 feet in height. What is the volume of the storage closet ?</p>	<p>A. <math>130 \text{ ft}^3</math> B. <math>160 \text{ ft}^3</math> C. <math>200 \text{ ft}^3</math> D. <math>320 \text{ ft}^3</math> E. <math>400 \text{ ft}^3</math></p>
<p>6. What is the volume of a square pyramid with base 12 meters and height 16 meters ?</p>	<p>A. <math>\frac{1}{3}(12^2)(16) \text{ m}^3</math> B. <math>\frac{1}{3}(12)(16) \text{ m}^3</math> C. <math>\frac{2}{3}(12)(16) \text{ m}^3</math> D. <math>\frac{2}{3}(16^2)(16) \text{ m}^3</math> E. <math>\frac{4}{3}(16^2)(12) \text{ m}^3</math></p>

## SHSAT Lesson #18: Classwork (continued)

<p>7. A soda can is 3 inches in diameter, and 7 inches tall. What is the volume of the soda can ?</p>		<p>A. <math>10\pi</math>            B. <math>12.25\pi</math>            C. <math>14\pi</math>            D. <math>15.75\pi</math>            E. <math>18\pi</math></p>
<p>8. The base of a square pyramid is <math>8 \times 8</math>. What height is needed so that the total amount of volume is exactly 256 ?</p>		<p>A. 18 units            B. 12 units            C. 9 units            D. 6 units            E. 3 units</p>
<p>9. A castle of cubes is made up of 3 by 3 by 3 unit cubes. The castle itself is a giant mass of 64 units cubes stacked in a grand design. What is the total volume of the giant castle ?</p>		<p>A. <math>(9)(16)</math>            B. <math>(27)(16)</math>            C. <math>(27)(64)</math>            D. <math>(81)(16)</math>            E. <math>(81)(64)</math></p>
<p>10. What is the volume of a triangular prism that is 6 inches long, has a base of 4 inches and height of 3.4 inches ?</p>		<p>A. <math>\frac{1}{2} (4)(3.4) * 6</math>            B. <math>\frac{1}{2} (3.4)(6) * 8</math>            C. <math>\frac{1}{2} (6)(4) * 1.7</math>            D. <math>\frac{1}{2} (6)(3.4) * 2</math>            E. <math>\frac{1}{2} (2)(3.4) * 6</math></p>
<p>11. America is known for its surplus of grains, corn and other vegetables. Food storage silos made of concrete can be seen on almost any US highway when travelling. This silo has an inner diameter of 15 feet and a height of 60 feet. What is the volume of this silo ?</p>		<p>A. <math>13,500\pi</math>            B. <math>12,000\pi</math>            C. <math>9,000\pi</math>            D. <math>7,500\pi</math>            E. <math>3,375\pi</math></p>
<p>12. These cereal storage silos from Mexico are extraordinary. They are approximately 12 meters in height and have a diameter of 10 meters. How much cereal can 6 conical silos hold ?</p>		<p>A. <math>7,200\pi</math>            B. <math>2,400\pi</math>            C. <math>1,200\pi</math>            D. <math>600\pi</math>            E. <math>720\pi</math></p>

## SHSAT Lesson #18: Classwork (continued)

<p>13. A fish tank is 12 inches by 24 inches and 18 inches deep. It is filled three quarters full with water and sand. What is the volume of the water and sand ?</p>		<p>A. 2888 <i>cu. in.</i>            B. 3678 <i>cu. in.</i>            C. 3781 <i>cu. in.</i>            D. 3888 <i>cu. in.</i>            E. 5184 <i>cu. in.</i></p>
<p>14. An open box is 8 by 12 at the bottom and 10 inches tall. If 500 pages is 2.5 inches in height, how many pages of paper 8 x 12 paper can fit in the box to the top ?</p>		<p>A. 1000 pages            B. 1250 pages            C. 1500 pages            D. 1750 pages            E. 2000 pages</p>
<p>15. A cylinder vase is designed with a magnetic bottom so that it does not tip over easily on metal surfaces. The base is 5 <i>cm radius</i> and the height of the vase is 30 <i>centimeters</i>. If the vase is filled one-fifth with water, what is the volume of the vase that is filled ?</p>		<p>A. <math>100\pi</math> <i>cubic cm</i>            B. <math>125\pi</math> <i>cubic cm</i>            C. <math>150\pi</math> <i>cubic cm</i>            D. <math>175\pi</math> <i>cubic cm</i>            E. <math>200\pi</math> <i>cubic cm</i></p>
<p>16. A beach ball with a world map is blown up for a school celebration! The diameter of the ball is 30 inches. What is the volume of the beach ball ?</p>		<p>A. <math>4500\pi</math> <i>cubic in</i>            B. <math>4250\pi</math> <i>cubic in</i>            C. <math>4200\pi</math> <i>cubic in</i>            D. <math>3200\pi</math> <i>cubic in</i>            E. <math>2000\pi</math> <i>cubic in</i></p>
<p>17. Some teepees built by native americans were quite large. A native american crow teepee has a height of 50 meters and 42 meters in diameter. What is the volume of this large community tent ?</p>		<p>A. <math>\frac{4}{3}\pi(84^2)(50)</math>            B. <math>\frac{4}{3}\pi(42^2)(100)</math>            C. <math>\frac{4}{3}\pi(42^2)(50)</math>            D. <math>\frac{4}{3}\pi(21^2)(100)</math>            E. <math>\frac{4}{3}\pi(21^2)(50)</math></p>
<p>18. A WNBA women's basketball has a diameter of approximately 23cm. An NBA men's basketball has a diameter of approximately 24cm. What is the difference in volume of men's and women's professional basketball? (Use estimation)</p>		<p>A. <math>\frac{1657}{3}\pi</math>            B. <math>\frac{1205}{3}\pi</math>            C. <math>\frac{829}{3}\pi</math>            D. <math>\frac{529}{3}\pi</math>            E. <math>\frac{217}{3}\pi</math></p>

## SHSAT Lesson #18: SHSAT Exam Classwork:

<p>19. An empty cylindrical can has a height of 4 inches and a base with a radius of 3 inches. Melanie fills the can <math>\frac{2}{3}</math> to the top with water. Then she waters a plant with <math>\frac{1}{4}</math> of the water in the can. What is the volume of the remaining water in the can ?</p>	<p>A. <math>24\pi \text{ in}^3</math>            B. <math>12\pi \text{ in}^3</math>            C. <math>18\pi \text{ in}^3</math>            D. <math>32\pi \text{ in}^3</math>            E. <math>30\pi \text{ in}^3</math></p>
<p>20. Terri fills <math>\frac{2}{3}</math> of a glass with water. If the glass is 15 cm tall and its radius is 2 cm, what volume of water is in Terri's glass ? Use the following formula for calculating the volume of a cylinder:  <math>V = \pi r^2 h</math></p>	<p>A. <math>10\pi \text{ cm}^3</math>            B. <math>20\pi \text{ cm}^3</math>            C. <math>30\pi \text{ cm}^3</math>            D. <math>40\pi \text{ cm}^3</math>            E. <math>50\pi \text{ cm}^3</math></p>
<p>21. A cylindrical pipe is painted grey on the side. The pipe is 9 cm tall and has a diameter of 10 cm. What is the area of the painted portion of the pipe ?</p>	<p>A. <math>20\pi \text{ cm}^2</math>            B. <math>60\pi \text{ cm}^2</math>            C. <math>90\pi \text{ cm}^2</math>            D. <math>140\pi \text{ cm}^2</math>            E. <math>180\pi \text{ cm}^2</math></p>
<p>22. The volume of a pyramid with a square base is 80 cubic centimeters. The side length of the square base is 4 centimeters. What is the height of the pyramid ?</p>	<p>A. 5 cm            B. 10 cm            C. 15 cm            D. 20 cm            E. 25 cm</p>
<p>23. A pyramid has a rectangular base. Its volume is 75 cubic centimeters and its height is 5 centimeters. If the length of the base is 9 centimeters, what is the width ?</p>	<p>A. 5 cm            B. 15 cm            C. 25 cm            D. 35 cm            E. 45 cm</p>
<p>24. The volume of 6 spherical balloons of radius 6 is equal to how many cylinders of radius 6 and height 12 ?</p>	<p>A. 14            B. 12            C. 8            D. 4            E. 2</p>

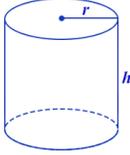
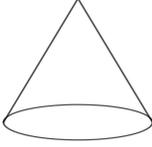
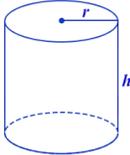
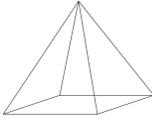
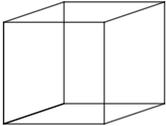
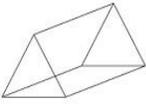
**SHSAT Lesson #18: SHSAT Mixed Review Classwork:**

<p>25. (Easy Level)</p> <p>What is the area, in square units, of a square that has the same perimeter as a rectangle 9 units by 5 units ?</p>	Grid In
<p>26. (Easy Level)</p> <p>An 8 by 10 picture frame has a picture inside that has a length of 8 and a width of 4. What is the area between the 8x10 frame border and the picture ?</p>	Grid In
<p>27. (Mid Level)</p> <p>ABCD is a square with area 25. If E is the midpoint of AD, what is the area of the triangle ABE ?</p>	Grid In
<p>28. (Mid Level)</p> <p>The area of circle O is <math>36\pi</math> at its diameter is <math>x</math>, what is the circumference of a circle whose radius is <math>2x</math> ? (Express your answer in terms of <math>a * \pi</math>, and grid in the value of "a" only.)</p>	Grid In
<p>29. (Challenge Level)</p> <p>ABCD and E are on a straight line, in that order. If AB is twice and the length of BC, <math>BC=CD</math> and DE is triple the length of CD. If <math>AE=49</math>, what is the length of BD ?</p>	Grid In
<p>30. (Challenge Level)</p> <p>A square ABCD is drawn. Along the base DC, point E is is on DC. DC is extended outside the square so that F is drawn outside the square. The perimeter of the square is 64, and <math>DC= EF</math>. What is the area of the triangle BEF ?</p>	Grid In

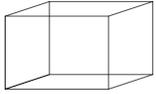
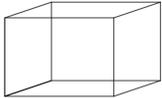
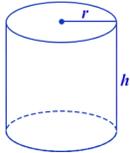
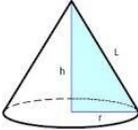
## SHSAT Lesson #18 Homework: Volume

1. The volume of a rectangular prism is 120 cubic yards. If the length is 12 feet and the width is 2 feet, what is the height ?	<p>A. 1 foot            B. 2 feet            C. 3 feet            D. 4 feet            E. 5 feet</p>
2. Find the volume of a glass marble ball with radius 20 cm.	<p>A. <math>\frac{4}{3}\pi(8000)</math>            B. <math>\frac{4}{3}\pi(800)</math>            C. <math>\frac{4}{3}\pi(80)</math>            D. <math>\frac{4}{3}\pi(8)</math>            E. None of these</p>
3. What is the volume of a rectangular prism with length 1 units, width 4 units and depth 10 units ?	<p>A. 20 units cubed            B. 40 units cubed            C. 60 units cubed            D. 80 units cubed            E. 100 units cubed</p>
4. A student pencil box is 8 inches by 7 inches by 2.5 inches. What is the volume ?	<p>A. <math>17.5 \text{ in}^3</math>            B. <math>35 \text{ in}^3</math>            C. <math>95 \text{ in}^3</math>            D. <math>120 \text{ in}^3</math>            E. <math>140 \text{ in}^3</math></p>
5. A storage closet is 8 feet wide, 8 feet deep and 5 feet in height. What is the volume of the storage closet ?	<p>A. <math>130 \text{ ft}^3</math>            B. <math>160 \text{ ft}^3</math>            C. <math>200 \text{ ft}^3</math>            D. <math>320 \text{ ft}^3</math>            E. <math>400 \text{ ft}^3</math></p>
6. What is the volume of a square pyramid with base 5 meters and height 12 meters ?	<p>A. <math>\frac{1}{3}(5^2)(24) \text{ m}^3</math>            B. <math>\frac{1}{3}(10)(12) \text{ m}^3</math>            C. <math>\frac{1}{3}(5)(12) \text{ m}^3</math>            D. <math>\frac{1}{3}(5^2)(6) \text{ m}^3</math>            E. <math>\frac{1}{3}(5^2)(12) \text{ m}^3</math></p>

## SHSAT Lesson #18: Homework (continued)

<p>7. A rubbish bin has an 18 inches diameter and is 24 inches deep. It is shaped like a cylinder. What is the volume ?</p>		<p>A. 1.5 cubic feet B. 2.5 cubic feet C. 3.5 cubic feet D. 4.5 cubic feet E. 5.5 cubic feet</p>
<p>8. A birthday party hat is conical shaped and has an 8 inch diameter base and is 12 inches tall with a streamer on top. The sides are custom painted for the birthday child. What is the volume of the hat ?</p>		<p>A. <math>\frac{2}{9}\pi</math> B. <math>\frac{4}{9}\pi</math> C. <math>\frac{6}{9}\pi</math> D. <math>\frac{8}{9}\pi</math> E. <math>\frac{10}{9}\pi</math></p>
<p>9. A container is shaped like a cylinder and is 10 inches in diameter, and 5 inches tall. What is the total volume of 4 of these containers ?</p>		<p>A. <math>4 * [\pi(10^2)(5)]</math> B. <math>4 * [\frac{1}{3}\pi(10^2)(5)]</math> C. <math>4 * [\frac{4}{3}\pi(5^2)(5)]</math> D. <math>4 * [\pi(5^2)(5)]</math> E. <math>4 * [\frac{4}{3}\pi(5^2)(5)]</math></p>
<p>10. The base of a square pyramid is 4x4. What height is needed so that the total amount of volume is exactly 192 ?</p>		<p>A. 48 units B. 36 units C. 24 units D. 18 units E. 12 units</p>
<p>11. A castle of cubes is made up of 2 by 2 by 2 unit cubes. The castle is a giant mass of 125 cubes stacked in a grand design. What is the total volume of the giant castle ?</p>		<p>A. (8)(25) B. (16)(125) C. (16)(25) D. (6)(125) E. (8)(125)</p>
<p>12. What is the volume of a triangular prism that is 9 cm long, has a base of 2 cm and a height of 1.7 inches ?</p>		<p>A. <math>\frac{1}{2}(2)(3.4) * 9</math> B. <math>\frac{1}{2}(2)(1.7) * 9</math> C. <math>\frac{1}{2}(2)(0.85) * 9</math> D. <math>\frac{1}{2}(9)(3.4) * 2</math> E. <math>\frac{1}{2}(9)(1) * 1.7</math></p>

## SHSAT Lesson #18: Homework (continued)

<p>13. A fish tank is 12 inches by 48 inches and 24 inches deep. It is filled three quarters full with water and sand. What is the volume of the water and sand ?</p>		<p>A. 2 cubic feet B. 4 cubic feet C. 6 cubic feet D. 8 cubic feet E. 10 cubic feet</p>
<p>14. An open box is 16 by 24 at the bottom and 25 inches tall. If 500 pages is 2.5 inches in height, how many pages of paper 8 x 12 paper can fit in the box to the top ?</p>		<p>A. 20,000 pages B. 17,500 pages C. 15,000 pages D. 12,500 pages E. 10,000 pages</p>
<p>15. A cylinder vase is designed with a magnetic bottom so that it does not tip over easily on metal surfaces. The base is 3 <i>cm radius</i> and the height of the vase is 30 <i>centimeters</i>. If the vase is filled one-fifth with water, what is the volume of the vase that is filled ?</p>		<p>A. <math>90\pi</math> B. <math>72\pi</math> C. <math>60\pi</math> D. <math>54\pi</math> E. <math>40\pi</math></p>
<p>16. A beach ball with a world map is blown up for a school celebration! The diameter of the ball is 30 inches. The total volume is <math>\frac{4}{3}\pi(\text{radius}^3)</math> <i>cubic centimeters</i>. If the ball is deflated at a rate of 3,500 cc per minute, about how many minutes will it take to deflate the beach ball ?</p>		<p>A. 2 minutes B. 3 minutes C. 4 minutes D. 5 minutes E. 6 minutes</p>
<p>17. What is the total volume of 12 cones of height 5 and diameter 10 ?</p>		<p>A. <math>12 * [\frac{1}{3}\pi(20^2)(5)]</math> B. <math>12 * [\frac{1}{3}\pi(10^2)(5)]</math> C. <math>12 * [\frac{1}{3}\pi(5^2)(5)]</math> D. <math>12 * [\frac{4}{3}\pi(10^2)(5)]</math> E. <math>12 * [\frac{4}{3}\pi(5^2)(5)]</math></p>
<p>18. An architect is designing three spheres for a public plaza. Each large sphere has a diameter of 10 meters and they will sit at the center of a large fountain. What is the total volume of the three spheres?</p>		<p>A. <math>3 * [\frac{4}{3}\pi(5^3)]</math> B. <math>3 * [\frac{2}{3}\pi(5^3)]</math> C. <math>3 * [\frac{1}{3}\pi(5^3)]</math> D. <math>3 * [\frac{4}{3}\pi(10^3)]</math> E. <math>3 * [\frac{2}{3}\pi(10^3)]</math></p>

## SHSAT Lesson #18: Grid In Review Homework:

<p>19. The formula for the volume of a sphere is <math>V = \frac{4}{3}\pi r^3</math> where <math>V = \text{volume}</math>, and <math>r = \text{radius}</math>. If the diameter of the sphere is 10 cm, then the volume to the nearest tenth is:</p>	<p>A. <math>4188.8 \text{ cm}^3</math>            B. <math>523.6 \text{ cm}^3</math>            C. <math>186.2 \text{ cm}^3</math>            D. <math>62.8 \text{ cm}^3</math>            E. <math>41.89 \text{ cm}^3</math></p>												
<p>20. Anne has two containers for water: a rectangular plastic box with a base area of 16 square inches, and a cylindrical container with a radius of 2 and a height of 11 inches. If the rectangular box is filled with water 9 inches from the bottom, and Anne pours the water into the cylinder without spilling, to what height would the water reach when poured into the cylinder ?</p>	<p>A. The cylinder will overflow.            B. The cylinder will be exactly full.            C. The cylinder will be filled to an approximate level of 10 inches.            D. The cylinder will be filled to an approximate level of 12 inches.            E. The cylinder will be filled to an approximate level of 8 inches.</p>												
<p>21. A refrigerator has dimensions 2 feet by 3 feet by 5 feet. What is the volume of the refrigerator ?</p>	<p>A. 10 cubic feet            B. 25 cubic feet            C. 30 cubic feet            D. 45 cubic feet            E. 62 cubic feet</p>												
<p>22. A large cube is composed of smaller cubes and measures 4 cubes long by 4 cubes wide by 4 cubes high. The outside of the large cube is painted blue. After the paint dries, the large cube is broken apart into smaller cubes. How many of the smaller cubes will not be painted blue on any of their sides ?</p>	<p>A. 8            B. 12            C. 16            D. 32            E. 64</p>												
<p>23. If the following two boxes have equal volume, what is <math>x</math> ?</p> <table border="1" data-bbox="298 1365 881 1562"> <thead> <tr> <th></th> <th>Length</th> <th>Width</th> <th>Height</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>4 cm</td> <td>4 cm</td> <td>3 cm</td> </tr> <tr> <td>B</td> <td>2 cm</td> <td>6 cm</td> <td><math>x</math> cm</td> </tr> </tbody> </table>		Length	Width	Height	A	4 cm	4 cm	3 cm	B	2 cm	6 cm	$x$ cm	<p>A. 3 cm            B. 4 cm            C. 4.5 cm            D. 5 cm            E. 6 cm</p>
	Length	Width	Height										
A	4 cm	4 cm	3 cm										
B	2 cm	6 cm	$x$ cm										
<p>24. The main fish tank at the East Point Aquarium is shaped like a rectangular prism. The tank is 16 feet deep, 24 feet wide, and 38 feet long. If the tank contains 4,660 cubic feet of water, how many more cubic feet of water must be added to completely fill the tank ?</p>	<p>A. <math>4,738 \text{ ft}^3</math>            B. <math>9,932 \text{ ft}^3</math>            C. <math>12,754 \text{ ft}^3</math>            D. <math>14,592 \text{ ft}^3</math>            E. <math>19,252 \text{ ft}^3</math></p>												

**SHSAT Lesson #18: Grid In Review Homework:**

<p>25. (Easy Level)</p> <p>What is the area of a square with side length <math>2\sqrt{2}</math> ?</p>	Grid In
<p>26. (Easy Level)</p> <p>Five people {Al, Bo, Cy, Di and Ed} are seated around a circular table in that order. If 52 cards are dealt beginning with Al and continuing clockwise to Bo, Cy, Di and Ed, who will get the last card ?</p> <p>Grid in "1" for Al, "2" for Bo, "3" for Cy, "4" for Di or "5" for Ed.</p>	Grid In
<p>27. (Mid Level)</p> <p>If the perimeter of the square is 36, and a circle is inscribed so that it touches the square at the midpoint of each side, what is the circumference of the circle?</p> <p>(Express your answer in terms of <math>a * \pi</math>, and grid in the value of "a" only.)</p>	Grid In
<p>28. (Mid Level)</p> <p>Rectangle MNOP has Base PO. Q is the midpoint of top side MN. An isosceles triangle is drawn with <math>QP = QO = 5</math> and <math>PO = 6</math>. What is the area of rectangle MNOP ?</p> <p>Use the Pythagorean Theorem <math>a^2 + b^2 = c^2</math></p>	Grid In
<p>29. (Challenge Level)</p> <p>In a circle with radius <math>(x - 5)</math> what value of x does the circle has a circumference of <math>20\pi</math> ?</p>	Grid In
<p>30. (Challenge Level)</p> <p>In a circle, a triangle ABC is drawn so that AC is a diameter and B is on the semicircle arc between A and C. If <math>AB = 6</math>, and <math>BC = 8</math>, what is the area of the circle ?</p> <p>(Express your answer in terms of <math>a * \pi</math>, and grid in the value of "a" only.)</p>	Grid In