UNIT 12: SOLIDS

I can define, identify and illustrate the following terms:

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<th>Orthographic View</th>
<th>Isometric View</th>
<th>Polyhedron</th>
<th>Cylinder</th>
<th>Cone</th>
<th>Pyramid</th>
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<th>Net</th>
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Dates, assignments, and quizzes subject to change without advance notice.

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Friday, 3/8

Views and Faces: Chapter 10 sections 1 - 3

- I can identify and draw orthographic and isometric views
- I can identify the number of faces, edges, and vertices
- I can identify the cross-sections of solid figures
- I can match solids and nets
- I can identify and draw orthographic and isometric views

PRACTICE: Class Activity

PRACTICE: Solids Basics Worksheet

Monday, 3/18

Prisms and Pyramids: Chapter 10 sections 4 - 7

- I can classify prisms and pyramids
- I can find the surface areas and volume of solids
- I can solve problems using surface areas and volume

PRACTICE: Volume and Surface Area of Prism and Pyramids Worksheet

Tuesday, 3/19

Cylinders, Cones, and Spheres: Chapter 10 sections 4 - 8

- I can find the surface areas and volume of solids
- I can solve problems using surface areas and volume

PRACTICE: Cylinders, Cones, and Spheres Worksheet

Block, 3/20-21

Applications

- I can find the surface areas and volume of solids
- I can solve problems using surface areas and volume

PRACTICE:
Friday, 3/22

**Composites**

- I can find the surface areas and volume of composite solids
- I can solve problems using surface areas and volume

**PRACTICE: Composite Worksheet**

Monday, 3/25

**Dimensional Changes**

- I can determine the effect on surface areas and volume when one or more dimensions are changed

**PRACTICE: Dimensional Changes Worksheet**

Tuesday, 3/26

**Review**

- I can assess my strengths and weaknesses on all previously learned material.

**PRACTICE: Review Activity**

Block day, 3/27-28

**Test Unit #11: Solids**

- I can demonstrate my ability on all previously learned material.
Prisms and Pyramids

“I can … find the lateral area, surface area, and volume of prisms. find the lateral area, surface area, and volume of pyramids.”

I. Definitions

A. **Lateral Area of a Prism or Pyramid** - The _____ if the areas of the lateral ______.

*NOTE 1*: Lateral faces are the faces other than the ______(s).

*NOTE 2*: The lateral area of a cylinder or cone is the _____ of the curved surface.

B. **Total Surface Area of a Figure**: The _______ area of the surfaces that cover the figure. It is the _____________ _______ plus the area of each ________.

C. Since _____________ _______ and _____________ _______ are areas, they are measured in __________ units.

D. **Volume of a Figure** – The number of cubic units needed to fill the figure. It is measured in _______ units.

II. Formulas

A. Lateral Area
   1. Prism: S = _____ where P = ___________ and h = __________
   3. Pyramid: S = _______ P = __________, l = __________ and take ½ the product.

B. Total Surface Area
   A. If there are __ bases ( ___________ or ____________ ) then ADD ___ + ____ where 
      B = _____ of the base and LA = ______________  _____
   B. IF there is only 1 base ( _______ or ____________ ) then use LA + __

C. Volume
   A. Prism: V = ______
   B. Pyramid: V = _______

III. Model Problems

Find the Surface area, Lateral Surface area, and Volume of each shape.
5. If the surface area of a cube is 70 cm², what is the approximate length, s, to the nearest tenth of a centimeter?

6. What is the lateral surface area of a pyramid with height 4 cm and radius 2 cm to the nearest tenth of a square cm?

Volume and Surface Area of Prisms and Pyramids

1. P = ________  
   h = ________  
   B = ________  
   LA = _______________  
   TA = _______________  
   V = _______________

2. P = ________  
   h = ________  
   B = ________  
   LA = _______________  
   TA = _______________  
   V = _______________

3. LA = _______________  
   TA = _______________  
   V = _______________

4. LA = _______________  
   TA = _______________  
   V = _______________
5. \[ P = \underline{\phantom{000}} \]
\[ h = \underline{\phantom{000}} \]
\[ B = \underline{\phantom{000}} \]
\[ \ell = \underline{\phantom{000}} \]

LA = ____________________

TA = ____________________

V = ____________________

6. \[ P = \underline{\phantom{000}} \]
\[ h = \underline{\phantom{000}} \]
\[ B = \underline{\phantom{000}} \]
\[ \ell = \underline{\phantom{000}} \]

LA = ____________________

TA = ____________________

V = ____________________

7. \[ P = \underline{\phantom{000}} \]
\[ h = \underline{\phantom{000}} \]
\[ B = \underline{\phantom{000}} \]
\[ \ell = \underline{\phantom{000}} \]

LA = ____________________

TA = ____________________

V = ____________________

8. \[ P = \underline{\phantom{000}} \]
\[ h = \underline{\phantom{000}} \]
\[ B = \underline{\phantom{000}} \]
\[ \ell = \underline{\phantom{000}} \]

LA = ____________________

TA = ____________________

V = ____________________

9. The base of a triangular prism is an equilateral triangle with a perimeter of 24 inches. If the height of the prism is 5 inches, find the lateral area.

F) 120 in\(^2\)  
G) 60 in\(^2\)  
H) 40 in\(^2\)  
J) 360 in\(^2\)

10) Find the surface area, lateral surface area and volume of a rectangular prism with height 7 m, length 10 m, and width 8 m.

11) What equation would be used to find the lateral surface area of a right triangular prism?

A) \( S = (10 + 24 + 26)(7) + 2\left(\frac{10(24)}{2}\right) \)

B) \( S = (10 + 24 + 7)(26) + \frac{10 + 24}{2} \)

C) \( S = (24 + 24 + 7 + 7)(10) + 2(24)(7) \)

D) \( S = (10 + 24 + 26)(7) + 2(10)(24) \)

12) What equation would be used to find the volume for the pyramid with apothem of 5.5 cm, a side length of 8 cm, and a height of 10 cm?

A) \( V = \frac{1}{3} \left( \frac{1}{2} \right)(5.5)(8)(10) \)

B) \( V = \frac{1}{3} \left( \frac{(5.5)(40)}{2} \right)(10) \)

C) \( V = \frac{1}{3} \left( \frac{(5.5)(8)}{2} \right)(10) \)

D) \( V = \frac{1}{3} (5.5)(8)(10) \)
Cylinders - Notes

Cylinder Formulas: $\text{LSA} = \underline{\phantom{0000}}$, $\text{SA} = \underline{\phantom{0000}}$, $\text{V} = \underline{\phantom{0000}}$

What is height of cylinder? ______
What is radius of cylinder? ______
What does B stand for? __________

YOU TRY:

Spheres - Notes

Sphere Formulas: Surface Area = $\underline{\phantom{00000000000}}$, Volume = $\underline{\phantom{00000000000}}$

YOU TRY:
Cones - Notes

Cone Formulas: LSA = ________________, SA = ________________, V = ___________

What is the height of the cone? ________
What is the radius of the base? _________
What is the slant height of the cone? _______

YOU TRY:

LSA = _________
SA = __________
V = ___________

LSA = _________
SA = __________
V = ___________

1. LSA = ________
SA = _________
V = __________

2. LSA = ________
SA = _________
V = __________

Cylinders, Cones, and Spheres Worksheet

1. LSA = ________
SA = _________
V = __________

2. LSA = ________
SA = _________
V = __________
11. For small paving jobs, a contractor uses a roller pushed by a worker. What is the area of pavement with which the surface of the roller will come into contact in one complete rotation?
12. A right circular cone has radius 5 inches and height 8 inches.

What is the lateral area of the cone? (Lateral area of cone = \( \pi rl \), where \( l \) = slant height)

A 40\( \pi \) sq in.
B 445\( \pi \) sq in.
C 5\( \pi \sqrt{39} \) sq in.
D 5\( \pi \sqrt{89} \) sq in.

13. A classroom globe has a diameter of 18 inches.

Which of the following is the approximate surface area, in square inches, of the globe? (Surface Area = \( 4\pi r^2 \))

A 113.0
B 226.1
C 254.3
D 1017.4

14. Vik is constructing a spherical model of Earth for his science fair project. His model has a radius of 24 inches. Since roughly 75% of Earth’s surface is covered by water, he wanted to paint 75% of his model blue to illustrate this fact. Approximately how many square inches on his model will be painted blue? (Surface Area = \( 4\pi r^2 \))

A 5426
B 7235
C 43,407
D 57,877

15. Susan has a fish tank in the shape of a cylinder that is 26 inches tall. The diameter of the tank is 12 inches. If there are 2 inches of rocks in the bottom, how much water is needed to fill the tank?
Notes – Applications of Solid Figures

1. Find the height of a cylinder with a surface area of $160\pi \text{ ft}^2$ and radius of 5 ft.

2. Abigail has a cylindrical candle mold with the dimensions shown. If Abigail has a rectangular block of wax measuring 15 cm by 12 cm by 18 cm, about how many candles can she make after melting the block of wax?
   
   A) 14     B) 31     C) 35     D) 76

3. Michael is refinishing the bookcase pictured to the left. A pint of stain covers 30 – 35 ft$^2$. How many cans of stain will Michael need to buy to cover the left side, right side, and back of the book case with two coats?

4. The Imaginary Toy Company, has increased their size of the “Creativity Doll”. The packaging department has calculated that they need to add 3 inches to each of the dimension of the original packaging (Original is shown in Picture). What is the new amount of cardboard needed to package one doll?

5. The volume of the cone shown is approximately 150 cubic centimeters. What is the approximate volume of the cylinder?

   F 450 cm$^3$  
   G 150 cm$^3$  
   H 50 cm$^3$  
   J Cannot be determined

6. Find the Volume and Surface Area

   $V = \___________$  
   $SA = \___________$

   $V = \___________$  
   $SA = \___________$
Practice and Applications

1. The greater the lateral area of a florescent light bulb, the more light the bulb produces. One cylindrical light bulb is 16 inches long with a 1 inch radius. Another is 23 inches long with a $\frac{3}{4}$ inch radius. Which bulb produces more light?

2. The base of a triangular prism is an equilateral triangle with a perimeter of 24 inches. If the height of the prism is 5 inches, find the lateral area.

F) 120 in$^2$  G) 60 in$^2$  H) 40 in$^2$  J) 360 in$^2$

3. A juice container is a square prism with base edge length 4 in. When an 8 in. straw is inserted into the container as shown, exactly 1 in. remains outside the container.

a) How much of the straw is in the container?

b) Find BC

c) Use BC and the straw to find AC

d) Now use the height (answer to part c) to find how much material is required to manufacture the container. Round to the nearest tenth.

4. Landscaping Ingrid is building a shelter to protect her plants from freezing. She is planning to stretch plastic sheeting over the top and the ends of a frame. Which of the frames shown will require more plastic?

5. Which of the following equations would answer the problem below?

Susan has a fish tank in the shape of a cylinder that is 26 inches tall. The diameter of the tank is 12 inches. If there are 2 inches of rocks in the bottom, how much water is needed to fill the tank?

A) $V = \pi(12)^2(26)$  B) $V = \pi(6)^2(26)$  C) $V = \pi(12)^2(24)$  D) $V = \pi(6)^2(24)$
6. A frustum of a cone is a part of the cone with two parallel bases. The height of the frustum of the cone is half the height of the original cone.
   a. Find the surface area of the original cone.
   b. Find the lateral area of the top of the cone.
   c. Find the area of the top base of the frustum.
   d. Use your results from parts a, b, and c to find the surface area of the frustum of the cone.

7. If one gallon of paint covers 250 square feet, how many gallons of paint will be needed to cover the shed, not including the roof? If a gallon of paint costs $25, about how much will it cost to paint the walls of the shed?

8. Colin is buying dirt to fill a garden bed that is a 9 ft by 16 ft rectangle. If he wants to fill it to a depth of 4 in., how many cubic yards of dirt does he need? If dirt costs $25 per yd^3, how much will the project cost? (Hint: 1 yd^3 = 27 ft^3)

9. The base of a triangular prism is an equilateral triangle with a perimeter of 24 inches. If the height of the prism is 5 inches, find the lateral area.

   F) 120 in^2
   G) 60 in^2
   H) 40 in^2
   J) 360 in^2

10. Lea made two candles in the shape of right rectangular prisms. The first candle is 15 cm high, 8 cm long, and 8 cm wide. The second candle is 5 cm higher but has the same length and width. How much additional wax was needed to make the taller candle?

   A) 320 cm^3
   B) 640 cm^3
   C) 960 cm^3
   D) 1280 cm^3

8. A cylindrical pedestal that is used on the set of a game show has a radius of 3 feet and a height of 2 feet. What is the surface area of the pedestal?

   A. $12\pi$ ft^2
   B. $18\pi$ ft^2
   C. $30\pi$ ft^2
   D. $45\pi$ ft^2

10. A right circular cylinder has a volume of 1,000 cubic inches and a height of 8 inches. What is the radius of the cylinder to the nearest tenth of an inch?

   A) 6.3 in
   B) 11.2 in
   C) 19.8 in
   D) 39.8 in
11. The radius of a sphere is 6 units. What is the area of a great circle of the sphere?

A. $6\pi$ square units  
B. $9\pi$ square units  
C. $12\pi$ square units  
D. $36\pi$ square units

12. The diameter of a sphere is 24 millimeters. What is the surface area of the sphere?

A. $144\pi$ mm$^2$  
B. $576\pi$ mm$^2$  
C. $2,304\pi$ mm$^2$  
D. $9,216\pi$ mm$^2$

13. The hay storage silo shown below is in the shape of a cylinder.

Which is the best estimate for the lateral surface area of the silo?

A. 188.0 ft$^2$  
B. 282.7 ft$^2$  
C. 565.5 ft$^2$  
D. 791.7 ft$^2$

14. A traffic cone is shown below.

What is the volume of the cone?

A. $56\pi$ in.$^3$  
B. $168\pi$ in.$^3$  
C. $504\pi$ in.$^3$  
D. $672\pi$ in.$^3$

15. A display case in an art museum is in the shape of a pyramid, as shown below.

What is the volume of the display case?

A. 238 in.$^3$  
B. 476 in.$^3$  
C. 2,023 in.$^3$  
D. 6,069 in.$^3$

16. A spherical contact juggling ball is shown below.

What is the volume of the contact juggling ball to the nearest tenth of a cubic centimeter?

A. 50.3 cm$^3$  
B. 67.0 cm$^3$  
C. 134.0 cm$^3$  
D. 268.1 cm$^3$
17. Rose bought a small tent for her pet rabbit. The tent is in the shape of a square pyramid, as shown below. The base has a side length of 18 inches. The lateral faces have a slant height of 15 inches.

What is the volume of the tent?
A. 324 in.$^3$
B. 405 in.$^3$
C. 1,296 in.$^3$
D. 1,620 in.$^3$

18. Look at the prism below.

Which is the volume of the prism?
A. 364.5 in.$^3$
B. 729 in.$^3$
C. $729\sqrt{2}$ in.$^3$
D. $729\sqrt{3}$ in.$^3$

19. A dome is in the shape of a hemisphere with a diameter of 6 meters. Since 1 meter is approximately equal to 1.09 yards, which of the following is closest to the volume of the dome, in cubic yards?
A. 56 yd.$^3$
B. 62 yd.$^3$
C. 73 yd.$^3$
D. 146 yd.$^3$

20. Paul is wrapping a gift in a box that has the shape of a hexagonal prism. The base is a regular hexagon with a side length of 8 inches. The height of the box is 10 inches.

Which of the following is closest to the surface area of the box?
A. 333 in.$^2$
B. 646 in.$^2$
C. 1145 in.$^2$
D. 813 in.$^2$

For the following solids find the volume and surface area.

21. $V =$ \[
\frac{1}{2} r^2 s^3 + \frac{1}{4} rs^2
\]
$SA =$ \[
\frac{1}{2} r^2 s^3 + \frac{1}{4} rs^2
\]

22. $V =$ \[
\frac{1}{4} r^2 s^3
\]
$SA =$ \[
\frac{1}{2} r^2 s^3
\]
A **composite** figure is made up of ____________ or more geometric figures combined.

**Keep in mind that some of the sides may not be in the surface area if they are now part of the interior of the figure.**

**Polyhedron** – a ____________ figure with ____________ surfaces

**Composite Examples:**

Find the volume and total surface area of the composite figures below.

1.  
2.  
3.  

4. \(V = \)__________  
5. \(SA = \)__________

6.  
7.  

8.  

**Notes and Assignment:**

Prisms and Pyramid: Composite and Nets Notes and Assignment
7. If one gallon of paint covers 250 square feet, how many gallons of paint will be needed to cover the shed, not including the roof? If a gallon of paint costs $25, about how much will it cost to paint the walls of the shed?

10. You can use displacement to find the volume of an irregular object, such as a stone. Suppose the tank shown is filled with water to a depth of 8 in. A stone is placed in the tank so that it is completely covered, causing the water level to rise by 2 in. Find the volume of the stone.

Which of the following equations can NOT be used to find the volume?
A) \( V = \pi (2^2)(4) + (12)(4)(4) \)
B) \( V = 16\pi + (192) \)
C) \( V = \frac{1}{2} [\pi (2^2)(4)] + (12)(4)(4) \)
D) \( V = 4\pi (4) + (12)(4)(4) \)

The answer is _______. The others don’t work because….


14. Abigail has a cylindrical candle mold with the dimensions shown. If Abigail has a rectangular block of wax measuring 15 cm by 12 cm by 18 cm, about how many candles can she make after melting the block of wax?

A) 14  B) 31  C) 35  D) 76

The answer is _______. The others don’t work because….
Lea made two candles in the shape of right rectangular prisms. The first candle is 15 cm high, 8 cm long, and 8 cm wide. The second candle is 5 cm higher but has the same length and width. How much additional wax was needed to make the taller candle?

A 320 cm$^3$
B 640 cm$^3$
C 960 cm$^3$
D 1280 cm$^3$

17. One juice container is a rectangular prism with a height of 9 in. and a square base. Another juice container is a cylinder with a radius of 3 in. and a height of 9 in. Which best describes the relationship between the volumes of these two containers?

A The prism has the greater volume.
B The cylinder has the greater volume.
C The volumes are equivalent.
D The volumes cannot be determined.

The answer is _______. The others don’t work because....

The volume of the cone shown is approximately 150 cubic centimeters. What is the approximate volume of the cylinder?

The answer is _______. The others don’t work because....

F 450 cm$^3$
G 150 cm$^3$
H 50 cm$^3$
J Cannot be determined
Find the total surface area of the composite figures below.

1. [Diagram of a cylinder with dimensions shown]

2. [Diagram of a composite figure with a sphere and a rectangular prism]

3. [Diagram of a cone with dimensions shown]

4. [Diagram of a triangular prism with dimensions shown]

Find the volume of these composite figures.

5. [Diagram of a cylinder with dimensions shown]

6. [Diagram of a composite figure with a cylinder and a rectangular prism]

9. A frustum of a cone is a part of the cone with two parallel bases. The height of the frustum of the cone is half the height of the original cone.
   a. Find the surface area of the original cone.
   b. Find the lateral area of the top of the cone.
   c. Find the area of the top base of the frustum.
   d. Use your results from parts a, b, and c to find the surface area of the frustum of the cone.

10. Which expression represents the volume of the composite figure formed by a hemisphere with radius \( r \) and a cube with side length \( 2r \)?
   - \( A: \frac{2}{3} \pi r^3 + 8r^3 \)
   - \( B: \frac{4}{3} \pi r^3 + 2r^3 \)
   - \( C: 2r^2(2 \pi + 12) \)
   - \( D: \frac{4}{3} \pi r^3 + 8r^3 \)
Dimensional Changes

“I can …
use proportions to find side lengths, perimeter, area, and volume.
apply dimensional changes to find side lengths, perimeter, area, and volume.”

I. Dimensional Changes when all sides change the same amount
   A. Ratio of Perimeter = Ratio of ______ _________ __
   B. Ratio of ( ______ )^2 = Ratio of side lengths.
   C. Ratio of ( _______ )^3 = Ratio of side lengths.

EX: If the side lengths of a cube are tripled, how many times greater is the volume?

II. Dimensional Changes when only some sides change
   A. Determine the effect on each side
   B. Multiply the values (may be whole numbers or __________)

III. Model Problems

<table>
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<tr>
<th>Guided Practice</th>
<th>On Your Own</th>
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<tbody>
<tr>
<td>A rectangle has a perimeter of 27 cm. If the lengths of the sides of the</td>
<td>A pentagon has a perimeter of 34 in. If the lengths of the sides of the</td>
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<tr>
<td>rectangle are all doubled, what will be the perimeter of the new rectangle?</td>
<td>pentagon are halved, what is the new perimeter of the pentagon?</td>
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<tr>
<td>A cone has a volume of 100 cm^3. If the radius and height of the cone are</td>
<td>A rectangular prism has a volume of 15 cubic units. If the length, width,</td>
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<tr>
<td>tripled, what will be the new volume of the cone?</td>
<td>and height are all changed to 5/3 their original size, what will be the</td>
</tr>
<tr>
<td>A cube has a surface area of 76 cm^2. If the dimensions of the cube are</td>
<td>new volume of the prism?</td>
</tr>
<tr>
<td>halved, what is the new surface area of the cube?</td>
<td></td>
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<tr>
<td>[F] 19 cm^2</td>
<td>[A] 352 cm^2</td>
</tr>
<tr>
<td>[G] 38 cm^2</td>
<td>[B] 264 cm^2</td>
</tr>
<tr>
<td>[H] 76 cm^2</td>
<td>[C] 167 cm^2</td>
</tr>
<tr>
<td>[J] 153 cm^2</td>
<td>[D] 88 cm^2</td>
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<tr>
<td>A triangle has an area of 22 cm^2. If the dimensions of the triangle are</td>
<td></td>
</tr>
<tr>
<td>increased by a factor of 4, what is the new area of the triangle?</td>
<td></td>
</tr>
</tbody>
</table>
In the circles shown below, the radius of the smaller circle was multiplied by a factor of 2 to produce the larger circle.

How does the circumference of the larger circle compare to the circumference of the smaller circle?

[A] The circumference of the larger circle is \(2\pi\) times the circumference of the smaller circle.
[B] The circumference of the larger circle is 2 times the circumference of the smaller circle.
[C] The circumference of the larger circle is 4 times the circumference of the smaller circle.
[D] The circumference of the larger circle is \(\frac{2\pi}{\pi}\) times the circumference of the smaller circle.

The length of a rectangular prism was halved to form a smaller rectangular prism. The width and height were not changed.

How does the volume of the smaller rectangular prism compare to that of the larger rectangular prism?

[F] The smaller rectangular prism has the same volume as the larger rectangular prism.
[G] The smaller rectangular prism has \(\frac{1}{8}\) the volume as the larger rectangular prism.
[H] The smaller rectangular prism has \(\frac{1}{4}\) the volume as the larger rectangular prism.
[J] The smaller rectangular prism has half the volume as the larger rectangular prism.

A sphere has a surface area of 46in\(^2\). If the diameter of the sphere is tripled, what is the new surface area of the sphere?

[A] 1242 in\(^2\)
[B] 414 in\(^2\)
[C] 368 in\(^2\)
[D] 138 in\(^2\)

Jim was blowing up a new soccer ball. The original radius was 3 in. If he inflated the ball until it was 5 in, how does the new volume compare with the old?

[A] Two times larger.
[B] \(\frac{25}{9}\) times larger.
[C] Eight times larger.
[D] \(\frac{125}{27}\) times larger.

**Dimensional Changes Assignment**

1. A pentagon has a perimeter of 20 ft. If every side is halved, find the new perimeter.

2. The perimeter of a triangle is 12 in. After a dilation the perimeter is 16 in. What is the scale factor of the dilation?

3. Describe the effect on the area of a circle when the radius is tripled.

4. Tony and Edwin each built a rectangular garden. Tony’s garden is twice as long and twice as wide as Edwin’s garden. If the area of Edwin’s garden is 600 square feet, what is the area of Tony’s garden?

5. The ratio of two similar polygons is 3:5. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?
6. The scale of two similar quadrilaterals is 1:4. The perimeter of the smaller quadrilateral is 80 centimeters. What is the perimeter of the larger quadrilateral?

7. If the dimensions of a rectangle with a perimeter of 24 inches are tripled, what will be the perimeter in inches of the new rectangle?

8. If the volume of a cube is increased by a factor of 8, what is the change in the length of the sides of the cube?

9. Describe the effect on the area of a circle when the radius is doubled.
   - F The area is reduced by \( \frac{1}{2} \).
   - G The area remains constant.
   - H The area is doubled.
   - J The area is increased four times.

10. The scale factor of two similar polygons is 2:3. The perimeter of the larger polygon is 150 centimeters. What is the perimeter of the smaller polygon?
   - A 100 cm
   - B 75 cm
   - C 50 cm
   - D 150 cm

2003 Exit

11. A rectangular solid has a volume of 24 cubic decimeters. If the length, width, and height are all changed to \( \frac{1}{2} \) their original size, what will be the new volume of the rectangular solid?
   - A 3 dm\(^3\)
   - B 4 dm\(^3\)
   - C 6 dm\(^3\)
   - D 12 dm\(^3\)

2006 Exit Modified

12. Campbell’s manufactures a cylindrical soup can that has a diameter of 6 inches and a volume of 226 in\(^3\). If the stays height the same and the diameter is doubled, what will happen to the can’s volume?
   - A It will remain the same.
   - B It will double.
   - C It will triple.
   - D It will quadruple.
1. P = _____
   h = _____
   B = _____

2. P = _____
   h = _____
   B = _____

3. LA = ________________
   TA = ________________
   V = ________________

4. P = _____
   h = _____
   B = _____

5. LA = ________________
   TA = ________________
   V = ________________

6. Name the cross section
   ________________

Circumference

P = ______

h = ______

B = ______
7. Find the length of the diagonal ___________.

8. Find the number of vertices, edges and faces. Use Euler’s Formula to verify.

\[ F \quad E \quad V \quad \text{Euler’s} \quad \]

Describe the three-dimensional figure that can be made from the given net.

9.________________________

10._____________________

Find the distance between the 2 points and then find the midpoint. A(8, 1, 5) and B (4, 3, 9)

d = ____________________  Midpoint ____________________

11. Draw all 6 orthographic views

   Front           Back

   Top              Bottom

   Left             Right
12. The dimensions of a rectangular prism are multiplied by a scale factor of \( \frac{3}{4} \). What will be the effect on the surface area and volume?

13. The volume of a square pyramid is 27 times greater than a similar pyramid. What were the dimensions multiplied by?

14. A brick patio measures 10 ft by 12 ft by 4 in. Find the volume of the bricks. If the density of brick is 130 pounds per cubic foot, what is the weight of the patio in pounds?

15. Explain to your friend, how to determine if something is a counter example of a statement.

16. What is always logically equivalent to the conditional statement?

17. How do you determine if two 3-dimensional shapes are similar?

***LOOK OVER ALL PREVIOUS ASSIGNMENTS FOR A COMPLETE REVIEW***