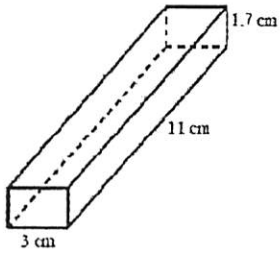
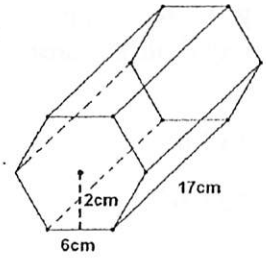
Volume, Lateral Area, and Surface Area of Prisms

Find the volume of each prism.

1.

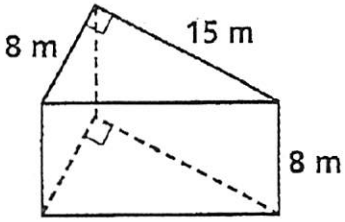


2.

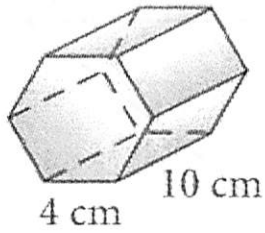


Find the lateral area of each prism.

3.

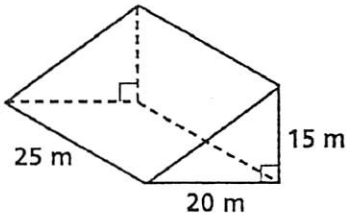


4.



Find the surface area of each prism.

5.



6.

29 cm

6.5 cm

19 cm

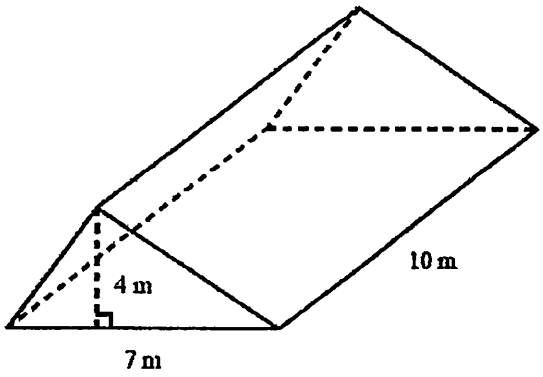
For you to Practice

1. **Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?**

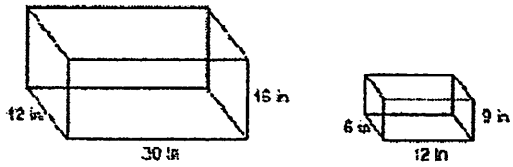
   [A] 27.0 ft^2 **[B]** 13.5 ft^2

   [C] 9.0 ft^2 **[D]** 22.5 ft^2

2. Find the volume of the triangular prism.



3. The diagram below represents Joe's two fish tanks.



   Joe's larger tank is completely filled with water. He takes water from it to completely fill the small tank. Determine how many cubic inches of water will remain in the larger tank.

4. A rectangular prism has a length of 21cm and width of 27cm. If the volume of a rectangular prism is 17577cm^3, what is the height of the prism?

Volume, LA, and SA of Prisms Practice Name _____

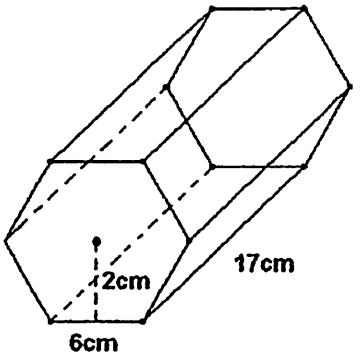
1. A rectangular prism has a volume of $3x^2 + 18x + 24$. Its base has a length of $x + 2$ and a width of 3. Which expression represents the height of the prism?

1) $x + 4$ 2) $x + 2$ 3) 3 4) $x^2 + 6x + 8$

2. If the length of a rectangular prism is doubled, its width is tripled, and its height remains the same, what is the volume of the new rectangular prism?

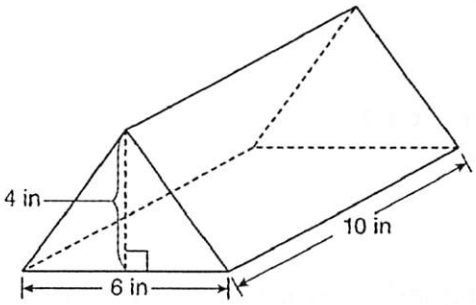
1) double the original volume
2) triple the original volume
3) six times the original volume
4) nine times the original volume

3. Find the surface area of the hexagonal prism.



4. The volume of a rectangular pool is 1,080 cubic meters. Its length, width, and depth are in the ratio 10:4:1. Find the number of meters in each of the three dimensions of the pool.

5. A packing carton in the shape of a triangular prism is shown in the diagram below. What is the volume, in cubic inches, of this carton?



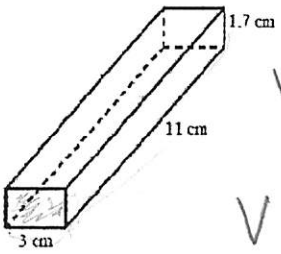
6. The Parkside Packing Company needs a rectangular shipping box. The box must have a length of 11 inches and a width of 8 inches. Find, to the *nearest tenth of an inch*, the minimum height of the box such that the volume is *at least* 800 cubic inches.

7. A typical box for a videocassette tape is open on one side as pictured below. How many square inches of cardboard are in a typical box for a videocassette tape?

Volume, Lateral Area, and Surface Area of Prisms

Find the volume of each prism.

1.

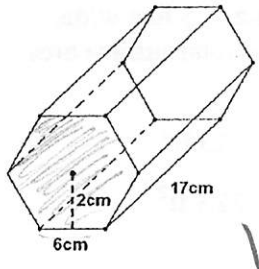


$V = B \cdot H$

$V = (3)(11)(1.7)$

$V = 56.1\ cm^3$

2.



$A_{Hex} = \frac{1}{2}(2)(36)$

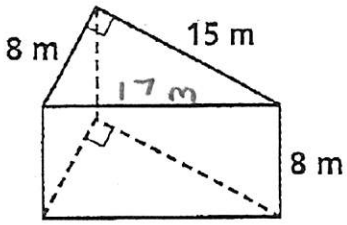
$= 36\ cm^2$

$V = (36\ cm^2)(17\ cm)$

$V = 612\ cm^3$

Find the lateral area of each prism.

3.

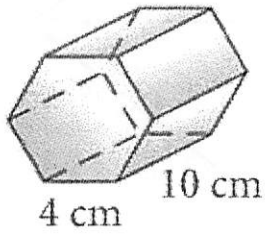


$LA = P \cdot H$

$LA = (40\ m)(8\ m)$

$LA = 320\ m^2$

4.



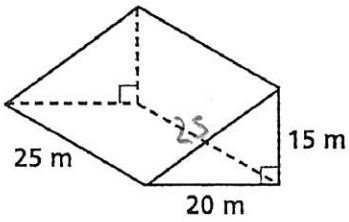
$LA = P \cdot H$

$LA = 24 \cdot 10$

$LA = 240\ cm^2$

Find the surface area of each prism.

5.



$SA = P \cdot H + 2B$

$SA = (20 + 15 + 25)(25) + 2\left(\frac{1}{2}(15)(20)\right)$

$SA = 1800\ m^2$

6.

$SA = (19 + 6.5 + 19 + 6.5)(29) + 2(19 \cdot 6.5)$

$SA = 1726\ cm^2$

For you to Practice

1. **Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?**

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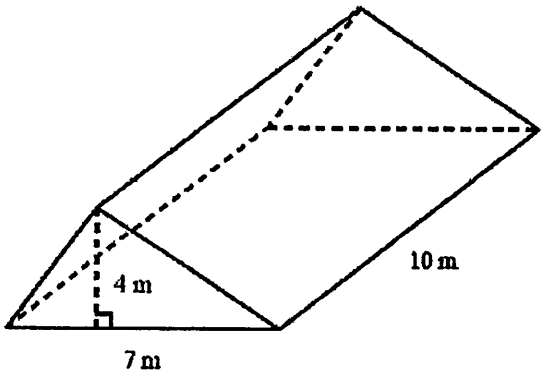
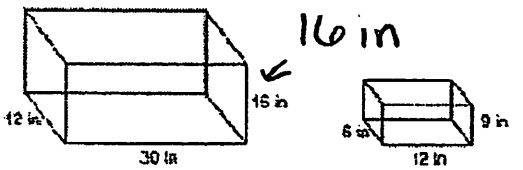


140 m^2

3. The diagram below represents Joe's two fish tanks.



5112 in^3

Joe's larger tank is completely filled with water. He takes water from it to completely fill the small tank. Determine how many cubic inches of water will remain in the larger tank.

4. A rectangular prism has a length of 21cm and width of 27cm. If the volume of a rectangular prism is 17577cm^3, what is the height of the prism?

$h = 31$ cm

Volume, LA, and SA of Prisms Practice Name _____

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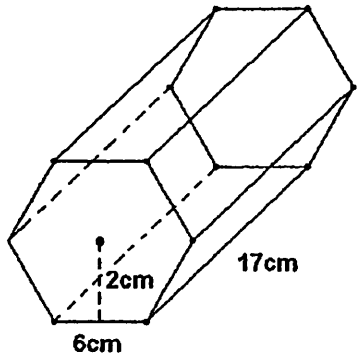


684 cm^2

4. The volume of a rectangular pool is 1,080 cubic meters. Its length, width, and depth are in the ratio 10:4:1. Find the number of meters in each of the three dimensions of the pool.

$(10x)(4x)(1x) = 1080$

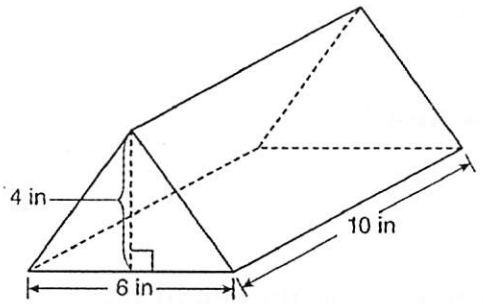
$40x^3 = 1080$

$x^3 = 27$

$x = 3$

Length	30 m
Width	12 m
Height	3 m

5. A packing carton in the shape of a triangular prism is shown in the diagram below. What is the volume, in cubic inches, of this carton?

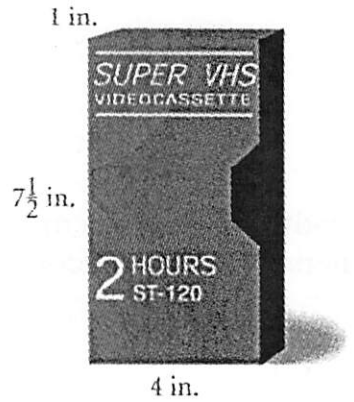


120 in^3

6. The Parkside Packing Company needs a rectangular shipping box. The box must have a length of 11 inches and a width of 8 inches. Find, to the *nearest tenth of an inch*, the minimum height of the box such that the volume is *at least* 800 cubic inches.

$h \geq 9.1 \text{ in}$

7. A typical box for a videocassette tape is open on one side as pictured below. How many square inches of cardboard are in a typical box for a videocassette tape?



75.5 in^2