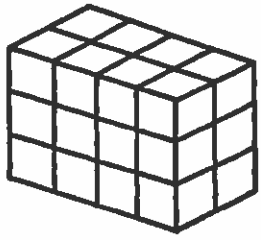
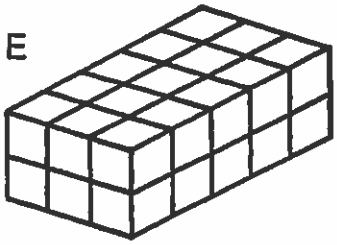
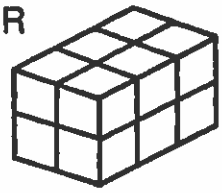
For Monday

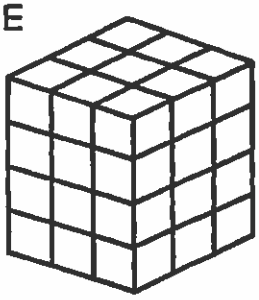
Mystery: What happened when a 6-year old, a 5-year old, a 4-year old, a 3-year old, and a 2-year old joined to form a basketball team?

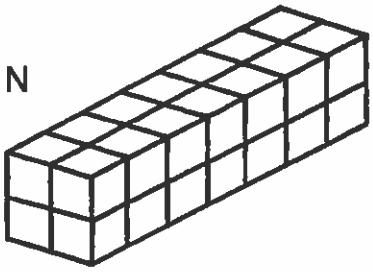
Find the volume of each prism in cubic units. Write the letter of the exercise in the box containing the answer.

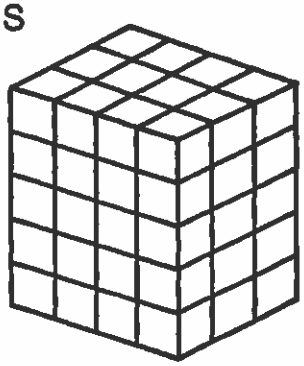
H 

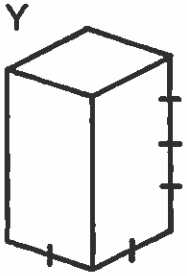
E 

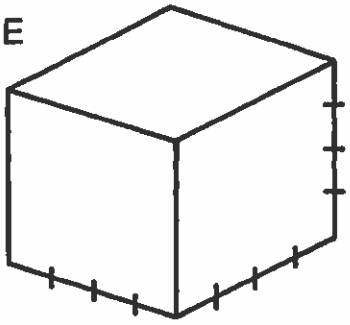
R 

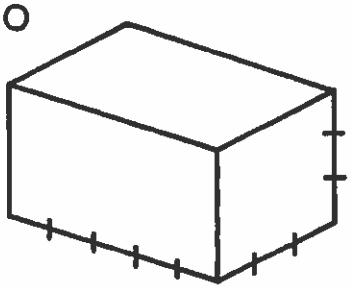
E 

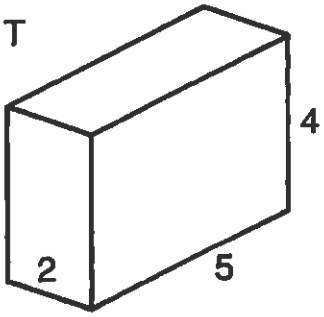
N 

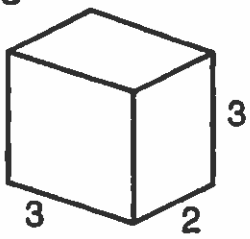
S 

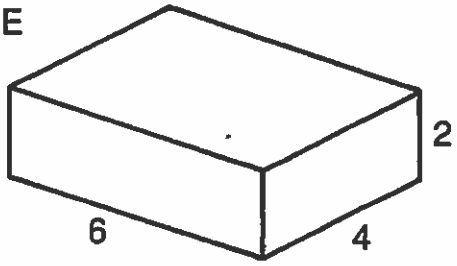
Y 

E 

O 

T 

S 

E 

(L) $\ell = 3; w = 7; h = 2$

(W) $\ell = 4; w = 3; h = 6$

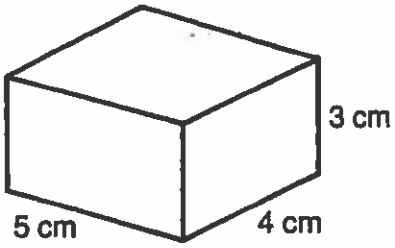
(E) $\ell = 5; w = 5; h = 3$

	40	24	36	16	32	72	64	12	48	80	45	28	75	42	30	60	18

What Happened to Zelda After She Swallowed Two Nickels, Three Dimes, and a Quarter?

Give the SURFACE AREA of each prism. Find your answer in the answer columns and notice the two letters next to it. Write these letters in the spaces over the exercise number at the bottom of the page.

(1)



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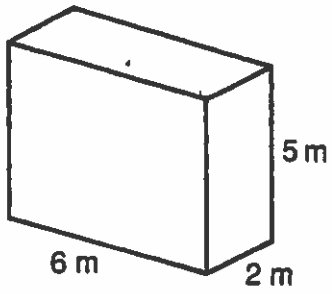

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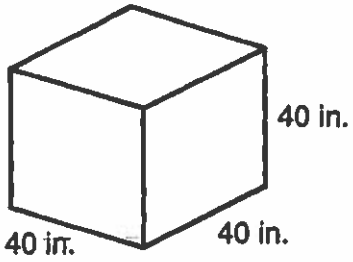
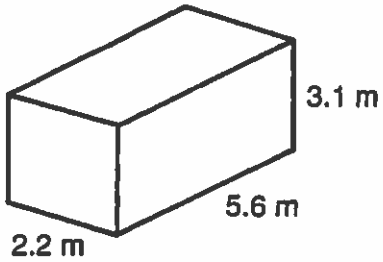
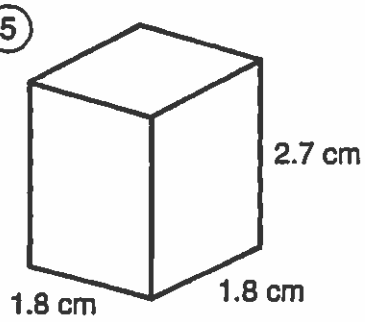


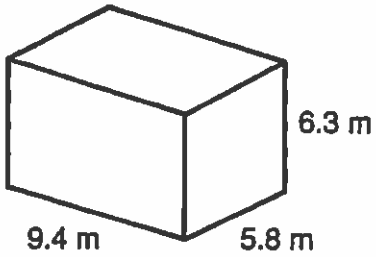
(4)



(5)



(6)



(7) A rectangular storage box is 12 in. wide, 15 in. long, and 9 in. high. How many square inches of colored paper are needed to cover the surface of the box?

(8) A teacher made a pair of foam dice to use in math games. Each cube measured 10 in. on a side. How many square inches of fabric were needed to cover the two cubes?

Answers

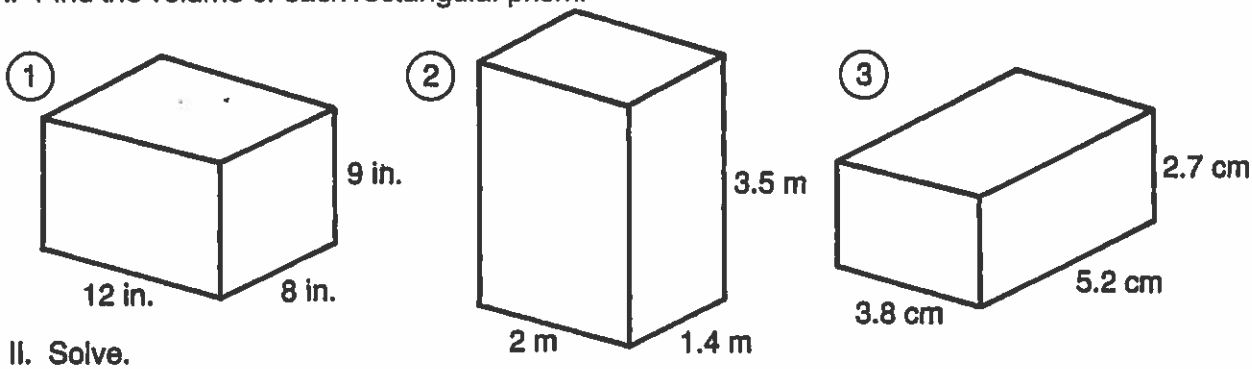
(TH) 73 m^2			(OB) 8,560 $in.^2$
(AL) 23.12 cm^2	(AS) 94 cm^2	(ER) 318.26 m^2	(NO) 25.92 cm^2
(EW) 846 $in.^2$	(IT) 86 m^2	(AN) 9,600 $in.^2$	(PL) 1,050 $in.^2$
(ER) 104 m^2	(CH) 1,200 $in.^2$	(GE) 300.56 m^2	(TR) 85 cm^2

4	2	7	1	5	8	3	6

What Movie Is about a Kid Who Ran Away from Home with His Bicycle?

Find each answer in the answer columns and notice the two letters next to it. Write these letters in the spaces over the exercise number at the bottom of the page.

I. Find the volume of each rectangular prism.



II. Solve.

(4) A classroom.is 26 ft wide, 32 ft long, and 9 ft high. What is the volume of the room in cubic feet?

(5) A swimming pool is 20.6 m long, 8.5 m wide, and has an average water depth of 1.7 m. Find the volume of water needed to fill the pool.

(6) If all the gold that has been produced in the last 500 years could be melted to form a single cube, each side would measure about 16 m. How many cubic meters of gold is this?

(7) A refrigerator is 3 ft wide, 2.5 ft deep, and 6 ft high. The walls and other parts of the refrigerator take up 20 ft^3. How many cubic feet are left for food?

(8) Krispy Kritters Cereal used to come in a box with a volume of 2,850 cm^3. However, The Krispy Kritters Co. designed a new larger box 22.5 cm wide, 6.2 cm deep, and 30 cm high. How many more cubic centimeters will the new box hold than the old box?

(9) An aquarium weighs 22.5 lb when empty. The aquarium is 30 in. long, 14 in. wide, and is filled with water to a depth of 18 in. Water weighs 0.036 pound per cubic inch. How much does the aquarium weigh when it is full of water?

ANSWERS

(RU) 985 cm^3	(ST) 6,118 ft^3	(WI) 4,096 m^3	(LA) 314.56 lb	(TH) 864 $in.^3$
(NN) 297.67 m^3	(CH) 53.352 cm^3	(IN) 23.5 ft^3	(GO) 1,335 cm^3	(LE) 311.27 m^3
(WI) 294.66 lb	(ES) 25 ft^3	(NE) 9.8 m^3	(PA) 3,986 m^3	(TH) 7,488 ft^3

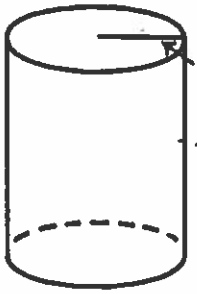
8	2	6	1	4	7	3	9	5

For Tuesday

Why Did Humpty Dumpty Have a Great Fall?

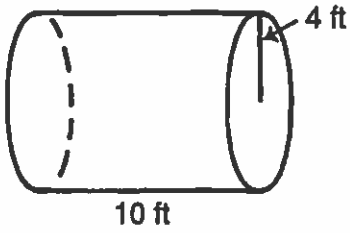
Do each exercise and find your answer in the answer column. Write the letter of the answer in each box containing the number of the exercise. Use 3.14 for π.

Find the lateral area and the total surface area of each cylinder.



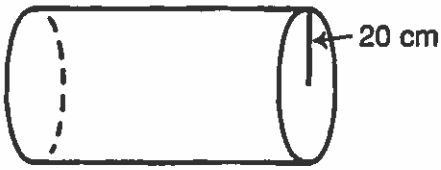
(1) lateral area: _____

(2) total area: _____



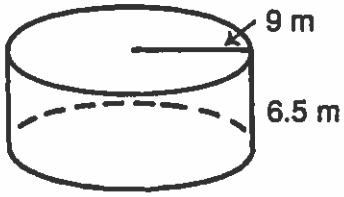
(3) lateral area: _____

(4) total area: _____



(5) lateral area: _____

(6) total area: _____



(7) lateral area: _____

(8) total area: _____

II. Find the total surface area of each cylinder.

(9) $r = 3$ cm, $h = 10$ cm

(10) $r = 8$ in., $h = 8$ in.

(11) $d = 10.8$ m, $h = 2.6$ m

III. Solve.

(12) A can of tomato juice is a cylinder with a radius of 7.5 cm and a height of 20 cm. What is the area of the label around the can?

(13) A steel oil tank is a cylinder with a diameter of 12 ft and a height of 18 ft. How many square feet of steel were needed to make the tank?

(Y) 412.18 ft^2
(R) 803.84 in.^{2}
(H) 792.16 m^2
(T) 251.2 ft2
(M) 904.32 ft^2
(L) 861.6 cm^2
(S) 367.38 m^2
(D) 376.8 cm^2
(P) 244.92 cm^2
(C) 815.18 ft^2
(K) 11,304 cm^2
(B) 942 cm^2
(E) 351.68 ft^2
(N) 775.14 in.^{2}
(U) 533.8 cm^2
(A) 271.296 m^2
(O) 876.06 m^2
(V) 12,412 cm^2
(F) 8,792 cm^2
(I) 311.046 m^2

3	8	13	11	6	4	2	9	5	8	10	11	12	11	1	7	2	13	13	4	10

☆ TRIVIA TEST ☆

1. What Is the Best Way to Paint a Rabbit?

4	7	2	8	8	3	11	5	10	1	11	3	6

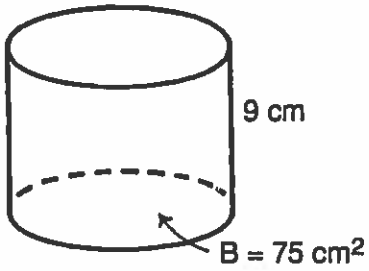
2. What Candy Do Kids Eat on the Playground?

11	5	9	5	10	10	1	7	5	9	5	10

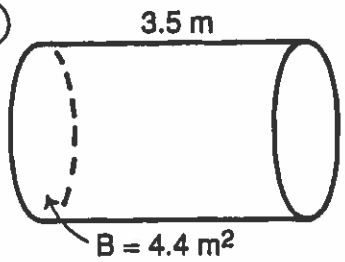
Do each exercise and find your answer in the answer column. Write the letter of the answer above the exercise number each time it appears in the code. Use 3.14 for π.

I. Find the volume of each cylinder.

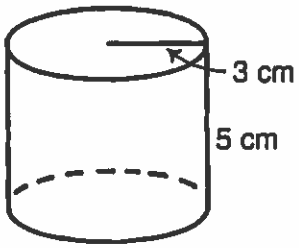
(1)



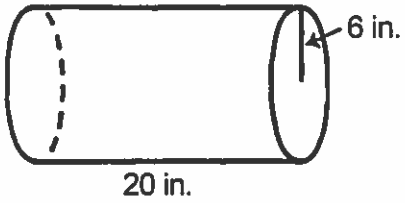
(2)



(3)



(4)



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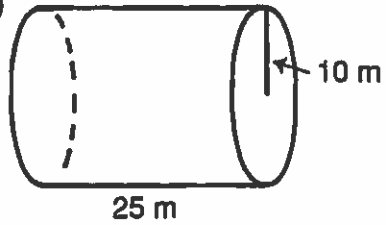
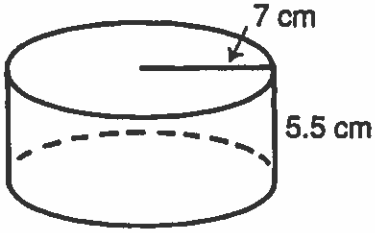


(6)



(7) $r = 8$ in.
$h = 3$ in.

(8) $r = 2.5$ mm
$h = 60$ mm

(9) $d = 10$ m
$h = 7.2$ m

Answers	
M	814.13 cm³
C	565.2 m³
N	381.36 mL
A	141.3 cm³
B	14.8 m³
I	602.88 in.3
P	675 cm³
U	7,490 m³
H	1,177.5 mm³
R	452.16 mL
W	2,260.8 in.³
L	382.8 cm³
T	15.4 m³
Y	846.23 cm³
O	717.8 in.³
S	376.8 cm³
G	1,224.5 mm³
E	7,850 m³
D	614.2 m³

II. Solve.

(10) Shawn is making a candle using a cylindrical mold with a radius of 2 cm and a height of 30 cm. How many cubic centimeters of wax are needed for the candle?

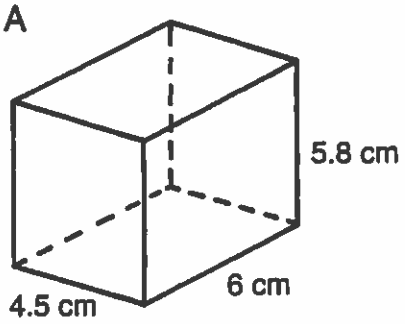
(11) A mug in the shape of a cylinder has a base with a radius of 4 cm. How many milliliters of liquid does it hold if filled to a height of 9 cm?
(Hint: 1 cm3 holds 1 mL.)

For Wednesday

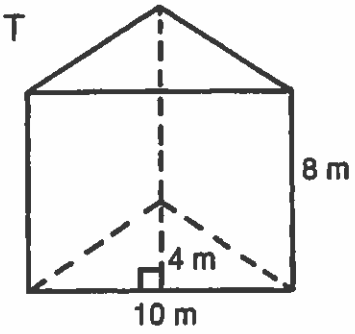
What Is Big, Gray, and Lives in California?

Find the volume of each prism. Write the letter of the exercise in the box above the answer at the bottom of the page.

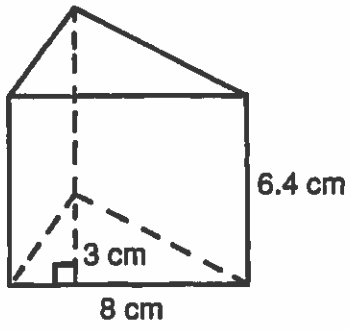
A



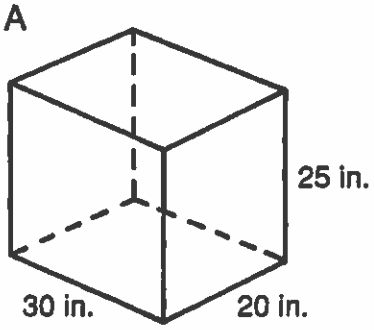
T



N



A



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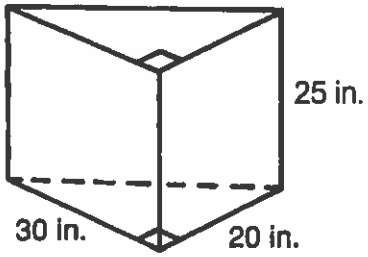
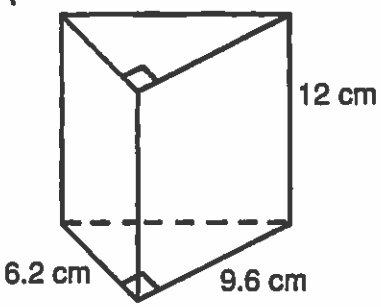


A



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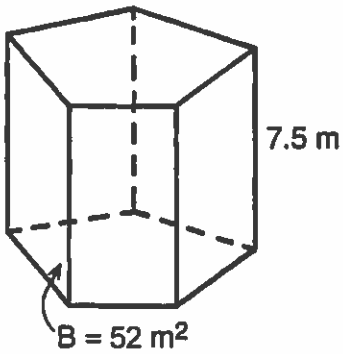
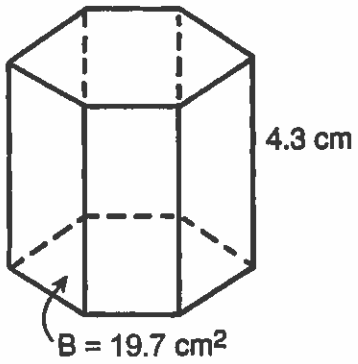
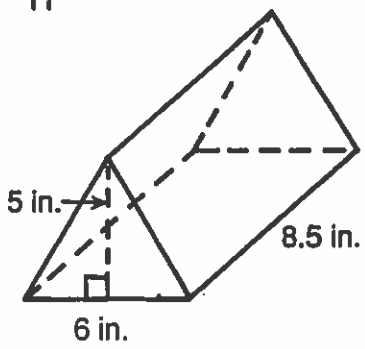


L



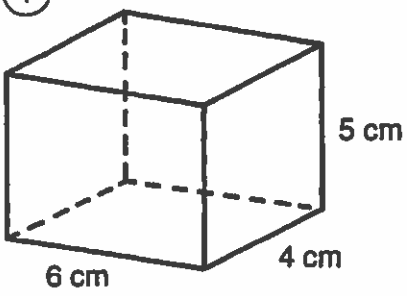
H

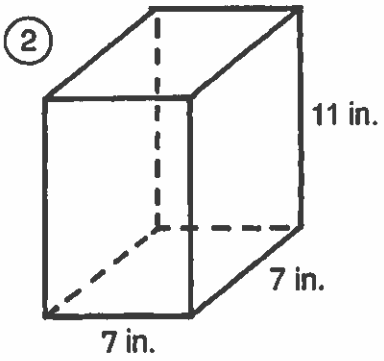


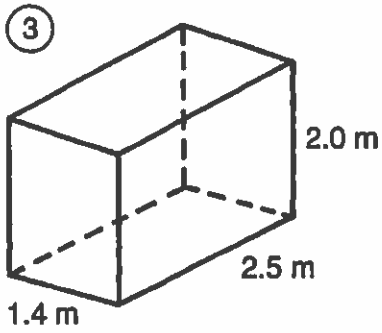
83.8 cm³	357.12 cm³	76.8 cm³	8,800 in.³	92.31 cm³	84.71 cm³	156.6 cm³	114.5 in.³	364.5 m³	7,500 in.³	127.5 in.³	15,000 in.³	390 m³	160 m³	349.22 cm³

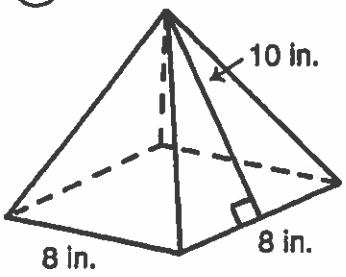
What Is Cold And Comes In Cans?

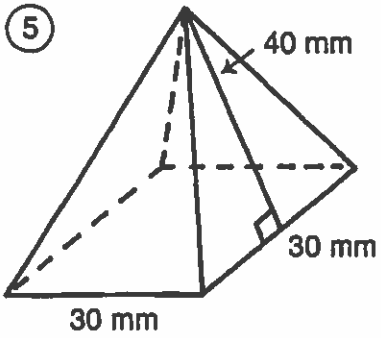
Find the surface area of each figure. Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

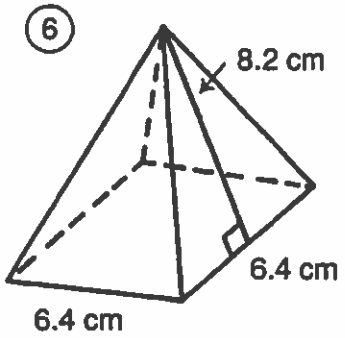
① 

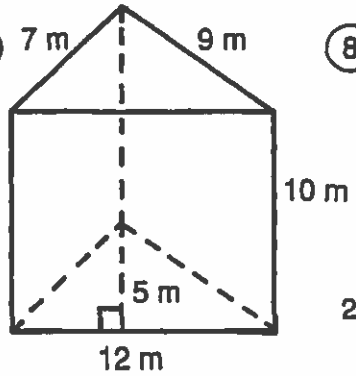
② 

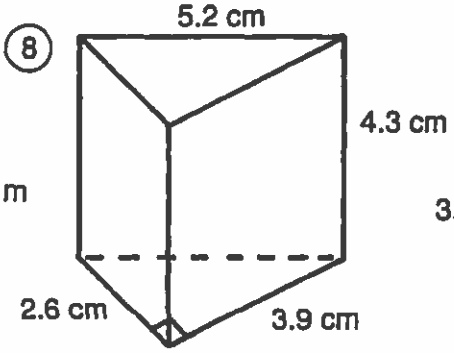
③ 

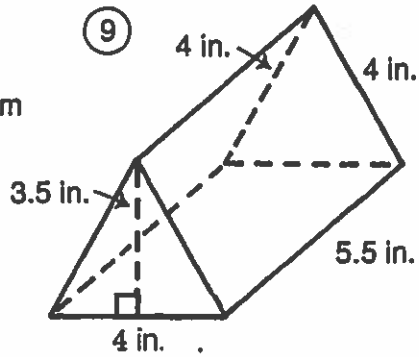
④ 

⑤ 

⑥ 

⑦ 

⑧ 

⑨ 

MU	RI	CH	OW	OP	FO	IL
340 m^2	224 $in.^2$	3,120 mm^2	148 cm^2	80 $in.^2$	3,300 mm^2	118 $in.^2$
IB	AR	CL	EA	CA	NS	KE
81.5 cm^2	22.6 m^2	60.45 cm^2	312 m^2	145.92 cm^2	25.8 m^2	406 $in.^2$

For Thursday

Surface Area and Volume

Day 1 - Surface Area of Prisms

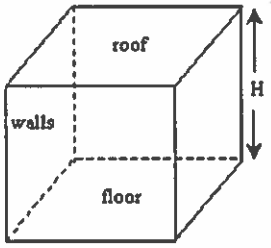
Surface Area = The total area of the surface of a three-dimensional object

(Or think of it as the amount of paper you'll need to wrap the shape.)

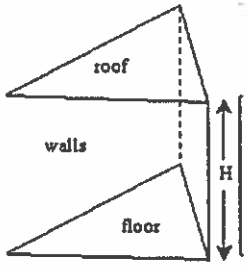
Prism = A solid object that has two identical ends and all flat sides.

We will start with 2 prisms – a rectangular prism and a triangular prism.

Rectangular Prism

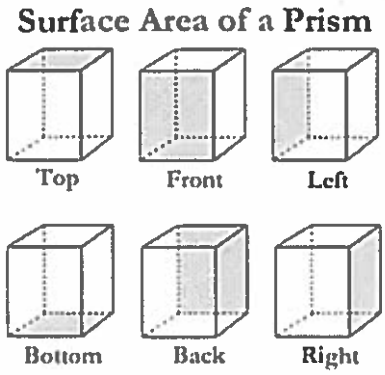


Triangular Prism

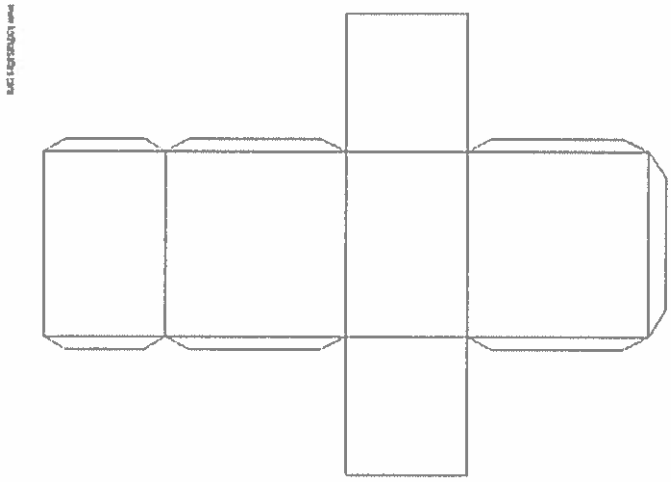


Surface Area (SA) of a Rectangular Prism

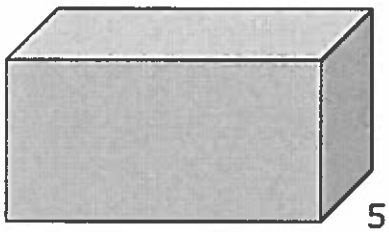
Like dice, there are six sides (or 3 pairs of sides)



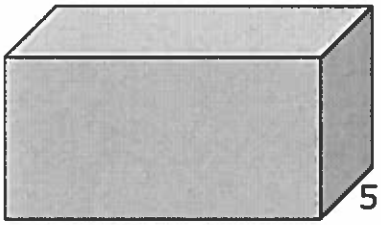
Prism net - unfolded



- Add the area of all 6 sides to find the Surface Area.



$$SA = 2lw + 2lh + 2wh$$



6 - height

5 - width

10 - length

SA = 2lw + 2lh + 2wh

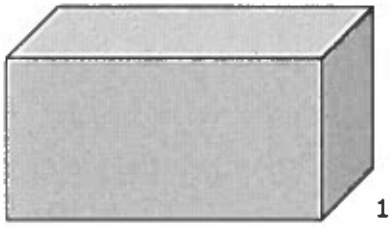
SA = 2 (10 x 5) + 2 (10 x 6) + 2 (5 x 6)

= 2 (50) + 2(60) + 2(30)

= 100 + 120 + 60

= 280 units squared

Practice



12 ft

10 ft

22 ft

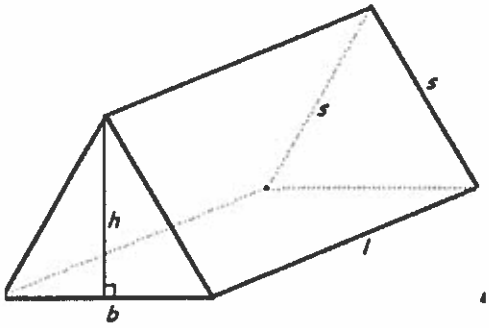
SA = 2lw + 2lh + 2wh
= 2(22 x 10) + 2(22 x 12) + 2(10 x 12)

= 2(220) + 2(264) + 2(120)

= 440 + 528 + 240

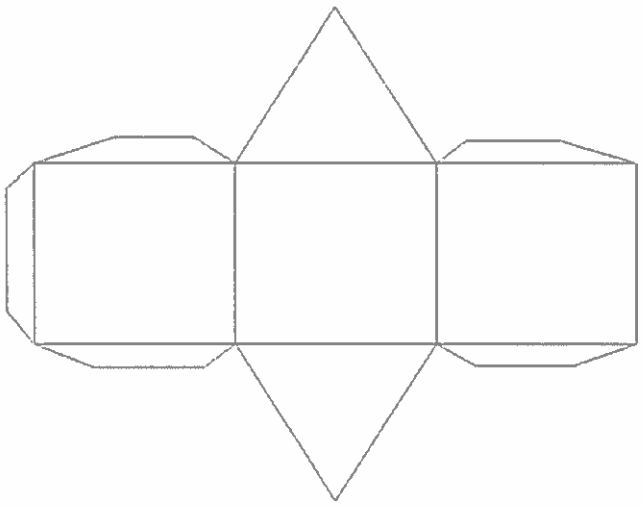
= 1208 ft squared

Surface Area of a Triangular Prism



- 2 bases (triangular)
- 3 sides (rectangular)

Unfolded net of a triangular prism



Triangular prism

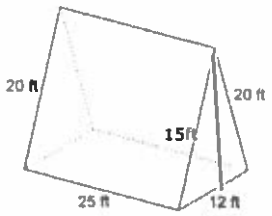
2(area of triangle) + Area of rectangles

Area Triangles = ½ (b x h)

= ½ (12 x 15)

= ½ (180)

= 90



Area Rect. 1 = b x h

= 12 x 25

= 300

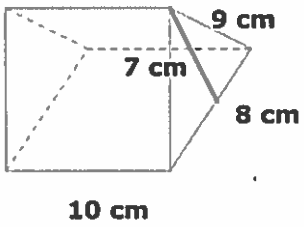
Area Rect. 2 = 25 x 20

= 500

SA = 90 + 90 + 300 + 500 + 500

SA = 1480 ft squared

Practice



Triangles = ½ (b x h)

= ½ (8 x 7)

= ½ (56)

= 28 cm

Rectangle 1 = 10 x 8

= 80 cm

Rectangle 2 = 9 x 10

= 90 cm

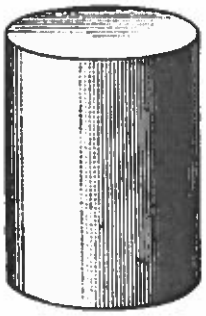
Add them all up

SA = 28 + 28 + 80 + 90 + 90

SA = 316 cm squared

DAY 2

Surface Area of a Cylinder



Review

- Surface area is like the amount of paper you'll need to wrap the shape.
- You have to "take apart" the shape and figure the area of the parts.
- Then add them together for the Surface Area (SA)

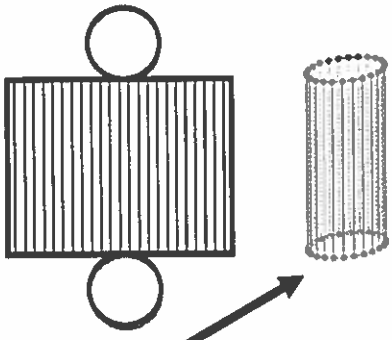
Parts of a cylinder

A cylinder has 2 main parts.

A **rectangle**

and

A **circle** – well, 2 circles really.



Put together they make a cylinder.

The Soup Can

Think of the Cylinder as a soup can.

You have the top and bottom lid (**circles**) and you have the label (a **rectangle** – wrapped around the can).

The lids and the label are related.

The circumference of the lid is the same as the length of the label.

Area of the Circles

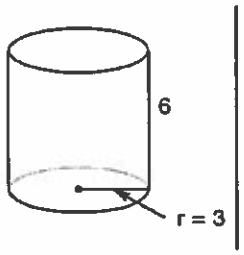
Formula for Area of Circle

$A = \pi r^2$

$= 3.14 \times 3^2$

$= 3.14 \times 9$

$= 28.26$

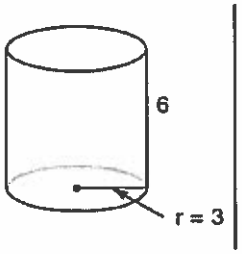


But there are 2 of them so

$28.26 \times 2 = 56.52$ units squared

The Rectangle

This has 2 steps. To find the area we need base and height. Height is given (6) but the base is not as easy.



Notice that the base is the same as the distance around the circle (or the Circumference).

Find Circumference

Formula is

$C = \pi$ x d

= 3.14 x 6 (radius doubled)

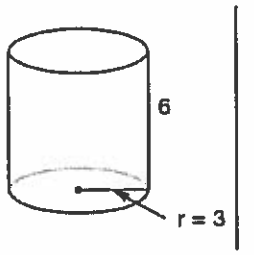
= 18.84

Now use that as your base.

A = b x h

= 18.84 x 6 (the height given)

= 113.04 units squared

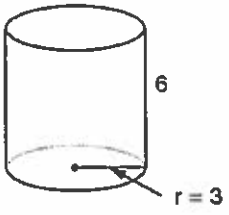


Add them together

Now add the area of the circles and the area of the rectangle together.

56.52 + 113.04 = 169.56 units squared

The total Surface Area!



Formula

$$SA = (\pi d \times h) + 2(\pi r^2)$$

Label — Area of Rectangle

Lids (2) — Area of Circles

Practice

Be sure you know the difference between a radius and a diameter!

$$SA = (\pi d \times h) + 2(\pi r^2)$$

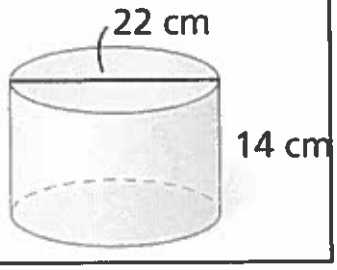
$$= (3.14 \times 22 \times 14) + 2(3.14 \times 11^2)$$

$$= (367.12) + 2(3.14 \times 121)$$

$$= (367.12) + 2(379.94)$$

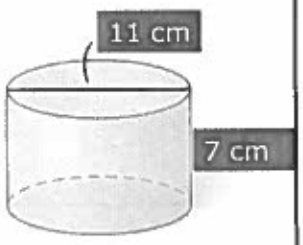
$$= (367.12) + (759.88)$$

$$= \underline{1127 \text{ cm}^2}$$



More Practice!

$SA = (\pi d \times h) + 2(\pi r^2)$
$= (3.14 \times 11 \times 7) + 2(3.14 \times 5.5^2)$
$= (241.78) + 2(3.14 \times 30.25)$
$= (241.78) + 2(3.14 \times 94.99)$
$= (241.78) + 2(298.27)$
$= (241.78) + (596.54)$
$= \underline{838.32\ cm^2}$

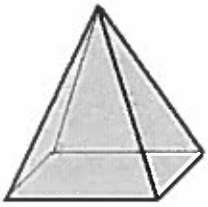


End of Day 2

For Friday

Day 3

Surface Area of a Pyramid



Pyramid Nets

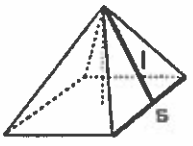
A pyramid has 2 shapes:

One (1) square

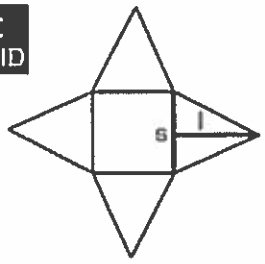
&

Four (4) triangles

TOTAL SURFACE AREA OF A PYRAMID

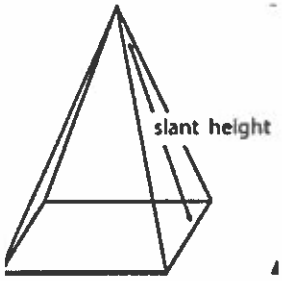


Step One



Step Two

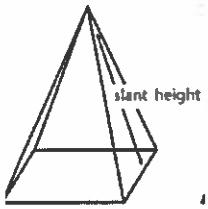
Step Three



Since you know how to find the areas of those shapes and add them.

Or…

you can use a formula…



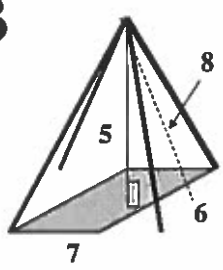
$$SA = \tfrac{1}{2} lp + B$$

Where *l* is the Slant Height and

***p* is the perimeter and**

B is the area of the Base

$SA = \frac{1}{2} lp + B$



Perimeter = (2 x 7) + (2 x 6) = 26

Slant height $l = 8$;

$SA = \frac{1}{2} lp + B$

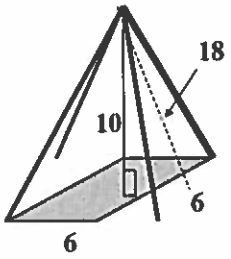
$= \frac{1}{2}$ (8 x 26) + (7 x 6) ***area of the base***

$= \frac{1}{2}$ (208) + (42)

= 104 + 42

= <u>146 units ^{2}</u>

Practice



$SA = \frac{1}{2} lp + B$

$= \frac{1}{2}$ (18 x 24) + (6 x 6)

$= \frac{1}{2}$ (432) + (36)

= 216 + 36

= <u>252 units^2</u>

Slant height = 18

Perimeter = 6x4 = 24

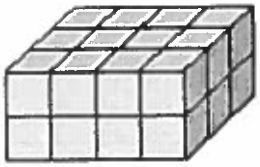
What is the extra information in the diagram?

End Day 3

Day 4
Volume of Prisms and Cylinders

Volume

- The number of cubic units needed to fill the shape.
  Find the volume of this prism by counting how many cubes tall, long, and wide the prism is and then multiplying.
- There are 24 cubes in the prism, so the volume is 24 cubic units.



2 x 3 x 4 = 24

2 – height

3 – width

4 – length

Formula for Prisms

VOLUME OF A PRISM

The volume *V* of a prism is the area of its base *B* times its height *h*.

$$V = Bh$$

Note – the capital letter stands for the AREA of the BASE not the linear measurement.

Try It

$V = Bh$

Find area of the base

$= (8 \times 4) \times 3$

$= (32) \times 3$

Multiply it by the height

$= \underline{96 \text{ ft}^3}$

Practice

$V = Bh$

$= (22 \times 10) \times 12$

$= (220) \times 12$

$= \underline{2640 \text{ cm}^3}$

Cylinders

VOLUME OF A CYLINDER

The volume V of a cylinder is the area of its base, πr^2, times its height h.

$$V = \pi r^2 h$$

Notice that πr^2 is the formula for area of a circle.

Try It

$V = \pi r^2 h$

The radius of the cylinder is 5 m, and the height is 4.2 m

$V = 3.14 \cdot 5^2 \cdot 4.2$ Substitute the values you know.

$V = \underline{329.7}$

Practice

13 cm - radius

7 cm - height

$V = \pi r^2 h$ Start with the formula

$V = 3.14 \times 13^2 \times 7$ Substitute what you know

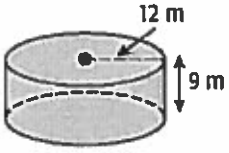
$= 3.14 \times 169 \times 7$ Solve using order of Ops.

$= \underline{3714.62\ cm^3}$

Lesson Quiz

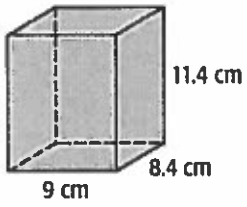
Find the volume of each solid to the nearest tenth. Use 3.14 for π

1.



4,069.4 m^3

2.



861.8 cm^3

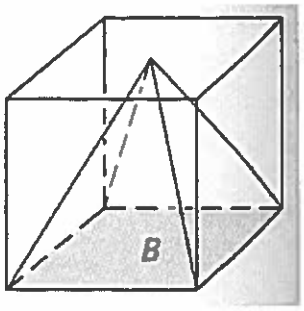
3. triangular prism: base area = 24 ft^2, height = 13 ft

312 ft^3

End of Day 4

Day 5

Volume of Pyramids



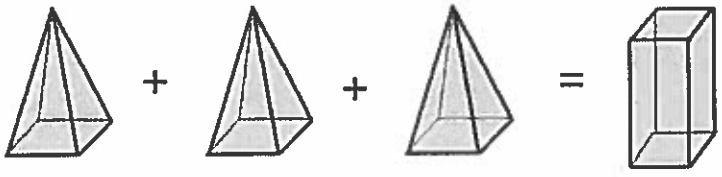
Remember that Volume of a Prism is B x h where b is the area of the base.

You can see that Volume of a pyramid will be less than that of a prism.

How much less? Any guesses?

If you said 2/3 less, you win!

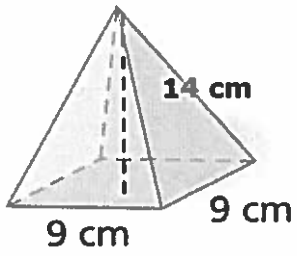
Volume of a Pyramid:
V = (1/3) Area of the Base x height
V = (1/3) Bh
Volume of a Pyramid = 1/3 x Volume of a Prism



Find the volume of the square pyramid with base edge length 9 cm and height 14 cm.

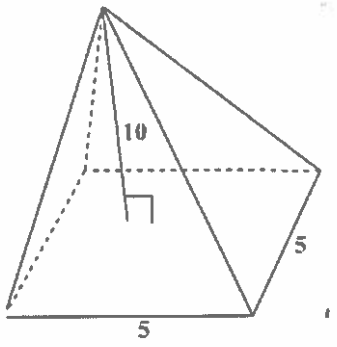
The base is a square with a side length of 9 cm, and the height is 14 cm.

$V = 1/3\ Bh$
$= 1/3\ (9 \times 9)(14)$
$= 1/3\ (81)(14)$
$= 1/3\ (1134)$
$= \underline{378\ cm^3}$



Practice

$V = 1/3\ Bh$
$= 1/3\ (5 \times 5)\ (10)$
$= 1/3\ (25)(10)$
$= 1/3\ 250$
$= \underline{83.33\ units^3}$



Quiz

Find the volume of each figure.

1. a rectangular pyramid with length 25 cm, width 17 cm, and height 21 cm

   2975 cm^3

2. a triangular pyramid with base edge length 12 in. a base altitude of 9 in. and height 10 in.

   360 in^3

End of Day 5