HOMEWORK SOLUTIONS...

Converting English and Metric

1) _741.61_ cubic feet = _21_ cubic meters

2) _13.5_ square yards = _11.29_ square meters

3) _26.31_ square yards = _22_ square meters

4) _7_ feet = _2.13_ meters

5) _17.5_ yards = _16_ meters

6) _14.39_ cubic yards = _11_ cubic meters

7) _1_ feet = _0.3_ meters

8) _10_ inches = _25.4_ centimeters

9) _13.73_ cubic yards = _10.5_ cubic meters

10) _335.49_ cubic feet = _9.5_ cubic meters

11) _13.36_ miles = _21.5_ kilometers

12) _17_ feet = _5.18_ meters

13) _2.99_ square yards = _2.5_ square meters

14) _1.24_ square inches = _8_ square centimeters

15) _0.93_ square inches = _6_ square centimeters

16) _4.5_ yards = _4.11_ meters

17) _2_ square feet = _0.19_ square meters

18) _3_ cubic feet = _0.08_ cubic meters

19) _16.4_ yards = _15_ meters

20) _25_ inches = _63.5_ centimeters

Quiz - Converting Measurements   Math-Aids.Com

4.3 - Surface Area

Pythagorean

$$c^2 = a^2 + b^2$$

hypotenuse

$$x^2 = 377.5^2 + 481^2$$

$$x^2 = \sqrt{377.5^2 + 481^2}$$

373867.25

$\sqrt{(Ans}$

611.4468497

$x =$

$x = 611.4$

Make Connections

The ancient pyramids at Giza, Egypt, were built about 4500 years ago.

This pyramid has a square base with a side length of 755 feet. The original height of the pyramid was 481 feet. Archeologists believe that the pyramid was once covered with a white limestone casing. How could you calculate the area that was once covered with limestone?
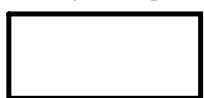
481

755 ft

377.5

611.4

755

× 4
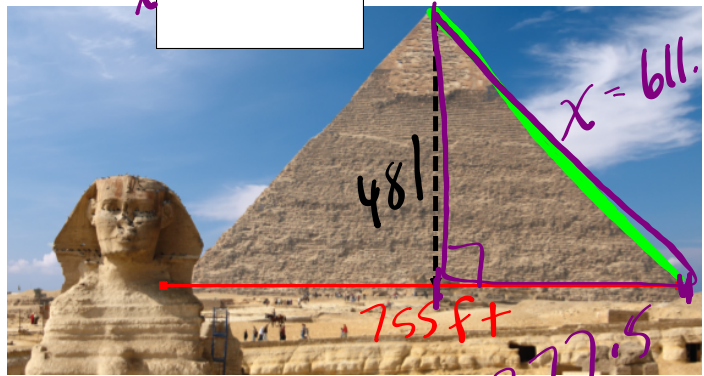
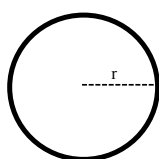$$SA = \boxed{\begin{array}{l} 755*611.4/2*4 \\ \qquad 923214 \end{array}} ft^2$$
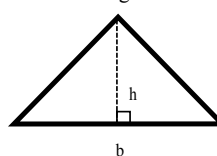
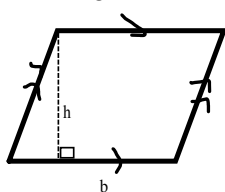# AREA Formulas...

Rectangle or Square
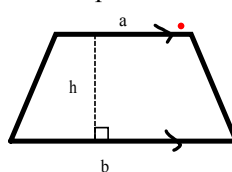
$A = bh$

Circle

$A = \pi\, r^2$

Triangle

$A = \frac{1}{2}\, bh$

Parallelogram or Rhombus

$A = bh$

Trapezoid

$A = \frac{1}{2}\, h(a + b)$

Surface Area

Surface area is the total area of all of the faces
of the object.

Steps need to find Surface area are:

1. Draw all of the faces with dimensions displayed on them.

2. Find the area of each face.

3. Then add up the areas of all of the faces.

The surface area of a prism is equal to the sum of the areas of its faces. For a rectangular prism with length ℓ, width w, and height h, the surface area is $S = 2\ell w + 2\ell h + 2wh$.

EXAMPLE 1 Find the surface area of the rectangular prism.
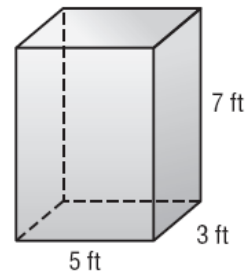
$S = 2\ell w + 2\ell h + 2wh$ Surface area of a prism
$S = 2(3)(5) + 2(3)(7) + 2(5)(7)$ $\ell = 3$, $w = 5$, $h = 7$
$S = 142$ Simplify.

The surface area is 142 square feet.

The surface area S of a cylinder with heig

✓ **SOLUTION**
(Erase to reveal)

7 ft

3 ft

5 ft

$3 \Rightarrow A = 5 \times 3$
$A = 15 \, ft^2$

$7 \Rightarrow A = 5 \times 7$
$= 35 \, ft^2$

$7 \Rightarrow A = 3 \times 7$
$= 21 \, ft^2$

$SA = 2(15) + 2(35) + 2(21)$
$= 142 \, ft^2$

The surface area S of a cylinder with height h and radius r is the area of the two bases plus the area of the curved surface, or $S = 2\pi r^2 + 2\pi rh$.
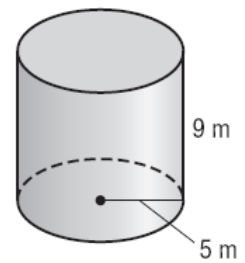
EXAMPLE 2 Find the surface area of the cylinder. Round to the nearest tenth.

$S = 2\pi r^2 + 2\pi rh$ Surface area of a cylinder

$S = 2\pi(5)^2 + 2\pi(5)(9)$ $r = 5, h = 9$

$S \approx 439.8$ Simplify.

The surface area is about 439

$SA =$

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2π*5²+2π*5*9
        439.8229715
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439.3 m²

✓ **SOLUTION**
(Erase to reveal)

EXAMPLE #3:
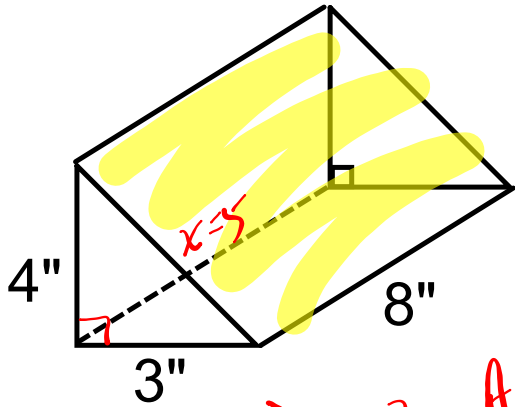
ANOTHER FORMULA...

$$a^2 + b^2 = c^2$$

4"

8"

3"

$x=5$

$$A = \frac{4(3)}{2}$$

$$A = 6 \text{ in}^2$$

$$A = 3(8)$$
$$= 24 \text{ in}^2$$

$$A = 4(8)$$
$$= 32 \text{ in}^2$$

$$A = 5(8)$$
$$= 40 \text{ in}^2$$

$$x^2 = 3^2 + 4^2$$
$$x^2 = 9 + 16$$
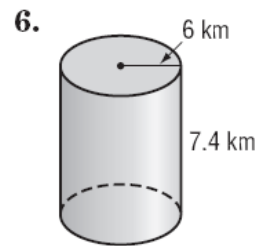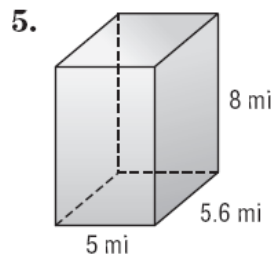$$\sqrt{x^2} = \sqrt{25}$$
$$x = 5$$

$$SA_{total} = 40 + 32 + 24 + 2(6)$$

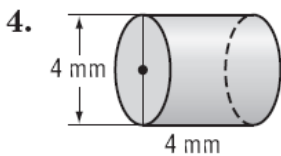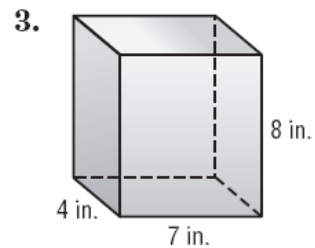$$\boxed{108 \text{ in}^2}$$

EXERCISES

Find the surface area of each solid. Round to the nearest tenth if necessary.

1.

5 yd
2 yd
4 yd

2.

5 cm
3 cm

3.

8 in.
4 in.
7 in.

4.

4 mm
4 mm

5.

8 mi
5.6 mi
5 mi

6.

6 km
7.4 km
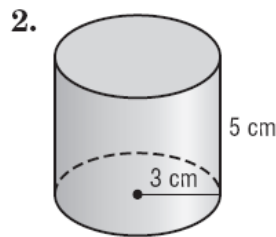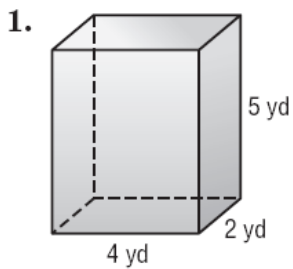
7. rectangular prism: length, 2.3 in.; width, 7 in.; height, 8 in.

8. cylinder: radius, 4 cm; height, 8.2 cm

Solutions...

1) 76 yd² 2) 150.8 cm² 3) 232 in² 4) 75.4 mm²
5) 225.6 mi² 6) 505.2 km² 7) 181 in² 8) 306.6 cm²

Homework...

Worksheet - Surface Area of Prisms and Cylinders.docx

Solutions...

1) 88 ft² 2) 169.6 in² 3) 96 mm²4) 276.5 yd²
5) 361.4 cm² 6) 304 m² 7) 210 mi² 8) 325.8 km²
9) 464.0 ft² 10) 558 m² 11) 378 cm² 12) 1164.9 in²
13) 726 m² 14) 1043.6 cm² 15) 1441.1 mm² 16) 2339.9 in²

Attachments

Worksheet - Surface Area of Prisms and Cylinders.docx