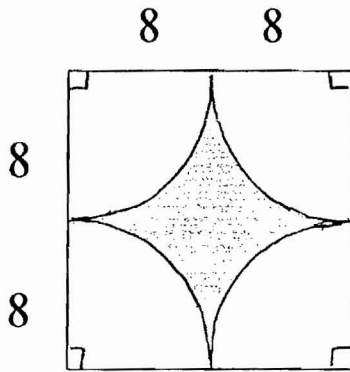


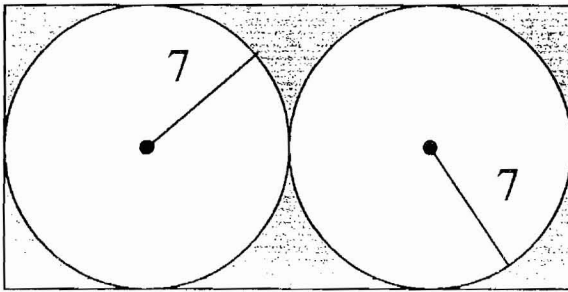
Shaded Area Worksheet

Find the exact shaded area for each:

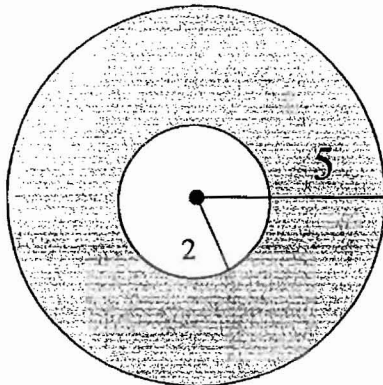
1)



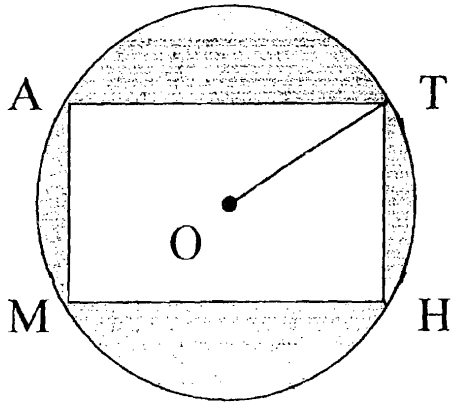
2)



3)

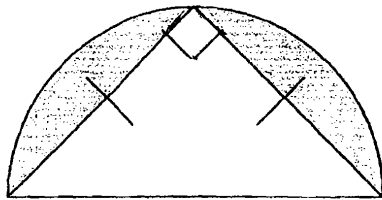


4) In the accompanying diagram, rectangle $MATH$ is inscribed in circle O . The length of radius \overline{OT} is 5 centimeters, and the length of \overline{TH} is 6 centimeters. Find the area of the shaded region to the *nearest hundredth of a square centimeter*.



5) The diameter of the semi-circle below is 8 inches.

a) Find the exact area of the shaded region.



b) Find the area of the shaded region to the *nearest tenth of a square inch*.

- 1) $256 - 64\pi$
- 2) $392 - 98\pi$
- 3) 21π
- 4) 30.54 cm^2
- 5) a) $8\pi - 16 \text{ in}^2$
- b) 9.1 in^2

3-7 Skills Practice

Percent of Change

State whether each percent of change is a percent of increase or a percent of decrease. Then find each percent of change. Round to the nearest whole percent.

1. original: 25
new: 10

2. original: 50
new: 75

3. original: 55
new: 50

4. original: 25
new: 28

5. original: 50
new: 30

6. original: 90
new: 95

7. original: 48
new: 60

8. original: 60
new: 45

Find the total price of each item.

9. dress: \$69.00
tax: 5%

10. binder: \$14.50
tax: 7%

11. hardcover book: \$28.95
tax: 6%

12. groceries: \$47.52
tax: 3%

13. filler paper: \$6.00
tax: 6.5%

14. shoes: \$65.00
tax: 4%

15. basketball: \$17.00
tax: 6%

16. concert tickets: \$48.00
tax: 7.5%

Find the discounted price of each item.

17. backpack: \$56.25
discount: 20%

18. monitor: \$150.00
discount: 50%

19. CD: \$15.99
discount: 20%

20. shirt: \$25.50
discount: 40%

21. sleeping bag: \$125
discount: 25%

22. coffee maker: \$102.00
discount: 45%

8-3 Enrichment

Converting Metric Units

Scientific notation is convenient to use for unit conversions in the metric system.

Example 1 How many kilometers are there in 4,300,000 meters?

Divide the measure by the number of meters (1000) in one kilometer. Express both numbers in scientific notation.

$$\frac{4.3 \times 10^6}{1 \times 10^3} = 4.3 \times 10^3$$

The answer is 4.3 3 103 km.

Example 2 Convert 3700 grams into milligrams.

Multiply by the number of milligrams (1000) in 1 gram.

$$(3.7 \times 10^3)(1 \times 10^3) = 3.7 \times 10^6$$

There are 3.7×10^6 mg in 3700 g.

Complete the following. Express each answer in scientific notation.

- | | |
|-------------------------|----------------------|
| 1. 250,000 m = _____ km | 2. 375 km = _____ m |
| 3. 247 m = _____ cm | 4. 5000 m = _____ mm |
| 5. 0.0004 km = _____ m | 6. 0.01 mm = _____ m |
| 7. 6000 m = _____ mm | 8. 340 cm = _____ km |
| 9. 52,000 mg = _____ g | 10. 420 kL = _____ L |

Solve.

- The planet Mars has a diameter of 6.76×10^3 km. What is the diameter of Mars in meters? Express the answer in both scientific and decimal notation.
- The distance from earth to the sun is 149,590,000 km. Light travels 3.0×10^8 meters per second. How long does it take light from the sun to reach the earth in minutes? Round to the nearest hundredth.
- A light-year is the distance that light travels in one year. (See Exercise 12.) How far is a light year in kilometers? Express your answer in scientific notation. Round to the nearest hundredth.

13-3 Enrichment

Surface Area of Solid Figures

Many solid objects are formed by rectangles and squares. A box is an example.

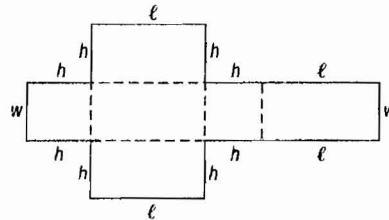
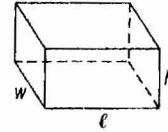
The dimensions of the box shown at the right are represented by letters. The length of the base is ℓ units, its width is w units, and the height of the box is h units.

Suppose the box is cut on the seams so that it can be spread out on a flattened surface as shown at the right. The area of this figure is the surface area of the box. Find a formula for the surface area of the box.

There are 6 rectangles in the figure. The surface area is the sum of the areas of the 6 rectangles.

$$S = hw + h\ell + \ell w + h\ell + hw + \ell w$$

$$S = 2\ell w + 2h\ell + 2hw$$



Find the surface area of a box with the given dimensions.

1. $\ell = 14$ cm, $w = 8$ cm, $h = 2$ cm
2. $\ell = 40$ cm, $w = 30$ cm, $h = 25$ cm
3. $\ell = x$ cm, $w = (x - 3)$ cm, $h = (x + 3)$ cm
4. $\ell = (s + 9)$ cm, $w = (s - 9)$ cm, $h = (s + 9)$ cm
5. The surface area of a box is 142 square centimeters. The length of the base is 2 centimeters longer than its width. The height of the box is 2 centimeters less than the width of the base. Find the dimensions of the box.
6. Write an expression that represents the surface area of the figure shown at the right. Include the surface area of the base.

