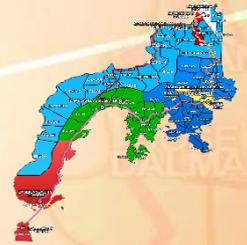




Republic of the Philippines
Department of Education
 Regional Office IX, Zamboanga Peninsula



Zest for Progress
 Zeal of Partnership

Mathematics

Quarter 3 - Module 6:

Area of a Composite Figures



- JANUARY
Makugihon
- FEBRUARY
Makigugmaon
- MARCH
Matinabangon
- APRIL
Matinahuron
- MAY
Mahapsay og Malimpyo
- JUNE
*Maabtik og Masuwad sa
Dhaklong Oras*
- JULY
Maantigo og Maabilidad
- AUGUST
*Maginhuhunon
para sa Uban*
- SEPTEMBER
Madaginoton
- OCTOBER
Matinud-anon
- NOVEMBER
Masaligan
- DECEMBER
Maalampon

Name of Learner: _____

Grade & Section: _____

Name of School: _____



What I Need to Know

The module contains only one lesson:

Lesson 4 – Finding the Area of a Composite Figures Formed and Solving Routine and Non-Routine Problems Involving Area of a Composite Figures Formed

After going through this module, you are expected to:

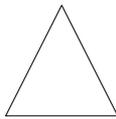
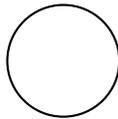
1. Find the area of a composite figures formed by any two or more of the following: triangle, square, rectangle, circle and semi – circle.
2. Solve routine and non-routine problems involving area of composite figures formed by any two or more of the following: triangle, square, rectangle, circle and semi – circle.



What I Know

Directions: Choose the letter of the correct answer then write it on a separate sheet of paper. Don't skip any item unanswered. Take note of the items that you will find hard to answer and find out how to answer them correctly as you go through this module.

1. Choose the correct set of formulas in finding the area of the following figures below:



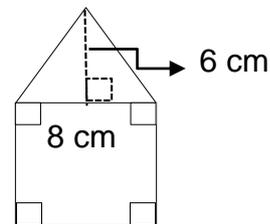
- a. $A = \pi.r.r$, $A = s.s$
- b. $A = l.w$, $A = \pi.r.r$

- c. $A = \pi.r.r$, $A = \frac{1}{2}.b.h$
- d. $A = s.s$, $A = \pi.r.r$

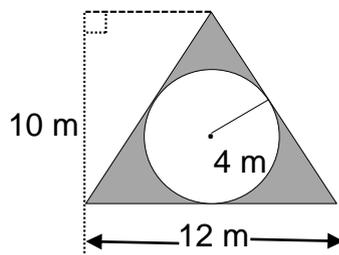
2. What is the area of the shown composite figure?

- a. $A = 88 \text{ cm}^2$
- b. $A = 89 \text{ cm}^2$

- c. $A = 91 \text{ cm}^2$
- d. $A = 95 \text{ cm}^2$



3. Find the area of the shaded region. Use $\pi = 3.14$



- a. $A = 120 \text{ cm}^2$
- b. $A = 13.5 \text{ cm}^2$
- c. $A = 48 \text{ cm}^2$
- d. $A = 9.76 \text{ cm}^2$

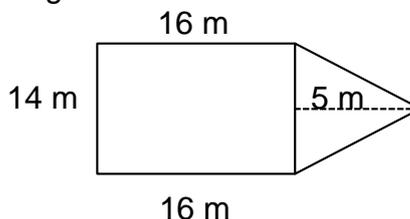
4. How much larger is the pizza made in a circular pan with a 14-inch diameter than a pizza made in square pan sides measuring 14 inches?

- a. $A = 42.14 \text{ in}^2$
- b. $A = 41.14 \text{ in}^2$
- c. $A = 9.76 \text{ in}^2$
- d. $A = 10.76 \text{ in}^2$

5. Father wants to paint the facade of the house. He needs to find out the area so that he would know the amount of paint to buy. The side of the square is 12 meters and the height of the triangle is 13 meters. What is the area of the facade of the house?
- a. $A = 200 m^2$ c. $A = 222 m^2$
 b. $A = 220 m^2$ d. $A = 218 m^2$

6. Find the area of a composite figure shown on the right.

- a. $A = 230 m^2$ c. $A = 220 m^2$
 b. $A = 240 m^2$ d. $A = 259 m^2$



7. A photograph measuring 10 cm by 4 cm is mounted on a rectangular cardboard leaving a margin of 3 cm all around. What area of the cardboard that is NOT covered by the photograph?

- a. $A = 120 cm^2$ c. $A = 130 cm^2$
 b. $A = 125 cm^2$ d. $A = 135 cm^2$

8. A piece of manila paper was cut in the shape of a triangle with a height of 30 centimeters and is taped to another manila paper that was cut in the shape of a square with a base of 22 centimeters. What is the area of the composite figure?

- a. $A = 814 cm^2$ c. $A = 816 cm^2$
 b. $A = 812 cm^2$ d. $A = 820 cm^2$

9. The sixth grade Boy Scouts have a garden in the shape of a rectangle. The length of the garden is 8 meters and the width is 5 meters. The distance between the sides is 1 meter. What is the area of the garden that is actually planted?

- a. $A = 24 m^2$ c. $A = 18 m^2$
 b. $A = 22 m^2$ d. $A = 20 m^2$

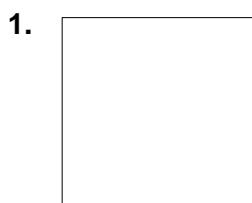
10. A circular cake that has a radius of 10 centimeters is placed inside a square box which side is 20 centimeters. What is the area of the box that is not occupied by the cake? Use $\pi = 3.14$.

- a. $A = 86 cm^2$ c. $A = 87 cm^2$
 b. $A = 84 cm^2$ d. $A = 85 cm^2$

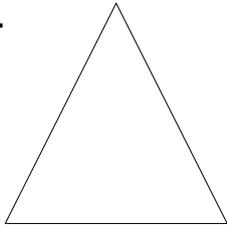


What's In

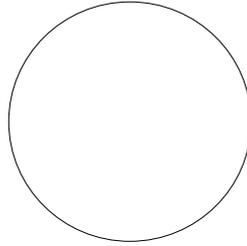
Directions: Identify the plane figures below. Write your answer on a separate sheet.



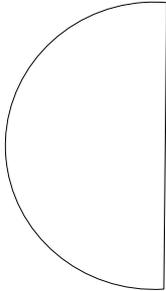
2.



4.



5.



As you have learned in your previous grades or lessons, the area of a plane figure is the amount of flat surface that the figure covers. Area is measured in square units, such as square inches or square centimeters.

Let us review the formula in finding the area of some plane figures.

Area of a Rectangle

$A = l \times w$

Where: l = length, w = width

Area of a Square

$A = s \times s$

Where: s = side

Area of a Triangle

$A = \frac{1}{2} \times b \times h$

Where: b = base, h = height

Area of a Circle

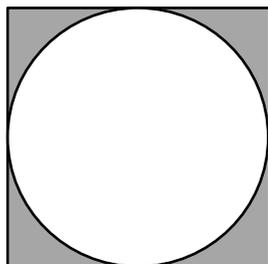
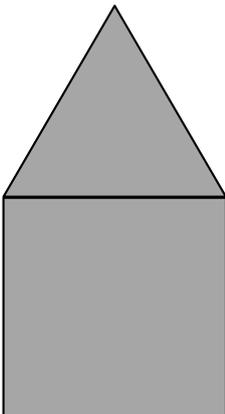
$A = \pi \times r \times r$

Where: π = pi (3.14), r = radius



What's New

Let us study the given figures.



We can see that each figure is composed of two shapes. The first figure has a *triangle* on top and a *square* right below. The second figure has a *circle* inside a *square* and the third figure is composed of a smaller *rectangle* and a *larger rectangle*.

We can divide each figure into more than one of the basic figures. These are examples of **composite figures**.

Previously, you learned how to find the area of a square, triangle, a circle and a rectangle. This time you will find the area of composite figures.

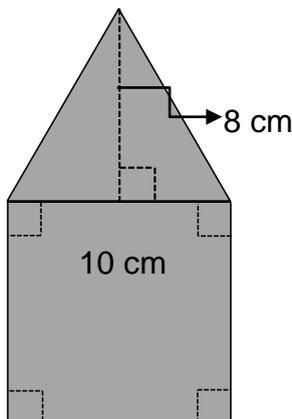


What is it

To solve the area of a composite figure, we will sometimes separate it into figures with areas you know how to find.

Now let us find the area of the first figure given with corresponding measurements.

Example 1



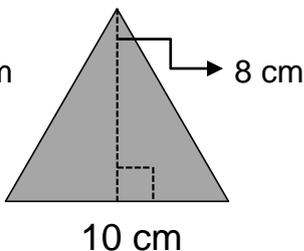
Let us separate the figure into two then find the area of each figure.

Solution:

Area of the triangle

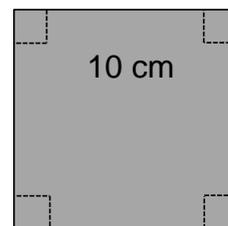
$$\begin{aligned}
 A &= \frac{1}{2} \times b \times h \\
 &= \frac{1}{2} \times 10 \text{ cm} \times 8 \text{ cm} \\
 &= \frac{1}{2} \times 80 \text{ cm}^2 \\
 &= \frac{80 \text{ cm}^2}{2}
 \end{aligned}$$

$$A = 40 \text{ cm}^2$$

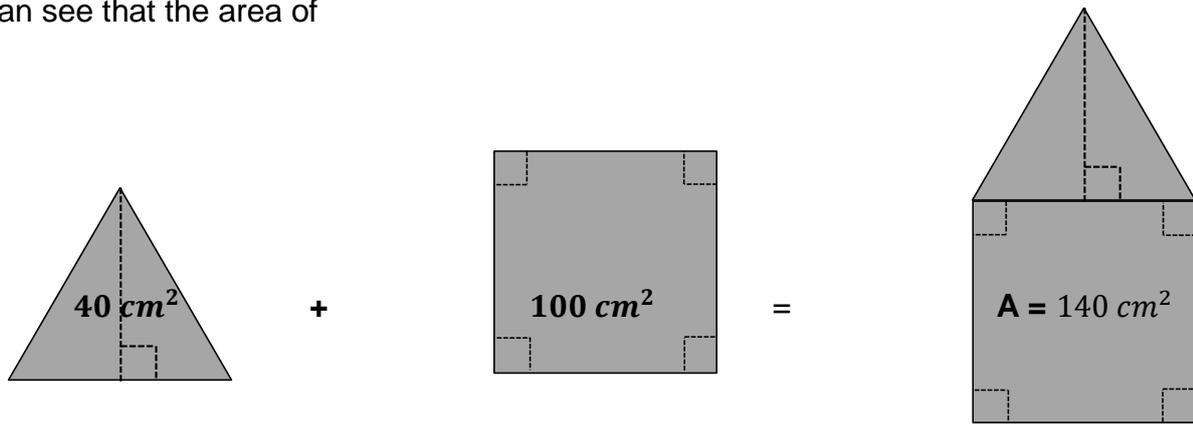


Area of the square

$$\begin{aligned}
 A &= s \times s \\
 &= 10 \text{ cm} \times 10 \text{ cm} \\
 A &= 100 \text{ cm}^2
 \end{aligned}$$



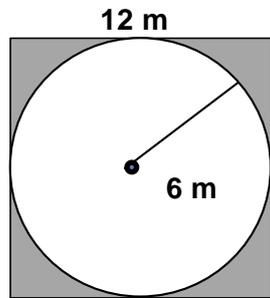
We can see that the area of



Therefore, the area of the composite figure is 140 cm^2 .

Example 2

How much larger is the area of the square having a 12-meter side than the area of a circle having a radius of 6 meters. Use $\pi = 3.14$.

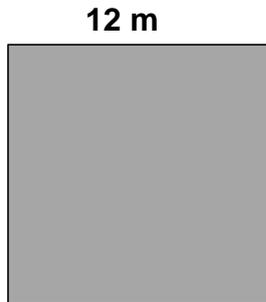


Area of the square:

$$A = s \times s$$

$$= 12 \text{ m} \times 12 \text{ m}$$

$$A = 144 \text{ m}^2$$



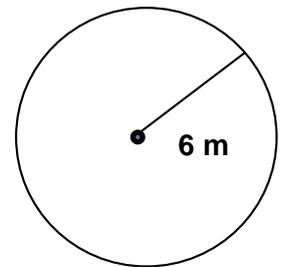
Area of the circle:

$$A = \pi \cdot r \cdot r$$

$$= (3.14) (6 \text{ m}) (6 \text{ m})$$

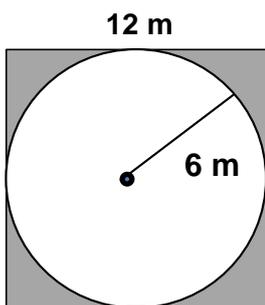
$$= (3.14) \times 36 \text{ m}^2$$

$$A = 113.04 \text{ m}^2$$



To find how much larger the area of the square than that of the circle, we will subtract the area of the circle from the area of the square.

Look at the illustration below:



$$A_{\text{(larger)}} = A_{\text{(square)}} - A_{\text{(circle)}}$$

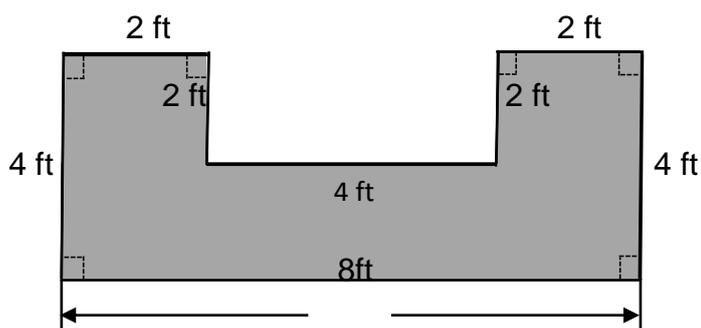
$$= 144 \text{ m}^2 - 113.04 \text{ m}^2$$

$$= 30.96 \text{ m}^2$$

Therefore, the area of the square is 30.96 m^2 larger than the area of the circle.

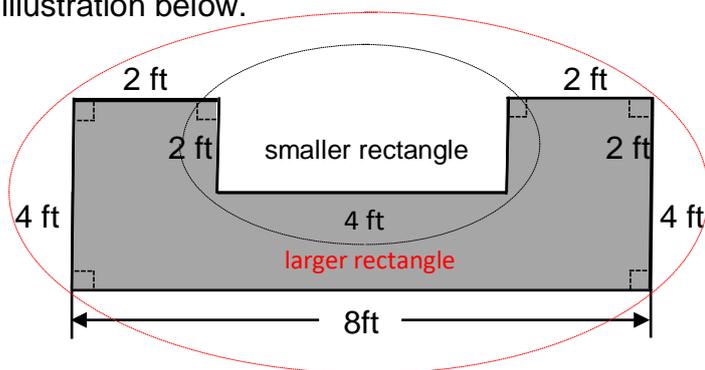
Example 3

Find the area of the shaded region below.



We can identify two rectangles from the figure, one that measures 4 feet by 2 feet (the smaller) and the 8 feet by 4 feet (the larger).

Look at the illustration below.



Solution:

Area of the smaller rectangle

$$\begin{aligned} A &= l \times w \\ &= 4 \text{ ft} \times 2 \text{ ft} \\ A &= 8 \text{ ft}^2 \end{aligned}$$

Area of the larger rectangle

$$\begin{aligned} A &= l \times w \\ &= 8 \text{ ft} \times 4 \text{ ft} \\ A &= 32 \text{ ft}^2 \end{aligned}$$

Area of the shaded region

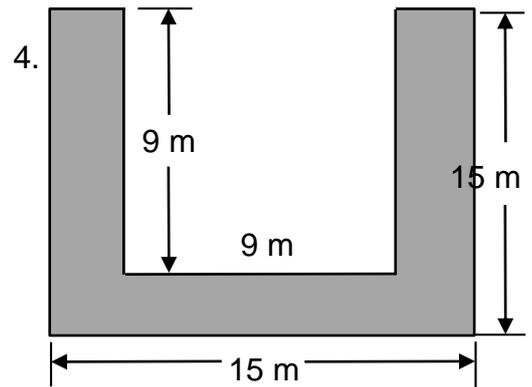
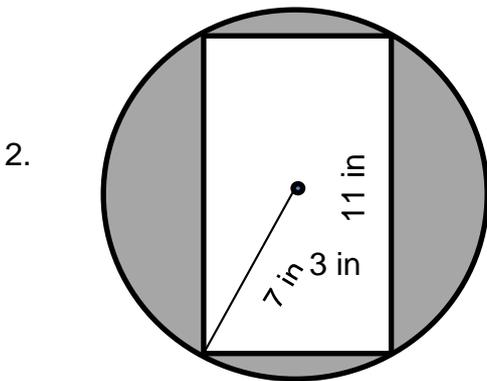
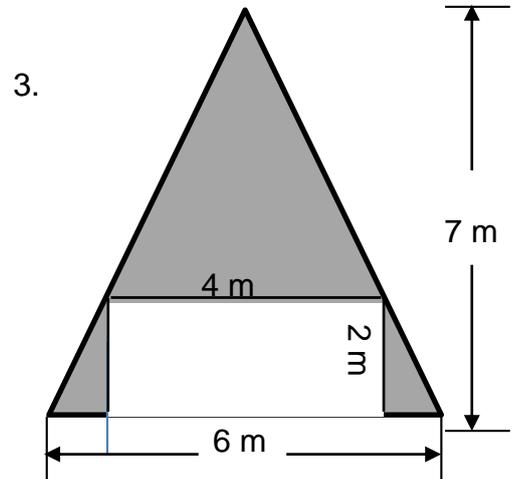
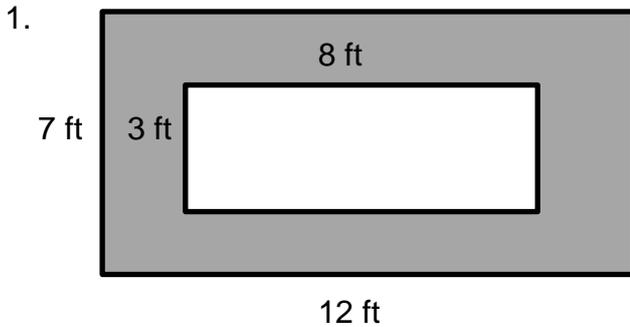
$$\begin{aligned} \text{(shaded)} &= \text{(larger)} - \text{(smaller)} \\ &= 32 \text{ ft}^2 - 8 \text{ ft}^2 \\ &= 24 \text{ ft}^2 \end{aligned}$$

Therefore, the area of the shaded region is 16 ft^2 .



What's More

Directions: Find the area of each shaded region. Assume that all angles that appear to be right angles are right angles. Do this on a separate sheet of paper.



What I Have Learned

Directions: Complete each statement below by choosing your answer inside the box. Do this on a sheet of paper.

Composite figure	add	$A = s \times s$
Subtract	area	$A = \frac{1}{2} \times b \times h$
Divide	square units	$A = \pi \times r \times r$

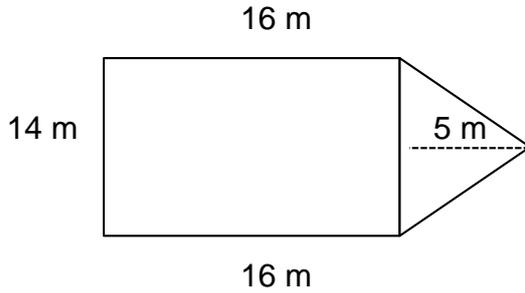
- _____ is a figure that can be divided into more than one of the basic figure.
- The _____ of a figure is the amount of flat surface that the figure covers.
- The formula in solving the area of a triangle is _____.
- Area is measured in _____.
- To solve the total area of a composite figure, we _____ the area of each figure.



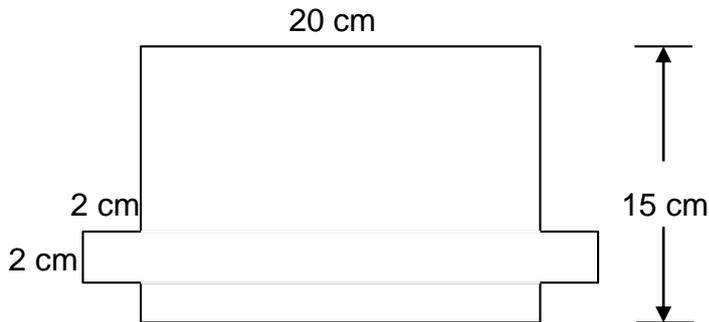
What I Can Do

Directions: Find the area of the following composite figures. Do this on a separate sheet of paper.

1.

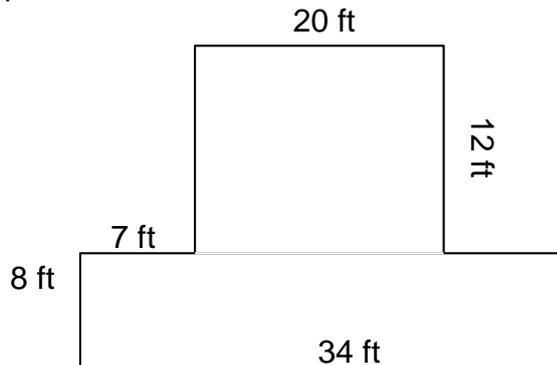


2.



Solve the following problems. Write your solutions on a separate sheet of paper.

3. A rectangular wrapping cloth has a length of 26 inches and a width of 24 inches. Two circular cloth with a diameter of 8 inches will be cut from it. How much cloth will be left?
4. How many square foot of tiles are needed to cover this kitchen floor?



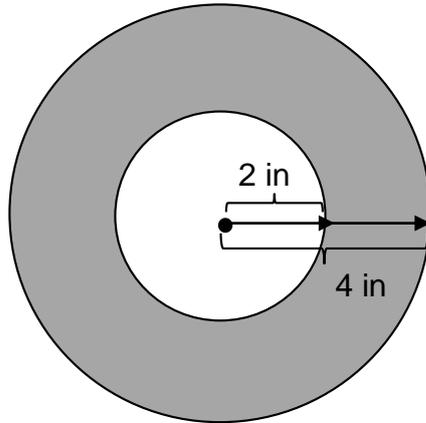
Assessment

Directions: Choose the letter of the correct answer and write it on a separate sheet of paper.

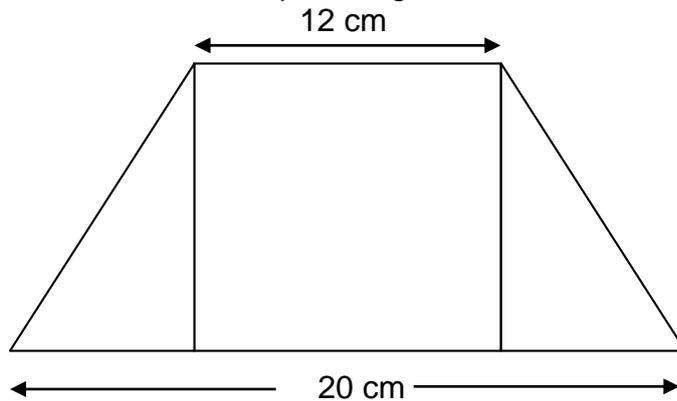
1. Two of the Girl Scout patrol leaders were given a task to form a figure with their patrol members. They must combine the two figures to form a facade of a house. Rose patrol was asked to form a triangle shape with a height of 2 meters and a base of 3 meters and the Sunflower patrol was tasked to form a square figure with a side of 3 meters. What is the area of the composite figure?

- a. $A = 12 m^2$ b. $A = 14 m^2$ c. $A = 16 m^2$ d. $A = 18 m^2$

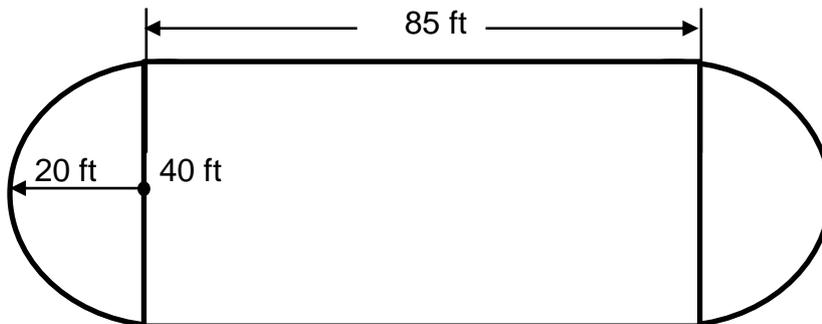
2. What is the area of the remaining lot that is 15 meters by 10 meters wide after a house is built having a dimension of 8 meters long and 7 meters wide?
- a. $A = 95 m^2$ b. $A = 94 m^2$ c. $A = 98 m^2$ d. $A = 100 m^2$
3. What is the area of the shaded region? Use $\pi = 3.14$.



- a. $A = 36.5 in^2$ b. $A = 37.68 in^2$ c. $A = 38.5 in^2$ d. $A = 37.65 in^2$
4. How much bigger is the area of a pizza box having a side of 24 cm than the area of a pizza having a radius of 12 cm? Use $\pi = 3.14$.
- a. $A = 125.84 cm^2$ b. $A = 127.81 cm^2$ c. $A = 126.64 cm^2$ d. $A = 125.54 cm^2$
5. What is the total area of the composite figure shown below?

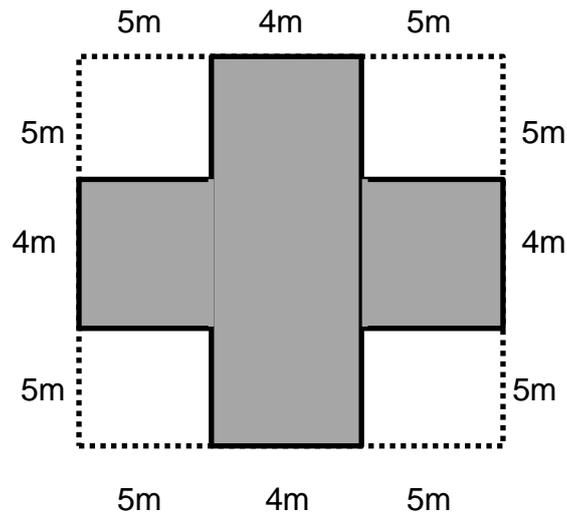


- a. $A = 138 cm^2$ b. $A = 142 cm^2$ c. $A = 192 cm^2$ d. $A = 240 cm^2$
6. A roller-rink floor is shown below. Each end is semi-circle. What is its area? Use $\pi = 3.14$.



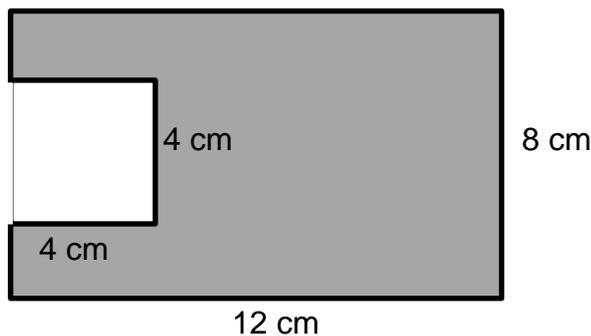
- a. $A = 4500 ft^2$ b. $A = 4564 ft^2$ c. $A = 4656 ft^2$ d. $A = 4730 ft^2$

7. The scouts were given a task to build a tent. First they need to find the area of its facade to know the cost of materials needed. The side of square is 7 meters and the height of the triangle is 6 meters. What is the area of the facade of their tent?
- a. $A = 70 \text{ m}^2$ b. $A = 75 \text{ m}^2$ c. $A = 78 \text{ m}^2$ d. $A = 80 \text{ m}^2$
8. Your family is planning to build a house that will have a dimension of 9 meters by 8 meters and a triangular roofing that will have a height of 2 meters and a base of 8 meters. What is the total area of both figures?
- a. $A = 80 \text{ m}^2$ b. $A = 75 \text{ m}^2$ c. $A = 90 \text{ m}^2$ d. $A = 85 \text{ m}^2$
9. Solve the area of the shaded region.



- a. $A = 86 \text{ m}^2$ b. $A = 70 \text{ m}^2$ c. $A = 90 \text{ m}^2$ d. $A = 96 \text{ m}^2$

10. What is the area of the shaded region below?



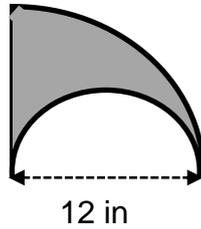
- a. $A = 90 \text{ cm}^2$ b. $A = 100 \text{ cm}^2$ c. $A = 80 \text{ cm}^2$ d. $A = 70 \text{ cm}^2$



Additional Activities

Directions: Solve the following problems. Show your complete solutions. Do this on a separate sheet of paper.

1. The figure below is made up of a semi-circle and a quadrant. Find the perimeter and area of the shaded part, rounding your answers to the nearest whole number. Use $\pi = 3.24$.



2. Suppose the height and base of a triangle are twice the length of the height and base of another triangle. What is the ratio of the area of the smaller to the area of the larger triangle?
3. The length and width of one rectangle are each three times the length of another rectangle. Is the area of the first rectangle three times the area of the other rectangle? Explain.

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Quezon City: EduResources Publishing, Inc.. 2011

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