1. Find the area of this parallelogram. Be sure to include the correct unit in your answer.

2. Find the area of the triangle below. Be sure to include the correct unit in your answer.
3. What is the area of the triangle?

4. Find the area of this trapezoid. Be sure to include the correct unit in your answer.
5. In rhombus $WXYZ$ below, $WV = 6$ cm and $XV = 11$ cm. Find the area of the rhombus.

Be sure to include the correct unit in your answer.

6. What is the area of the trapezoid?
7. Find the area of a circle with radius 8 in.
Use the value 3.14 for π, and do not round your answer.
Be sure to include the correct unit in your answer.

8. A ring-shaped region is shown below.
Its inner radius is 6 yd, and its outer radius is 9 yd.

Find the area of the shaded region.
Use 3.14 for π. Do not round your answer.

9. A rectangle is placed around a semicircle as shown below. The width of the rectangle is 9 cm. Find the area of the shaded region.

Use the value 3.14 for π, and do not round your answer. Be sure to include the correct unit in your answer.
10. Three semicircles are placed in a rectangle as shown below. The length of the rectangle is 36 cm.

Find the area of the shaded region. Use the value $3.14$ for $\pi$, and do not round your answer. Be sure to include the correct unit in your answer.

11. The circle on the right has center $O$. Its radius is 8 cm, and the central angle $\theta$ measures $110^\circ$. What is the area of the shaded region?

Give the exact answer in terms of $\pi$, and be sure to include the correct unit in your answer.
12. The circle below has center $O$, and its radius is $8$ ft. Given that $m \angle AOB = 150^\circ$, find the area of the shaded region and the length of the arc $ADB$.

Give exact answers in terms of $\pi$, and be sure to include the correct units in your answer.

![Diagram of a circle with center $O$, radius $8$ ft, and shaded region.

13. Find the area and the circumference of a circle with radius $4$ m.

Write your answers in terms of $\pi$, and be sure to include the correct units in your answers.

![Diagram of a circle with radius $4$ m.]

14. The circle below with center $C$ is divided into $8$ equal slices.

Central angle $\angle ACB$ intercepts $\overline{AB}$, forming the shaded sector.

Complete the statements below.

Give your answers as exact values, not decimal approximations.
(a) Find the ratio of the area of the sector to the area of the circle.
From the figure we see that $m \angle ACB = 45^\circ$.

The measure of $\angle ACB$ is [twice / equal to / half] the measure of $\overarc{AB}$.

So, $m \overarc{AB} = \underline{\phantom{10}}$.

This gives the following equation.

\[
\frac{m \overarc{AB}}{360^\circ} = \underline{\phantom{10}}
\]

(c) Choose the equation that is true.

- $\frac{\text{Area of sector}}{\text{Area of circle}} = 8 \cdot \frac{m \overarc{AB}}{360^\circ}$
- $\frac{\text{Area of sector}}{\text{Area of circle}} = m \overarc{AB}$
- $\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{m \overarc{AB}}{360^\circ}$
- $\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{360^\circ}{m \overarc{AB}}$

(d) Using $\pi r^2$ for the area of the circle, choose the equation that gives a formula for the area of the sector.

- $\text{Area of sector} = \frac{m \overarc{AB}}{360^\circ} \cdot 8 \pi r^2$
- $\text{Area of sector} = \frac{m \overarc{AB}}{360^\circ} \cdot \pi r^2$
- $\text{Area of sector} = m \overarc{AB} \cdot \pi r^2$
- $\text{Area of sector} = \frac{360^\circ \cdot \pi r^2}{m \overarc{AB}}$
15. Find the area of the figure. (Sides meet at right angles.)

16. A rectangle is removed from a right triangle to create the shaded region shown below. Find the area of the shaded region. Be sure to include the correct unit in your answer.

17. A regular heptagon has an apothem of approximately 3.5 cm and a perimeter of approximately 23.8 cm. Find the area of the heptagon.
18. Find the area of an equilateral triangle with radius length 8 m. If necessary, write your answer in simplified radical form.

![Equilateral Triangle with Radius 8 m](image)

19. A rose garden is formed by joining a rectangle and a semicircle, as shown below. The rectangle is 25 ft long and 16 ft wide.

Find the area of the garden. Use the value 3.14 for \( \pi \), and do not round your answer. Be sure to include the correct unit in your answer.

![Rose Garden Diagram](image)
20. An equilateral triangle is circumscribed about a circle with a radius of 3 cm. Find the area of the shaded region shown.

Give the exact answer. (Do not approximate \( \pi \) or any square root.)

![Diagram of an equilateral triangle circumscribed about a circle with a radius of 3 cm.]

21.

Find the area of the figure.
(Sides meet at right angles.)

![Diagram of a figure with sides meeting at right angles.]

4 ft

2 ft

4 ft

2 ft

3 ft

3 ft

2 ft

1 ft

1 ft

3 ft

2 ft

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22. A pair of similar figures is given below. (Note: the figures are not drawn to scale.)
The sides $CD$ and $EF$ are corresponding sides.

Use the information below to find $CD$ in Figure 1 and the area of Figure 2.

<table>
<thead>
<tr>
<th>Figure 1</th>
<th>Figure 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Figure 1" /></td>
<td><img src="image2" alt="Figure 2" /></td>
</tr>
<tr>
<td>Area of Figure 1 = 243 cm$^2$</td>
<td>Area of Figure 2 = ____ cm$^2$</td>
</tr>
<tr>
<td>Perimeter of Figure 1 = 36 cm</td>
<td>Perimeter of Figure 2 = 20 cm</td>
</tr>
<tr>
<td>$CD$ = ____ cm</td>
<td>$EF$ = 5 cm</td>
</tr>
</tbody>
</table>

23. A scale drawing for an apartment is shown below.
In the drawing, 5 cm represents 6 m.

Assuming the bedroom is rectangular, find the area of the real bedroom.

![Scale drawing of an apartment](image3)
24. Find the surface area of this rectangular prism. Be sure to include the correct unit in your answer.

![Rectangular Prism Diagram]

25. Find the surface area of this triangular prism. Be sure to include the correct unit in your answer.

![Triangular Prism Diagram]

26. Find the surface area of a cylinder with a height of 6 yd and a base radius of 4 yd.

Use the value 3.14 for π, and do not do any rounding.
Be sure to include the correct unit.

![Cylinder Diagram]
27. A rectangular prism and its net are shown below. 
The top and bottom of the prism are shaded. 
(All lengths are in millimeters.)

(a) Find the following side lengths for the net.

\[ A = \_\_\_ \text{mm} \]
\[ B = \_\_\_ \text{mm} \]
\[ C = \_\_\_ \text{mm} \]
\[ D = \_\_\_ \text{mm} \]

(b) Use the net to find the lateral surface area of the prism. Neither the top nor bottom is included.

\[ \_\_\_ \text{mm}^2 \]

(c) Use the net to find the total surface area of the prism.

\[ \_\_\_ \text{mm}^2 \]

28. Here is a triangular pyramid and its net. 
The lateral faces are congruent triangles. The base (shaded) is an equilateral triangle. 
(All lengths are in millimeters.)

(a) Find the area of the base of the pyramid.

\[ \_\_\_ \text{mm}^2 \]

(b) Find the area of one lateral face of the pyramid.

\[ \_\_\_ \text{mm}^2 \]

(c) Use the net to find the lateral surface area of the pyramid. The base is not included.

\[ \_\_\_ \text{mm}^2 \]

(d) Use the net to find the total surface area of the pyramid.

\[ \_\_\_ \text{mm}^2 \]
29. A rectangular prism and its net are shown below. 
(All lengths are in millimeters.)

(a) Find the following side lengths for the net.

\[ A = \underline{\phantom{0}} \text{mm} \]
\[ B = \underline{\phantom{0}} \text{mm} \]
\[ C = \underline{\phantom{0}} \text{mm} \]
\[ D = \underline{\phantom{0}} \text{mm} \]

(b) Use the net to find the surface area of the prism.

\[ \underline{\phantom{0}} \text{mm}^2 \]
1. 143 ft$^2$

2. Area: 47.5 ft$^2$

3. 16 square units

4. 77 ft$^2$

5. Area: 132 cm$^2$

6. 30 square units

7. 200.96 in$^2$

8. 141.3 yd$^2$

9. 34.83 cm$^2$

10. 46.44 cm$^2$

11. $\frac{176 \pi}{9}$ cm$^2$
12. Area of shaded region: $\frac{112}{3} \pi \text{ ft}^2$

Length of $ADB: \frac{28}{3} \pi \text{ ft}$

13.

Area: $16\pi \text{ m}^2$

Circumference: $8\pi \text{ m}$
14. (a) Find the ratio of the area of the sector to the area of the circle.

\[
\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{1}{8}
\]

(b) From the figure we see that \( m \angle ACB = 45^\circ \).

The measure of \( \angle ACB \) is [equal to] the measure of \( \overarc{AB} \).

So, \( \overarc{AB} = 45^\circ \).

This gives the following equation.

\[
\frac{m \overarc{AB}}{360^\circ} = \frac{1}{8}
\]

(c) Choose the equation that is true.

- \[ \frac{\text{Area of sector}}{\text{Area of circle}} = \frac{m \overarc{AB}}{360^\circ} \]
- \[ \frac{\text{Area of sector}}{\text{Area of circle}} = m \overarc{AB} \]
- \[ \frac{\text{Area of sector}}{\text{Area of circle}} = \frac{m \overarc{AB}}{360^\circ} \]
- \[ \frac{\text{Area of sector}}{\text{Area of circle}} = \frac{360^\circ}{m \overarc{AB}} \]

(d) Using \( \pi r^2 \) for the area of the circle, choose the equation that gives a formula for the area of the sector.

- \[ \text{Area of sector} = \frac{m \overarc{AB}}{360^\circ} \cdot 8 \pi r^2 \]
- \[ \text{Area of sector} = \frac{m \overarc{AB}}{360^\circ} \cdot \pi r^2 \]
- \[ \text{Area of sector} = m \overarc{AB} \cdot \pi r^2 \]
- \[ \text{Area of sector} = \frac{360^\circ}{m \overarc{AB}} \cdot \pi r^2 \]

15. \( 18 \text{ m}^2 \)
16. $16 \text{ m}^2$

17. $41.65 \text{ cm}^2$

18. Area $= 48 \sqrt{3} \text{ m}^2$

19. $500.48 \text{ ft}^2$

20. $27\sqrt{3} - 9\pi \text{ cm}^2$

21. 14 square feet

22. $CD = 9 \text{ cm}$

Area of Figure 2 $= 75 \text{ cm}^2$

23. Area of the real bedroom: $72 \text{ m}^2$

24. $174 \text{ in}^2$

25. $2232 \text{ ft}^2$

26. $251.2 \text{ yd}^2$
27.

(a) Find the following side lengths for the net.

\[ A = 11 \text{ mm} \]
\[ B = 8 \text{ mm} \]
\[ C = 4 \text{ mm} \]
\[ D = 11 \text{ mm} \]

(b) Use the net to find the lateral surface area of the prism. Neither the top nor bottom is included.

\[ 240 \text{ mm}^2 \]

(c) Use the net to find the total surface area of the prism.

\[ 328 \text{ mm}^2 \]

28. Test Resolution PDF

29. (a) Find the following side lengths for the net.

\[ A = 5 \text{ mm} \]
\[ B = 9 \text{ mm} \]
\[ C = 2 \text{ mm} \]
\[ D = 2 \text{ mm} \]

(b) Use the net to find the surface area of the prism.

\[ 146 \text{ mm}^2 \]