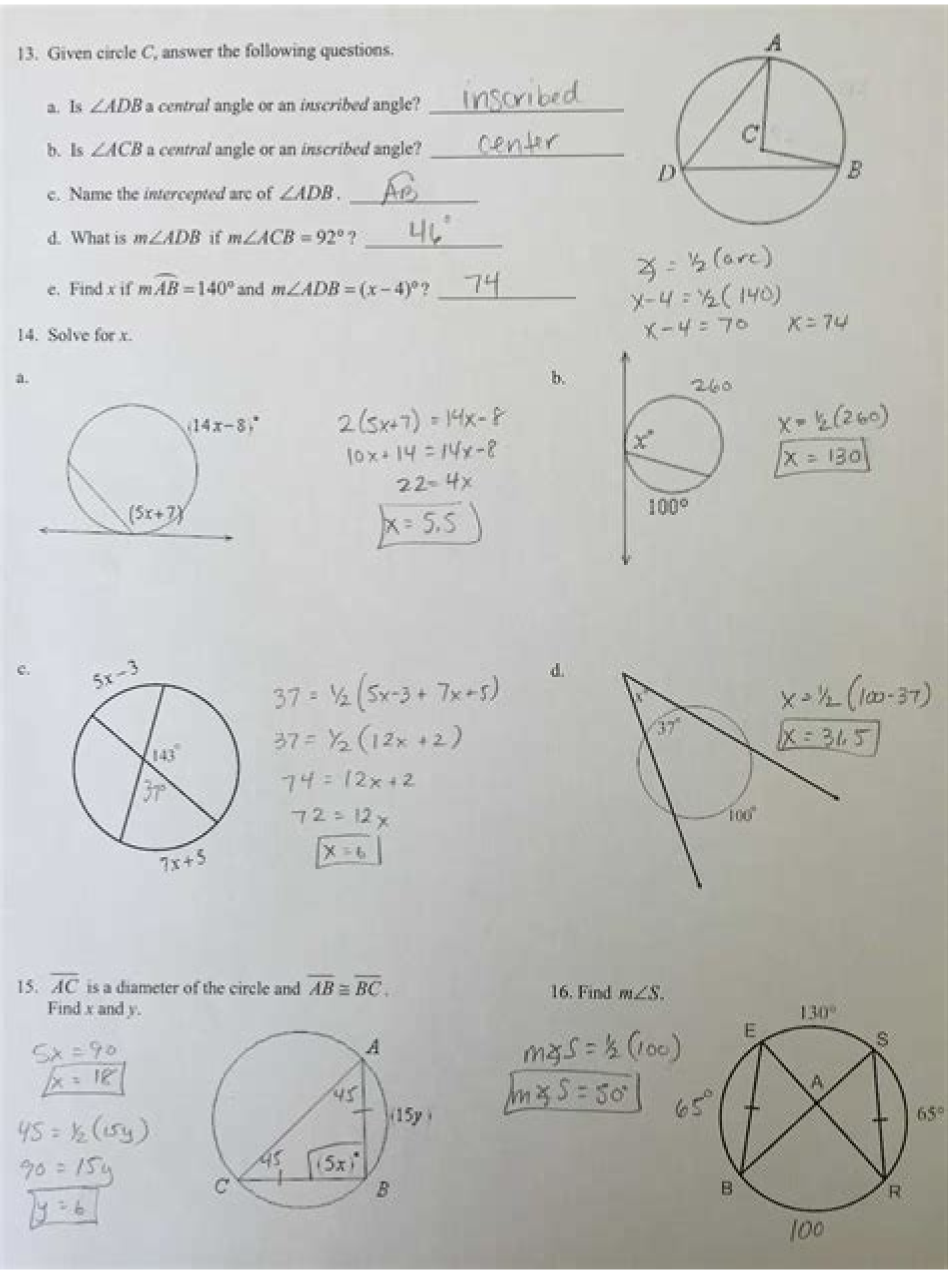
Lesson 1 Homework Practice Circumference



13. Given circle C, answer the following questions.

a. Is $\angle ADB$ a *central* angle or an *inscribed* angle? inscribed

b. Is $\angle ACB$ a *central* angle or an *inscribed* angle? center

c. Name the *intercepted* arc of $\angle ADB$. $\overset{\frown}{AB}$

d. What is $m\angle ADB$ if $m\angle ACB = 92°$? 46°

e. Find x if $m\overset{\frown}{AB} = 140°$ and $m\angle ADB = (x-4)°$? 74

$\measuredangle = \frac{1}{2}(\text{arc})$
$x-4 = \frac{1}{2}(140)$
$x-4 = 70 \quad x = 74$

14. Solve for x.

a.

$2(5x+7) = 14x-8$
$10x+14 = 14x-8$
$22 = 4x$
$\boxed{x = 5.5}$

b.

$x = \frac{1}{2}(260)$
$\boxed{x = 130}$

c.

$37 = \frac{1}{2}(5x-3+7x+5)$
$37 = \frac{1}{2}(12x+2)$
$74 = 12x+2$
$72 = 12x$
$\boxed{x = 6}$

d.

$x = \frac{1}{2}(100-37)$
$\boxed{x = 31.5}$

15. $\overline{AC}$ is a diameter of the circle and $\overline{AB} \cong \overline{BC}$. Find x and y.

$5x = 90$
$\boxed{x = 18}$
$45 = \frac{1}{2}(15y)$
$90 = 15y$
$\boxed{y = 6}$

16. Find $m\angle S$.

$m\measuredangle S = \frac{1}{2}(100)$
$\boxed{m\measuredangle S = 50°}$

Lesson 1 Homework Practice Circumference is a fundamental concept in geometry that not only introduces students to the properties of circles but also establishes a foundation for understanding more complex mathematical principles. Circles are ubiquitous in the world around us, from the wheels on a bicycle to the design of circular parks. In this article, we will explore the definition of circumference, the formula to calculate it, its applications, and some practice exercises to solidify understanding.

Understanding Circumference

Circumference refers to the distance around the edge of a circle. It is akin to the perimeter in polygons, but since a circle has no corners, we use a different approach to measure its boundary.

The circumference can be seen as the "outer limit" of a circular object.

The Formula for Circumference

The circumference of a circle can be calculated using the following formula:

\[
C = 2\pi r
\]

Where:
- \(C\) is the circumference,
- \(r\) is the radius of the circle,
- \(\pi\) (pi) is a constant approximately equal to 3.14159.

Alternatively, if the diameter \(d\) of the circle is known, the formula can also be expressed as:

\[
C = \pi d
\]

Where:
- \(d\) is the diameter, which is twice the radius (\(d = 2r\)).

Applications of Circumference

Understanding and calculating the circumference has numerous real-world applications. Here are some notable examples:

- **Engineering:** Engineers often need to calculate the circumference in the design of circular structures, wheels, and pipes.
- **Manufacturing:** In manufacturing, knowing the circumference is essential when creating circular products, such as gears or discs.
- **Agriculture:** Farmers may use circumference calculations to determine the amount of fencing needed for circular areas, such as enclosures for livestock.
- **Sports:** Many sports utilize circular fields or equipment, from the circumference of a basketball hoop to the track length of a circular running track.

Lesson 1: Homework Practice on Circumference

To effectively master the concept of circumference, it is crucial to practice various problems. Below are some practice exercises that can help reinforce understanding.

Example Problems

1. Finding the Circumference using the Radius:
- A circle has a radius of 5 cm. What is its circumference?
- Solution:
\[
C = 2\pi r = 2 \times \pi \times 5 = 10\pi \approx 31.42 \text{ cm}
\]

2. Finding the Circumference using the Diameter:
- A circular table has a diameter of 1.2 meters. Calculate the circumference.
- Solution:
\[
C = \pi d = \pi \times 1.2 \approx 3.77 \text{ meters}
\]

3. Real-World Application:
- A circular swimming pool has a radius of 7 feet. How much material is needed to create a circular border around the pool?
- Solution:
\[
C = 2\pi r = 2 \times \pi \times 7 \approx 43.98 \text{ feet}
\]

Practice Problems

Try solving these problems on your own:

1. Calculate the circumference of a circle with a radius of 10 cm.
2. What is the circumference of a circle whose diameter is 4 meters?
3. A circular garden has a radius of 3.5 feet. Find the circumference.
4. If the circumference of a circular track is 62.8 meters, what is the radius?
5. A wheel makes one complete revolution. If its radius is 0.5 meters, how far does it travel in one complete turn?

Tips for Mastering Circumference Calculations

Here are some tips to help students master the concept of circumference:

1. **Familiarize Yourself with π:** Understand the value of π and how it is used in calculations. Knowing that π is a constant helps in memorizing the formulas.

2. **Practice with Different Units:** Make sure to practice converting between different units of measurement (e.g., centimeters to meters) as circumference can be expressed in various units.

3. **Visualize Circles:** Draw circles and label their radius and diameter. This practice will help solidify the relationship between the two and their connection to circumference.

4. **Use Real-World Examples:** Apply the concept of circumference to real-world scenarios to see its relevance. For instance, measure the circumference of circular objects around you.

5. **Work with Peers:** Collaborating with classmates can provide different perspectives and methods for solving problems, making learning more dynamic.

Conclusion

Lesson 1 Homework Practice Circumference is a crucial stepping stone in the study of geometry. By understanding how to calculate the circumference of a circle and recognizing its applications in real life, students can appreciate the importance of this mathematical concept. Regular practice through exercises, both theoretical and practical, will help reinforce these ideas and build confidence in using them. Remember, the more you practice, the more proficient you will become in calculating and applying circumference in various contexts.

Frequently Asked Questions

What is the formula for calculating the circumference of a circle?

The formula for calculating the circumference of a circle is $C = 2\pi r$, where C is the circumference and r is the radius.

How do you find the radius if you are given the circumference?

To find the radius from the circumference, you can rearrange the formula: $r = C / (2\pi)$.

What units should be used when measuring circumference?

The units of measurement for circumference should match the units used for the radius, such as centimeters, meters, inches, or feet.

Can the circumference be calculated using the diameter?

Yes, the circumference can also be calculated using the diameter with the formula $C = \pi d$, where d is the diameter.

What is the circumference of a circle with a radius of 5 cm?

The circumference of a circle with a radius of 5 cm is C = 2π(5) = 10π cm, which is approximately 31.42 cm.

Why is understanding circumference important in real-life applications?

Understanding circumference is important for various real-life applications such as designing wheels, circular tracks, and understanding circular objects in engineering and architecture.

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