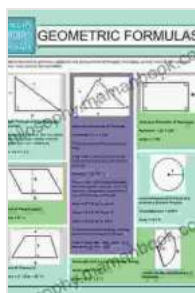


The Ultimate Geometric Formulas Speedy Study Guide

Geometry is a branch of mathematics that deals with the properties and relationships of shapes. It is a fundamental subject for students of all ages, and it is used in a wide variety of fields, including architecture, engineering, and design.

In order to be successful in geometry, it is important to have a strong understanding of the basic geometric formulas. These formulas can be used to calculate the area, perimeter, volume, and surface area of different shapes.

This study guide will provide you with a comprehensive overview of all the essential geometric formulas. We will cover the formulas for triangles, quadrilaterals, circles, spheres, cones, and cylinders. We will also provide clear explanations, problem-solving examples, and practice questions to test your understanding.



Geometric Formulas (Speedy Study Guide) by Dai Hunter

★★★★★ 5 out of 5

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Triangles are one of the most basic geometric shapes. They are three-sided polygons with three angles. The sum of the angles in a triangle is always 180 degrees.

The following are the formulas for triangles:

- **Area:** $A = (1/2) * b * h$
- **Perimeter:** $P = a + b + c$
- **Height:** $h = (2 * A) / b$
- **Base:** $b = (2 * A) / h$

Example:

Find the area of a triangle with a base of 10 cm and a height of 8 cm.

$$A = (1/2) * b * h \quad A = (1/2) * 10 \text{ cm} * 8 \text{ cm} \quad A = 40 \text{ cm}^2$$

Quadrilaterals are four-sided polygons. There are many different types of quadrilaterals, including squares, rectangles, parallelograms, and trapezoids.

The following are the formulas for quadrilaterals:

- **Area:** $A = l * w$
- **Perimeter:** $P = 2 * l + 2 * w$
- **Diagonal:** $d = \sqrt{l^2 + w^2}$

Example:

Find the perimeter of a rectangle with a length of 10 cm and a width of 8 cm.

$$P = 2 * l + 2 * w \quad P = 2 * 10 \text{ cm} + 2 * 8 \text{ cm} \quad P = 36 \text{ cm}$$

Circles are two-dimensional shapes that are defined by a single point (the center) and a distance (the radius). The radius is the distance from the center to any point on the circle.

The following are the formulas for circles:

- **Area:** $A = \pi r^2$
- **Circumference:** $C = 2\pi r$
- **Diameter:** $d = 2r$

Example:

Find the area of a circle with a radius of 10 cm.

$$A = \pi r^2 \quad A = \pi * 10 \text{ cm}^2 \quad A = 100\pi \text{ cm}^2$$

Spheres are three-dimensional shapes that are defined by a single point (the center) and a distance (the radius). The radius is the distance from the center to any point on the sphere.

The following are the formulas for spheres:

- **Volume:** $V = (4/3)\pi r^3$
- **Surface Area:** $A = 4\pi r^2$

Example:

Find the volume of a sphere with a radius of 10 cm.

$$V = \frac{4}{3}\pi r^3 \quad V = \frac{4}{3}\pi * 10 \text{ cm}^3 \quad V = \frac{4000}{3}\pi \text{ cm}^3$$

Cones are three-dimensional shapes that have a circular base and a single vertex. The height of a cone is the distance from the vertex to the center of the base.

The following are the formulas for cones:

- **Volume:** $V = \frac{1}{3}\pi r^2 h$
- **Surface Area:** $A = \pi r^2 + \pi r l$

Example:

Find the volume of a cone with a radius of 10 cm and a height of 15 cm.

$$V = \frac{1}{3}\pi r^2 h \quad V = \frac{1}{3}\pi * 10 \text{ cm}^2 * 15 \text{ cm} \quad V = \frac{500}{3}\pi \text{ cm}^3$$

Cylinders are three-dimensional shapes that have two parallel circular bases and a curved surface. The height of a cylinder is the distance between the two bases.

The following are the formulas for cylinders:

- **Volume:** $V = \pi r^2 h$
- **Surface Area:** $A = 2\pi r^2 + 2\pi r h$

Example:

Find the volume of a cylinder with a radius of 10 cm and a height of 15 cm.

$$V = \pi r^2 h \quad V = \pi * 10 \text{ cm}^2 * 15 \text{ cm} \quad V = 1500\pi \text{ cm}^3$$

1. Find the area of a triangle with a base of 12 cm and a height of 8 cm.
2. Find the perimeter of a rectangle with a length of 10 cm and a width of 8 cm.
3. Find the area of a circle with a radius of 10 cm.
4. Find the volume of a sphere with a radius of 10 cm.
5. Find the volume of a cone with a radius of 10 cm and a height of 15 cm.
6. Find the volume of a cylinder with a radius of 10 cm and a height of 15 cm.

1. 48 cm^2
2. 36 cm
3. $100\pi \text{ cm}^2$
4. $(4000/3)\pi \text{ cm}^3$
5. $(500/3)\pi \text{ cm}^3$
6. $1500\pi \text{ cm}^3$

This study guide has provided you with a comprehensive overview of all the essential geometric formulas. We have covered the formulas for triangles,

quadrilaterals, circles, spheres, cones, and cylinders. We have also provided clear explanations, problem-solving examples, and practice questions to test your understanding.

By mastering these formulas, you will be well prepared to succeed in geometry and beyond.



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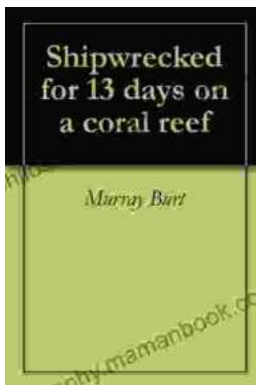
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