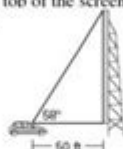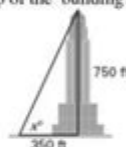# Angle Of Elevation And Depression Trig Worksheet

Angles of Elevation and Depression

Solve each problem. Round angles to the nearest degree and segments to the nearest tenth.
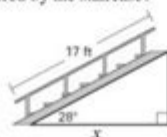
1. You are 50 ft from the screen at a drive-in movie. The angle of elevation to the top of the screen is 58°. How tall is the screen?

2. You are standing 350 feet away from a skyscraper that is 750 ft tall. What is the angle of elevation from you to the top of the building?
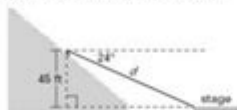
3. A staircase has an angle of elevation of 28° and covers a total distance of 17 feet. What is the horizontal length covered by the staircase?
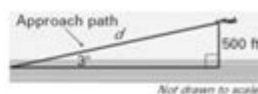
4. A chair lift on a ski slope has an angle of elevation of 28° and covers a total distance of 4640 feet. What is the vertical height covered by the chair lift?
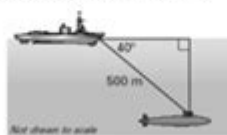
5. You sit in the bleachers at a concert. The angle of depression from your horizontal sight to the stage is 24°. If your seat is 45 feet above the stage level, what is your actual distance **d** from the stage?

6. An airplane preparing to land is on an approach path that forms a 3° angle with the runway. What is the distance along this approach path to your touchdown point when you are 500 ft above the ground?

7. A sonar operator on a ship detects a submarine at a distance of 500 meters and an angle of depression of 40°. How deep is the submarine?

8. At 2 P.M., the shadow of a lighthouse is 19 feet long and the angle of elevation is 75°. Find the height of the lighthouse.

Angle of Elevation and Depression Trig Worksheet

Understanding the concepts of angle of elevation and angle of depression is crucial in trigonometry, particularly in the context of real-world applications. These angles are fundamental in solving various problems related to heights and distances, which can be encountered in fields such as architecture, engineering, and navigation. This article will provide a comprehensive overview of angle of elevation and depression, how they are measured, and how to create a trig worksheet that effectively incorporates problems related to these angles.

What are Angles of Elevation and Depression?

Definition of Angles

- Angle of Elevation: This is the angle formed by the horizontal line and the line of sight from the observer to an object that is above the horizontal line. For example, if you are standing on the ground and looking up at the top of a building, the angle between your line of sight and the horizontal line at your eye level is the angle of elevation.

- Angle of Depression: Conversely, the angle of depression is the angle formed by the horizontal line and the line of sight from the observer to an object that is below the horizontal line. For instance, if you are on the roof of a building and looking down at a car parked on the ground, the angle between your line of sight to the car and the horizontal line from your eyes is the angle of depression.

Visual Representation

To better understand these concepts, it can be helpful to visualize them. Imagine standing on a hill (or the roof of a building) and looking at an object:

- When looking up, the angle of elevation is formed.
- When looking down, the angle of depression is formed.

These angles are often represented in diagrams to illustrate their relationship to horizontal lines and the objects being observed.

Applications of Angles of Elevation and Depression

The angles of elevation and depression have various practical uses, including:

1. Architecture: Architects use these angles to determine the height of structures and to ensure that buildings are designed with appropriate angles for aesthetics and functionality.
2. Navigation: Pilots and sailors often use these angles for navigation to determine their altitude or the distance to objects on the ground or sea.
3. Surveying: Surveyors use these angles to calculate distances and heights of various landforms and structures.
4. Astronomy: Astronomers measure angles of elevation when observing celestial bodies from the surface of the Earth.

Trigonometric Functions Involved

The primary trigonometric functions used in problems involving angles of elevation and depression are sine, cosine, and tangent. These functions relate the angles to the ratios of the sides of right triangles.

Basic Relationships

For a right triangle formed by the angle of elevation or depression, we can use:

- Tangent Function:
- $\tan(\theta) = \frac{\text{opposite}}{\text{adjacent}}$

- Sine Function:
- $\sin(\theta) = \frac{\text{opposite}}{\text{hypotenuse}}$

- Cosine Function:
- $\cos(\theta) = \frac{\text{adjacent}}{\text{hypotenuse}}$

Where:
- θ represents the angle of elevation or depression.
- Opposite is the height of the object or the vertical distance.
- Adjacent is the horizontal distance from the observer to the base of the object.
- Hypotenuse is the line of sight from the observer to the object.

Creating a Trig Worksheet for Angles of Elevation and Depression

A well-structured trig worksheet should provide a variety of problems that allow students to practice calculating angles of elevation and depression. Here's how to create an effective worksheet:

Components of the Worksheet

1. Clear Instructions: Each problem should have clear instructions on what is being asked.
2. Diverse Problem Types: Include problems that vary in difficulty and type to challenge students.
3. Diagrams: Provide diagrams to help visualize the problems and illustrate the scenarios.
4. Real-World Contexts: Use scenarios that relate to real-world applications to make the problems more engaging.

Example Problems

Here are some example problems that can be included in the worksheet:

1. Problem 1: A person is standing 50 meters away from a building. If the angle of elevation to the top of the building is 30 degrees, how tall is the building?
- Solution:
- Use the tangent function:
- $\tan(30^\circ) = \frac{\text{height}}{50}$

2. Problem 2: A drone is flying at an altitude of 100 meters. If the angle of depression to a point on the ground is 45 degrees, how far is the drone from the point on the ground?
- Solution:
- Use the tangent function:
- $\tan(45^\circ) = \frac{100}{\text{distance}}$

3. Problem 3: From the top of a lighthouse, the angle of depression to a boat in the water is 60 degrees. If the lighthouse is 150 meters high, how far is the boat from the base of the lighthouse?
- Solution:
- Use the tangent function:
- $\tan(60^\circ) = \frac{150}{\text{distance}}$

Answers Section

Including an answers section at the end of the worksheet allows students to check their work. However, it's essential to provide explanations for the solutions to reinforce learning.

Conclusion

The concepts of angle of elevation and depression are not only foundational in trigonometry but also vital in various fields of study and real-life applications. A well-designed trig worksheet can help students grasp these concepts effectively, providing them with the skills necessary to solve practical problems involving heights and distances. By incorporating diverse problems, clear instructions, and real-world contexts, educators can ensure that students engage with the material meaningfully and develop a solid understanding of these important trigonometric principles.

Frequently Asked Questions

What is the angle of elevation and how is it used in

trigonometry?

The angle of elevation is the angle formed by the horizontal line and the line of sight to an object above the horizontal line. It is used in trigonometry to solve problems involving heights and distances, particularly in right triangles.

How can I apply the angle of depression in real-life situations?

The angle of depression is the angle formed by the horizontal line and the line of sight to an object below the horizontal line. It can be applied in real-life situations such as determining the height of a building when standing at a distance or calculating the distance to the horizon from a height.

What are some common problems involving angles of elevation and depression?

Common problems include calculating the height of a tree or building using the angle of elevation, determining the distance from a point to a boat in the water using the angle of depression, and finding distances between points using trigonometric ratios.

What trigonometric functions are used with angles of elevation and depression?

The primary trigonometric functions used are sine, cosine, and tangent. For angles of elevation, tangent is often used to relate the opposite side (height) to the adjacent side (distance). For angles of depression, the same functions apply, depending on the triangle formed.

What tips can help me solve angle of elevation and depression problems effectively?

Start by sketching a right triangle to visualize the problem. Label the sides and angles clearly. Use the appropriate trigonometric ratio (sine, cosine, or tangent) based on known values. Lastly, ensure to check your calculator's mode (degrees or radians) based on the problem's requirements.

Find other PDF article:
https://soc.up.edu.ph/46-rule/pdf?dataid=ZcP84-0971&title=perceval-the-story-of-the-grail.pdf

[Angle Of Elevation And Depression Trig Worksheet](#)

Apple Watch - Apple
Apple Watch is the ultimate device for a healthy life. Available in three models: Apple Watch Ultra 2,

Apple Watch Series 10, and Apple Watch SE.

Chrono24: The World's Leading Watch Market
Every month, over 9 million watch enthusiasts search for their next watch on Chrono24 – perhaps yours is the watch they are looking for? Create a free listing in a few simple steps and find a …

Amazon.com: Watches
Amazon.com: watchesThe ClimatePartner certified product label confirms that a product meets the requirements for the five steps in climate action including calculating carbon footprints, setting reduction targets, implementing reductions, financing climate projects and communicating transparently to continuously reduce emissions.

Jomashop.com: Online Shopping for Watches, Handbags, …
With an impressive catalog of over 75,000 unique products, whether it's a watch, handbag, pair of sunglasses, shoes, or fragrance, Jomashop is the go-to platform for all your luxury needs.

Watch Warehouse | Fast, Free Shipping on Select Orders
Jul 17, 2025 · Looking for discount luxury watches that surpass the ordinary? Explore Watch Warehouse's collection for great deals on designer watches, pens, and accessories.

Men's Watches | Nordstrom
Find a great selection of Men's Watches at Nordstrom.com. Top Brands. New Trends.

Watches: Authentic, Classic Wrist Watch Collections - Fossil
Browse our extensive selection of online watches or shop in store - we're here in the way that serves you best. We have leather watch styles, stainless steel bracelet watch designs and even silicone watch bands that give you the freedom to choose what's right for you.

Watches - Best Buy
Shop at Best Buy for watches. Find sporty and classic men's and women's wristwatches to suit any occasion.

Men's & Women's Watches - Target
For men's and women's watches, the main difference is the size of the strap and the dial, a couple of mm larger or smaller. So, walk into a Target store or shop at Target.com for any types, sizes, materials, or features of watches you need.

Watch Connection
Watch Connection is the largest marketplace for Luxury Watches & Timepieces including Tag Heuer, Gucci, Tissot, Movado, Michael Kors, Versace and more. Buy authentic watches with FREE worldwide delivery.

wife blowjob - Literotica.com
Aug 23, 2019 · The babysitter makes a cuckold fantasy come true. My wife learns to love sucking cock. How a wife treats her husband after a long day at work. A coerced blowjob. Husband …

Kathie Sucks Her Boss - Loving Wives - Literotica.com
Kathie Sucks Her Boss I don't know if there's a label for it when you end up eating three stranger's cum from your woman on the very first date (see TexMeetsHisFutureWifeKathie on my …

'my boss wants my dick' Search - XVIDEOS.COM

99,775 my boss wants my dick FREE videos found on XVIDEOS for this search.

Keeping the Boss Happy! - Loving Wives - Literotica.com
Wife fucks and sucks her boss.This story happened year's ago when me and my wife Joyce first got married and the company I worked for was looking for an secretary and my wife applied ...

Free Sucking Bosses Dick Porn Videos (474) - Tubesafari.com
POV BJ - My hot secretary confesses to me that she wants to suck my cock and how well she does it.

boss-blowjob videos - XVIDEOS.COM
XVIDEOS boss-blowjob videos, freeNaughty Secretary Sucks Boss off While on Zoom Meeting Cum in Mouth 10 min StaceyAlexisPawg - 64.2k Views -

Janet Meets My Boss Ch. 01 - Reluctance/NonConsent
Finally he said, "Okay, now suck cock, bitch" and offered his cock back to her. She looked at the massive tool in front of her and opened her mouth and he pushed forward stretching her lips ...

'boss tells secretary to suck his dick' Search - XNXX.COM
IN MY BOSS'S OFFICE!! WORKING AS A SECRETARY IN THE OFFICE AND I STARTED TO MAKE A HOT VIDEO TO RELAX MY BOSS. HE IS VERY EXCITED TO SEE MY SEXY TITS, ...

'my boss made me suck his dick' Search - XVIDEOS.COM
114,575 my boss made me suck his dick FREE videos found on XVIDEOS for this search.

Wife's Secret Fantasy - Fetish - Literotica.com
"I want to watch you suck a cock." I still can't believe I kept my car on the road after hearing my wife blurt that out. We'd been at a party hosted by one of my wife Annie's co-workers. It wasn't ...

Wife Sucks Boss Porn Videos | Pornhub.com
Watch Wife Sucks Boss porn videos for free, here on Pornhub.com. Discover the growing collection of high quality Most Relevant XXX movies and clips. No other sex tube is more ...

My wife sucks her boss' cock and takes his milk out
Watch My Wife Sucks Her Boss' Cock and Takes His Milk out video on xHamster - the ultimate database of free Female Masturbation & Mom HD porn tube movies!

'wife reluctant timid convinced by husbands boss' Search
A busty milf hooks up with husbands boss.Black guy sucks on her big tits.The cougar blowjobs him.Then husband catches her cheating fucking a bbc. 2.5M 100% 6min - 720p

'boss makes wife suck his cock' Search - XVIDEOS.COM
103,865 boss makes wife suck his cock FREE videos found on XVIDEOS for this search.

Master the concepts of angle of elevation and depression with our comprehensive trig worksheet. Enhance your skills today! Learn more and excel in trigonometry!

Back to Home