Angle of elevation and depression word problems worksheet with answers

The connection of trigonometry with measurement places it in teacher manuals for a wide variety of professions. Carpenters, builders, designers, architects and engineers, to name a few, deal with measurements, and as such, they engage in a triangle of activities, or trigonometry. Combining your skills with similar triangles, trigonometry and Pythagorean theories, you're ready to solve problems related to more real world scenarios. The situations you will address will be specifically related to the correct triangles and you will use our three main trigonometric functions. Once the diagram is set, the mathematical solution will be the same as shown in the solution of the parties or the solution for the corners. There are two new dictionary terms that may appear in problems with the program. Angle of height: In this diagram, xº indicates the angle of height of the top of the tree, as seen from a point on the ground. The angle of height is always measured from grounding upwards. This is an upward angle from the horizontal line. It is always inside the triangle. You can come up with a height angle in relation to the movement of your eyes. You look straight ahead and you have to raise (raise) your eyes to see the top of the tree. When trying to remember the value of the height angle think of a lift that only goes up! Angle of depression: In this diagram, xº indicates the angle of the boat's depression in the sea from the top of the lighthouse. The angle of depression is always outside the triangle. It is never inside a triangle. This is a descending angle from the horizontal line. You can come up with an angle of depression in relation to the movement of your eyes. You stand at the top of the lighthouse and you look straight ahead. You have to lower your (depressing) eyes to see the boat in the water. Note how the horizontal line in the corner of the chart depression parallels the ground level. The fact that horizontal lines are always parallel guarantees that alternative corners of the interior are equal in measure. In the diagram, the angle marked xº is equal to the m∠BAC. Just stated, it means that ... → angle = angle of depression ← When solving the problem with the angle of the depression, you need to find a measure of the angle INSIDE the triangle. There are two options: option 1: find an angle inside the triangle that fits (next door) to the angle of depression. This adjacent angle will always be an addition to the corner of the depression, as the horizontal line and vertical line are perpendicular (90º). In the diagram on the left, the adjacent angle is 52º. Option 2: use the fact that the angle of depression = angle of height and label ∠BAC as 38º inside the triangle. Note that both options answer the same. Let's see how to put these skills to work in word problems. Nursery plants a new tree and attaches guy wire to help support the tree while its roots take An octopus wire is attached to the tree and an octopus wire is attached to the peg in the ground. From a stake in the ground, the angle of connection to the tree is 42º. Find the next tenth leg, the height of the connection point on the tree. SOLUTION: • Guy wire is a support wire used to keep the newly planted tree in place, preventing it from bending or rooting during strong winds. • Height angle from grounding upwards. • It is assumed that the tree is vertical, making it perpendicular to the ground. • This problem applies to the opposite and hypotenuse, making it a problem sine. • From the top of the fire tower, the forest ranger sees his partner on the ground at a 40º depression angle. If the tower is 45 feet tall, how far is a partner from the base of the tower, to the nearest tenth leg? SOLUTION: • Remember that the angle of depression is from the horizontal line of view downwards. • It is assumed that the tower is vertical, making it perpendicular to the ground. • This solution will use alternative interior angles from parallel horizontal lines, so place 40º inside the triangle with a partner (bottom right). • This solution is dealing with the opposite and adjacent, making it a antactic problem. • Find a shadow cast by a 10-foot lamp post when the sun's height angle is 58º. Find the length to the nearest tenth leg. SOLUTION: • Remember that the angle of height is from the horizontal ground line upwards. • It is assumed that the lamppost is vertical, making it perpendicular to the ground. • Shadows on earth! If you put a shadow on the hypotenuse, you have created a ghost (ghost), not a shadow! • This solution is dealing with the opposite and adjacent, making it a antactic problem. • Not all problems with the trigonometry of the word will use the terms angle of height or angle of depression. You may need to read carefully where to specify the angle in the problem. The ladder leans against the brick wall. At the foot of the ladder is 2 5 meters from the wall. The ladder reaches a height of 15 feet on the wall. Find to the nearest degree the angle that the ladder does with the wall. SOLUTION: • In this problem, the xº place where the stairs meet the wall. Do not think that the angle will always be at ground level. • It is assumed that the wall is vertical, perpendicular to the ground. • The foot of the ladder is the bottom of the ladder, where it hits the ground. • This solution is dealing with the opposite and adjacent, making it a antactic problem. • It may be the case that the problem will consist of two overlapping right triangles. The radio tower was built in two sections. From a point 27 feet from the base of the tower, the angle of height of the top of the first section is 25º, and the height angle of the top of the second section is 40º. To the nearest leg, what is the height of the top of the tower? SOLUTION: • Think of this problem as working with individual triangles: (1) a larger triangle with an angle of 40º and a vertical side, which represents the entire height, b, tower, and (2) a smaller triangle with an angle of 25º and a vertical side, and, representing the height of the first (lower) part of the tower. • Decide the vertical heights (b and a) in two separate triangles. • The required height, x, second (upper) section of the tower will be the difference between the maximum height, b and the height of the first (lower) section, a. You will need to subtract. • In both triangles, the solution refers to the opposite and adjacent, which makes it a antactic problem. • Larger triangle with height b: • Smaller triangle with height a: • Difference (b - a): 73.00166791 - 40.56876626 = 32.43290165 ≈ 32 ft Note, that in this problem, trigonometry functions could not work directly on the side of the x-inscription, since this side was not the side of the right triangle. Don't forget to set the graphics calculator to degree mode. For help with the trig factors on the calculator, click here. NOTE: Re-posting materials (partially or in general) from this site to the Internet is a copyright infringement and is not considered a good use for educators. Please read the Terms of Use. English (United Kingdom) English (United States) Español (Latinoamérica) Question 1:Angle of height of the upper part of the building at a distance of 50 m from its foot on a horizontal plane is set at 60 degrees. Find the height of the building. Question 2 :Ladder placed on the wall so that it reaches the top of the wall height of 6 m, and the ladder tilts at an angle of 60 degrees. Find how far the ladder is from the foot of the wall. Question 3:The string of the kite is 100 meters long, and this makes the angle 60° horizontal. Find the height of the kite,assuming that there is no slak in the thread. Question 4 :From the top of the tower height of 30 m, a person watches the base of the tree at a depression angle measuring 30 degrees. Find the distance between the tree and the tower. Question 5 :The man wants to determine the height of the light house. He measured the angle on the A and found that tan A = 3/4. What is the height of the lighthouse, if A is 40 m from the base? Q6:He ladder leans against a vertical wall making an angle of 20° with the ground. The foot of the ladder is 3 meters from the wall. Find the length of the stairs. Question 7: A kite flying at an altitude of 65 m is attached to a thread tilted 31° to the horizontal one. What is the length of the string? Question 8: The length of the rope between the kites and the point on the ground is 90 m. If the rope makes an angle δ with ground level such that the tan δ = 15/8, how tall will the kite be? Question 9: The plane is observed to approach the air point. It is located 12 km from the observation point and makes an altitude angle of 50 degrees. Find the height above the ground. Question 10:Balloon related to cable length of 200 m sloping at an angle of 60 degrees . Find the height of the balloon off the ground. (Imagine that there is no slur in the cable) Answers to the question 1:The height angle of the upper part of the building at a distance of 50 m from its foot on the horizontal plane will be 60 degrees. Find the height of the building. Solution: Now we need to find the length of the side AB.tan = Opposite side / adjacent side 60° = AB / BC√3 = AB / 50√3 x 50 = ABAB = 50√3Approximate value √3 is 1,732AB = 50 (1.732) AB = 86.6 mSo, the height of the building is 86.6 m.Question 2:Ladder placed on the wall so that it reaches the tops of the wall height of 6 m, and the ladder tilts at an angle of 60 degrees. Find how far the ladder is from the foot of the wall. Solution: Here AB represents the height of the wall, BC is the distance between the wall and the foot of the staircase and ac is the length of the staircase. In the RIGHT TRIANGLE, the ABC side, which is opposite a 60-degree angle, is known as the opposite side (AB), a side that is opposite 90 degrees, called the hypotension side (AC), and the remaining side is called the adjacent side (BC). Now we need to find the distance between the foot of the ladder and the wall. That is, we must find the length of BC.tan δ = Opposite Side/Adjacent Sidetan60° = AB/BC√3 = 6/BCBC = 6/√3BC = (6/√3) x (√3/√3/√ √ <1> <6>3)BC = (6√3)/3BC = 2√3Proxy value √3 is 1,732 hp. = 2 (1,732)BC = 3,464 m So the distance between the foot of the stairs and the wall is 3,464 m.Question 3:Thread kite 100 meters long and makes an angle of 60 ° with horizontal. Find the height of the kite, assuming that there is no slak in the row. Solution: Now we need to find the side height AB. Sin η = Opposite side/Hypotenuse sidesin| = AB/ACsin 60° = AB/100√3/2 = AB/100(√3/2) x 100 = ABAB = 50 √3 mSo, height of the kite from the ground 50 √3 m.Question 4:Top tower height of 30 m person watches the base of the tree at a drop angle measuring 30 degrees. Find the distance between the tree and the tower. Solution: Here AB represents the height of the tower, BC is the distance between the foot of the tower and the foot of the tree. Now we need to find the distance between the foot of the tower and the foot of the tree (BC).tan δ = Opposite Side/Adjacent Side 30° = AB/BC1/√3 = 30/BCBC = 30√3Approximate value √ 3 is 1.732 BC. = 30 (1,732) BC = 81.96 mSo, the distance between the tree and the tower is 51.96 m.Question 5:The man wants to determine the height of the light house. He measured the angle on the A and found that tan A = 3/4. What is the height of the lighthouse, if A is 40 m from the base? Solution: Now we need to find the height of the light house (BC).tanA = Opposite side/Adjacent sidetanA=BC/ABGiven : tanA = 3/43/4 = BC/403 x 40 = BC x 4BC = (3 x 40)/4BC = (3 x 10)BC = 30 m So, the height of the light house is 30 m.Question 6:The man wants to determine the height of the light house. Vin A leans against the vertical wall makes an angle of 20° with the ground. The foot of the ladder is 3 meters from the wall. Find the length of the stairs. Solution : Now we need to find the length of the stairs (AC). Cos δ = Adjacent Side/Hypotenuse sideCos δ = BC/ACCos 20° = 3/AC0.9396 = 3/ACAC = 3/0.9396AC = 3.192So, length of stairs 3,192 m.Question 7:Kite flying at an altitude of 65 m, attached to a rope tilted by 31° to the horizontal. What is the length of the string? Solution: Now we need to find the length of the AC string. Sin η = Opposite Side/Hypotenuse SideSin δ = AB/ACSin 31° = AB/AC0.5150 = 65/ACAC = 65/0.5150AC = 126.2 mHence, rope length 126.2 m.Question 8:Length of rope between kites and point on earth 90 m. If the rope makes angle δ with ground level such that the tan δ = 15/8, how tall will the kite be? Solution: Now we need to find the length of the side AB. Tan δ = 15/8 --------> baby cot = 8/15csc δ = √(1+ cot²l)csc δ = √(1 + 64/225)csc δ = √(225 + 64)/225csc δ = √289/0 225csc δ = 17/15 -------> sin η = 15/17But, sin | = opposite side/hypotenuse side = AB/ACAB/AC = 15/17AB/90 = 15/17AB = (15 x 90)/17AB = 79.41So, tower height 79.41 m.Question 9:Aircraft observed to approach the air point. It is located 12 km from the observation point and makes an altitude angle of 50 degrees. Find the height above the ground. Solution: Now we need to find the length of the side AB. From the above figure AB means the height of the aircraft above the ground. sin η = Opposite side/Hypotenuse sidesin 50° = AB/AC0.7660 = h/120.7660 x 12 = hh = 9.192 kmSo, aircraft height above ground is 9,192 km. Question 10:The balloon is connected to the meteorological station with a cable length of 200 m, tilted at an angle of 60 degrees. Find the height of the balloon off the ground. (Imagine that there is no slak in the cable) Solution: Now we need to find the length of the side AB. From the above figure AB means the height of the ball above the ground. sin η = Opposite side/Hypotenuse lateral sin δ = AB/ACsin 60° = AB/200√3/2 = AB/200AB = (√3/2) x 200AB = 100√ √ <5>3Proxim value √3 is 1,732AB = 100 (1,732)AB = 173,2 mSo, bullet height from the ground - 173,2 m. In addition to things, provided in this section, if you need any other things in mathematics, please use our custom Google search here. If you have any feedback on our mathematical content, please provide us with: v4formath@gmail.com We always appreciate your feedback. You can also visit the following web pages on various materials in mathematics. PROBLEMS WORDSHCF and LCM word problemsMeeting problems with simple equations Problems with Word on linear equations Problems with quadratic equationsAgreima problems wordsMeeting problems with trainsRea and perimeter problems Word problems on direct variation and inverse option Problems with Word per unit priceGill changesSpection Problems with unit Problems with Word on comparison custom units word problems Converting metric units word problemsModern problems with simple interestPlaying interestSpecial interestsSplayers of angles Additional and additional angles problems with wordsSome facts problems with wordsTrigonometry problems with the word General problems with the word Problems with text Profit and loss of the word Problems Markup and markup problems with the word Problems with the decimal wordIndustrial problems with fractions About problems with the word on mixed fractrius One step equation problems with the wordLinear inequalities problems with the word Ratio and proportional problems with the wordTime and work problems with wordPromov in sets and charts veinsEducation Problems with centuriesSite theorem Problems with the wordMarking problems with the number of wordsTime of problems with constant speedMeeting problems with the speed Of problems with Word on the sum of the corners of the triangle is 180 degreesInteresting themes And losses ShortcutsMart shortcutsTime table Times, speed and distance shortcutsRatio and proportions shortcutsDemine and range of rational functionsDemidation and range of rational functions with holesChange rational functionsChange rational functions with holesVerting repeating decimals in fractionsDecimal representation of rational numbersChange square root using a long separation of methodL.C.M to solve time and problems with workTranslation of problems with the word in algebraic expressionsRemenuation at 2 power 256 is divided into 17Insurration, when 17 power 23 is divided into 16Sum of all three-digit numbers, divided into 6Sum of all three digits, divided into 7Suzhet all three digits, divided into 8Suma of all three-digit numbers formed with the help of 1, 3, 4Suma all three four digits formed with nonzero figuresSuzh all three four-digit numbers formed with the help of 0 , 1, 2, 3Sum of all three four digits formed using 1, 2, 5, 6 author's onlinemath4all.com SBI! Sbi!