

The Pythagorean Theorem - Word Problems

1. A rectangular plasma TV screen has a width of 40 inches and a diagonal of 52 inches. Find the height of the TV screen. Round your answer to the nearest tenth of an inch.
2. A rectangular painting has a height of 36 cm and a diagonal of 45 cm. Find the perimeter of the painting.
3. The total amount of fencing around a square plot of land is 112 yards. Find the diagonal distance across the plot of land. Round your answer to the nearest yard.
4. The length of the diagonal of a square carpet is 18 feet. Find the width of the carpet. Leave your answer in radical form.

5. The length of the diagonal of a square swimming pool is 72 meters. Find the perimeter of the pool. Round your answer to the nearest meter.

6. The lengths of the diagonals of a rhombus are 16 and 24. Find the perimeter of the rhombus. Leave your answer in radical form.

7. One diagonal of a rhombus has a length of 14, and the perimeter of the rhombus is 36. Find the length of the other diagonal of the rhombus. Leave your answer in radical form.

8. A farmer leans his 8-foot-long rake against the side of his barn, such that the base of the rake is 5 feet from the base of the barn. How far above the ground is the point where the top of the rake touches the barn? Round your answer to the nearest tenth of a foot.

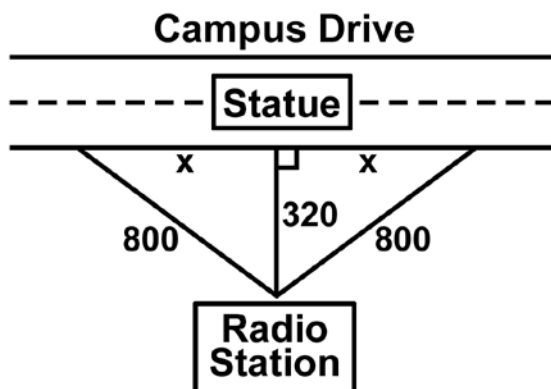
9. A ladder is leaning against the side of a building and is positioned such that the base of the ladder is 25 feet from the base of the building, and the top of the ladder touches the building at a point that is 60 feet above the ground. What is the length of the ladder?

10. A guy wire connects to the top of a radio tower for support. The guy wire is 150 feet long and is positioned such that the base of the wire is 80 feet from the base of the radio tower. How tall is the radio tower? Round your answer to the nearest foot.

11. A lightning bolt has knocked over the top part of a tree, such that the height of the remaining stump is 13 feet and the top of the tree now touches the ground at a point which is 38 feet from the base of the tree stump. What was the original height of the tree? Round your answer to the nearest foot.

12. A lumberjack plans to chop down a 51-foot-tall tree, leaving a stump that is 10 feet tall. He needs to be sure that the fallen portion of the tree does not land on a house, which is 43 feet from the base of the tree. How far from the base of the tree stump will the top of the tree touch the ground when it falls? Round your answer to the nearest foot. Will the tree hit the house?

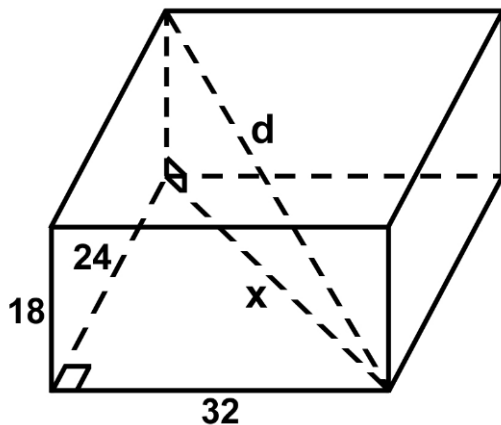
13. A university has a student-run radio station, which can broadcast to any radio within 800 meters of the station. The radio station is located 320 meters from a statue, which is at the center point on Campus Drive. How many meters along Campus Drive can the broadcast be heard? Round your answer to the nearest meter. If a student lives in an apartment on Campus Drive that is 710 meters from the statue, can she hear the radio broadcast?



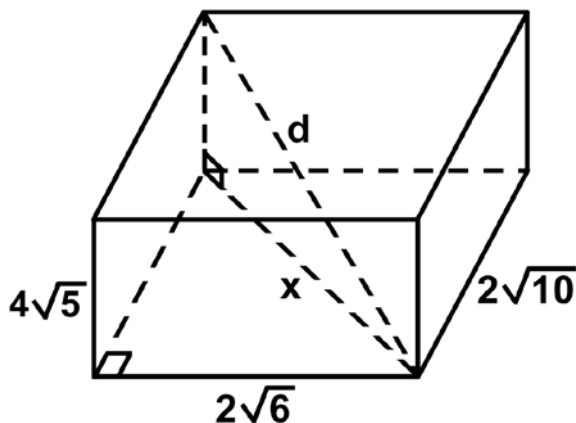
14. Emma rides her bicycle 2 miles south, 1 mile west, 5 miles south, and 10 miles west. How far is she from where she started? Round your answer to the nearest mile.

15. A delivery truck drives $5\sqrt{3}$ miles south, $\sqrt{13}$ miles east, $3\sqrt{3}$ miles south, and $3\sqrt{13}$ miles east. How far is the delivery truck from where it started? Leave your answer in radical form.

16. The dimensions of a rectangular box are 18 cm by 24 cm by 32 cm, as shown in the diagram below. Find the length of the diagonal of the box, which is represented by the variable d . Round your answer to the nearest centimeter.



17. The dimensions of a rectangular box are $4\sqrt{5}$ cm by $2\sqrt{10}$ cm by $2\sqrt{6}$ cm, as shown in the diagram below. Find the length of the diagonal of the box, which is represented by the variable d . Leave your answer in radical form.



18. A square garden has a perimeter of $32\sqrt{5}$ feet. Find the length of the diagonal of the garden. Leave your answer in radical form.

19. The lengths of the diagonals of a rhombus are $4\sqrt{5}$ and 16. Find the perimeter of the rhombus. Leave your answer in radical form.

20. A rectangular room in a house is $2\sqrt{7}$ feet wide and has a diagonal distance of $2\sqrt{35}$ feet. Find the length of the room and the area of the room. Leave your answers in radical form. (Hint: Area of a rectangle = length times width)