



Codingal
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Pythagoras's Theorem

- **Problem:** A rectangular swimming pool has a length of 20 meters and a width of 16 meters. A rope is stretched from one corner of the pool to the opposite corner. After the rope is cut, one part is found to be 6 meters shorter than the other. How long was the rope before it was cut?
- **Problem:** A kite string is tied to the ground at two points 15 meters apart. The kite is directly above the midpoint of the string. If each part of the string is 17 meters long, how high is the kite above the ground?
- **Problem:** A right-angled triangle has one leg that is 10 meters longer than the other leg. The hypotenuse is 26 meters. Find the lengths of both legs of the triangle.
- **Problem:** A man walks 5 km due north and then turns 30° to his right. He continues walking in that direction for another 8 km. Find the straight-line distance between his starting point and his final position.
- **Problem:** A flagpole is split into two parts by a rope. The lower part of the pole is 8 meters tall, and the rope is 15 meters long, reaching from the top of the flagpole to a point on the ground 12 meters away from the base. Find the height of the entire flagpole.
- **Problem:** Two lighthouses are 50 km apart along a straight coastline. The top of one lighthouse is 70 meters above sea level, and the top of the other is 100 meters above sea level. If the distance between the tops of the lighthouses is 60 km, find the distance of each lighthouse from the coastline.
- **Problem:** In a right-angled triangle, the hypotenuse is 50 cm long. The difference in the lengths of the other two sides is 14 cm. Find the lengths of the other two sides.
- **Problem:** An airplane flies 100 km east and then 120 km north. It then changes direction and flies directly back to its starting point. How far does the airplane fly on the last leg of its journey?
- **Problem:** A rectangular park has dimensions of 60 meters by 80 meters. A diagonal path is to be built across the park. The cost of paving the path is \$30 per meter. If the path is 10 meters longer than one of the sides of the park, what will be the total cost of paving the path?
- **Problem:** In a trapezoid, the two parallel sides are 8 cm and 12 cm long. The non-parallel sides are 6 cm and 10 cm long. If a line segment is drawn from the midpoint of one non-parallel side to the midpoint of the other non-parallel side, what is the length of this segment? (Hint: Use Pythagoras's theorem on the two right triangles formed by the segment and the non-parallel sides.)

