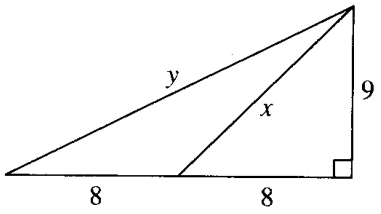
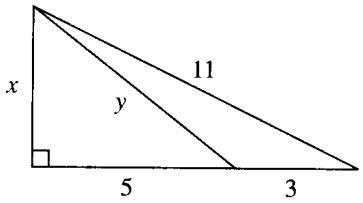
Topic: Pythagoras Theorem

Q1 Calculate the values of x and y in each of the following

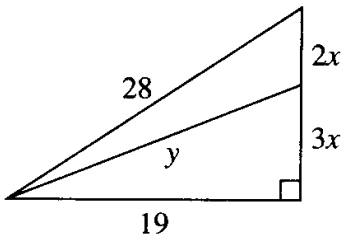
(a)



(b)



(c)



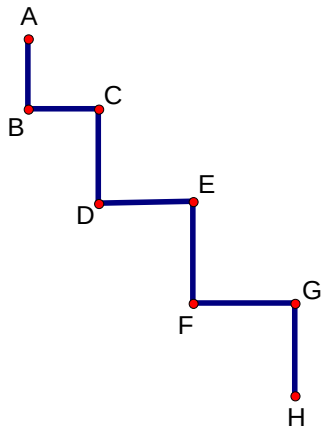
Q2 Two vertical poles are 14 m apart. One is 3 m high and the other is 4.6 m high. Find the distance between the tops of the two posts.

Q3 A cone has a base radius of 8 cm and a slant height of 12 cm. Calculate its vertical height.

Q4 The lengths of the sides of a right-angled triangle are x cm, $(x+2)$ cm, and $(x+4)$ cm. Calculate the value of x.

Q5 In a right-angled triangle ABC, $AB = 2x$ cm, $BC = (x-1)$ cm and $AC = (2x+1)$ cm. Find the value of x.

Q6 The diagram shows the vertical lines AB, CD, EF, GH and the horizontal lines BC, DE, and FG. Given that $AB = BC = 3$ cm, $CD = DE = GH = 4$ cm, $EF = FG = 5$ cm. Find the length of AH.



*Q7 In Figure 1, the points *A*, *B*, *C* and *D* are the centers of four spheres, each of radius 4 cm, which rest on a horizontal table. Each sphere touches two of the other spheres, so that *ABCD* is a square of side 8 cm.

(a) Given that *N* is the midpoint of *AC*, find AN^2.

(b) A fifth sphere, with center *E* and radius 5 cm, is now placed on top of the other four spheres so that it touches each one of them, as shown in Figure 2. Find the height of *E* above the table.

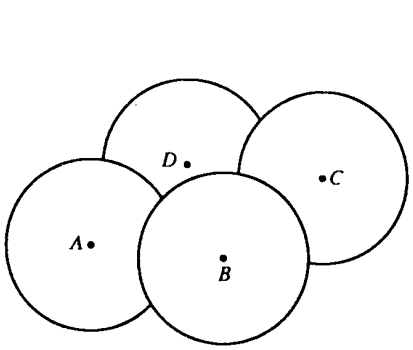


Figure 1

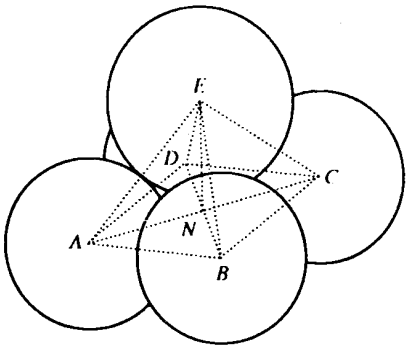
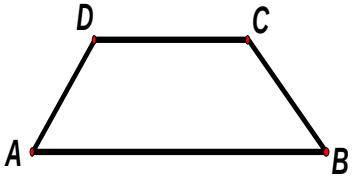


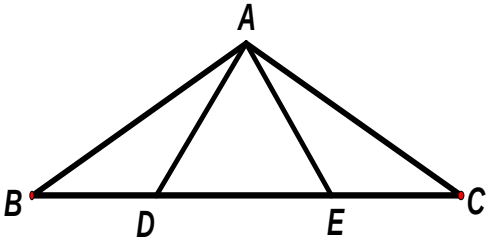
Figure 2

*Q8 The perimeter of a right-angled triangle is 180 cm and the length of the altitude perpendicular to the hypotenuse is 36 cm. Find the length of the hypotenuse.

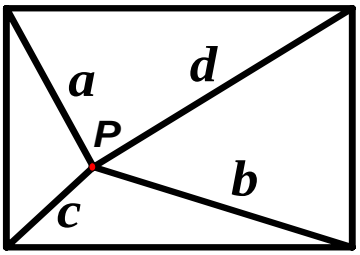
*Q9 The diagram shows a trapezium *ABCD*. Given that *AB* = 52 cm, *BC* = 12 cm, *CD* = 39 cm and *AD* = 5 cm, find the area of the trapezium.

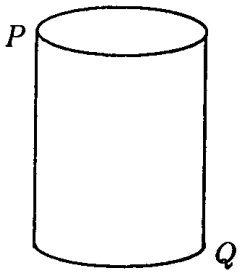


*Q10 4 points *B*, *D*, *E* and *C* lie on a straight line with *AD* = *AE* = 10 cm, *DE* = 12 cm, *AB* = *AC* and *BD* = *CE*. Given that the perimeter of triangle *ABC* is twice that of triangle *ADE*, find the length of *BD*.



*Q11 A point P is placed inside a rectangle as shown (below, left). Show that $a^2 + b^2 = c^2 + d^2$.





*Q12 The diagram (above, right) shows a circular cylinder of circumference 6 cm and height 4 cm. Point P on the top rim is diametrically opposite Q on the bottom rim. What is the shortest distance from P to Q along the surface of the cylinder?

*Q13 Diagram I shows a rectangular piece of paper $ABCD$ with AB = 6 cm and BC = 8 cm. The paper is folded so that corner C lands on the opposite corner A as shown in diagram II. What is the length of the crease EF?

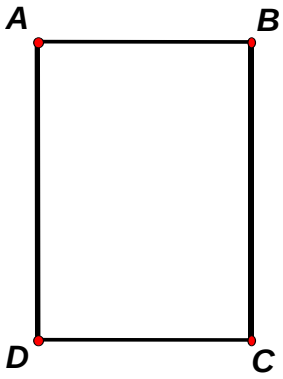


Diagram I

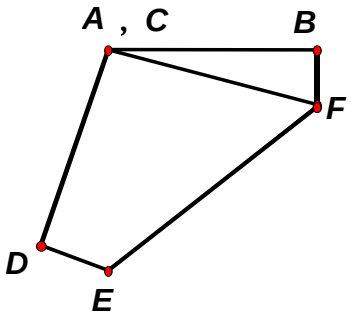


Diagram II

*Q14 A circular table is pushed into a right-angled corner of a room such that point A on the edge of the table is 8 cm from one wall and 9 cm from the other wall. Find the radius of the table.