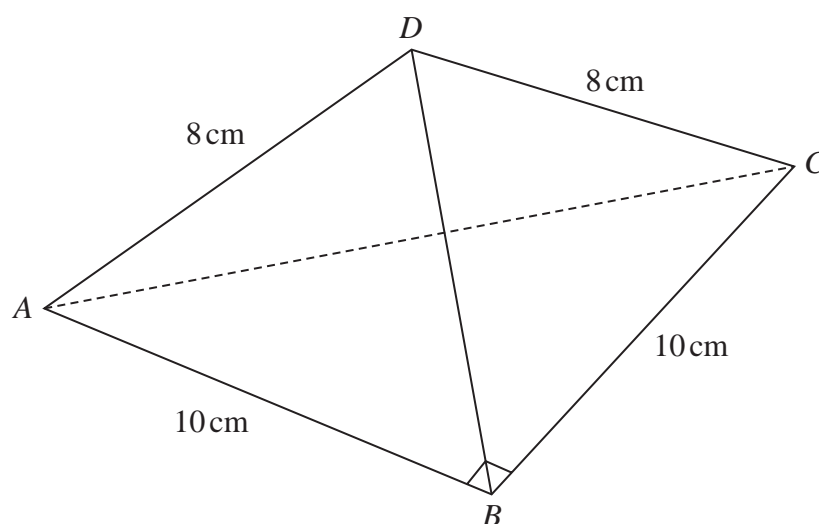**9**

Figure 2

Figure 2 shows a triangular pyramid *ABCD* with base *ABC*

$$AB = BC = 10 \text{ cm} \qquad AD = CD = 8 \text{ cm} \qquad \angle ABC = 90°$$

(a) Find the exact length of *AC*

Give your answer in the form $p\sqrt{q}$ cm where p is an integer and q is a prime number.

(2)

The point *M* is the midpoint of *AC*

(b) Find the exact length of *BM*

Give your answer in the form $m\sqrt{n}$ cm where both m and n are prime numbers.

(2)

Given that *BD* = 6 cm,

(c) find, in degrees to one decimal place, the size of the acute angle between the plane *ACD* and the plane *ABC*

(4)

The base *ABC* of the pyramid is placed on a horizontal plane.

(d) Find, in cm to 3 significant figures, the vertical height of *D* above the base.

(2)

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Question 9 continued

Question 9 continued

Question 9 continued

(Total for Question 9 is 10 marks)