**1.**                                                                                                        **[4 marks]**
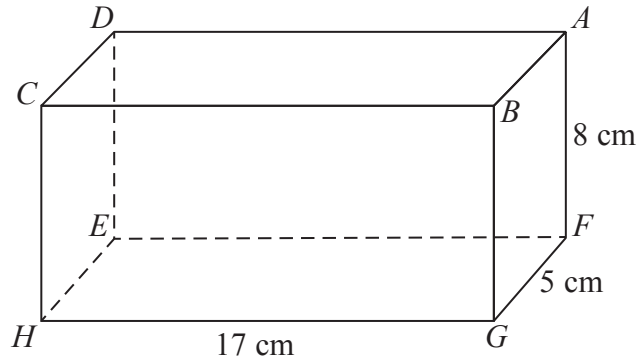
*ABCDEFGH* is a cuboid.



Diagram **NOT** accurately drawn

The cuboid has

        length 17 cm
         width 5 cm
        height 8 cm

Work out the size of the angle that *AH* makes with the plane *EFGH*.
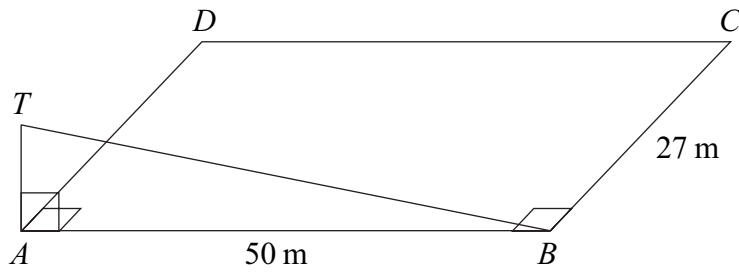Give your answer correct to 1 decimal place.

Diagram **NOT** accurately drawn

*ABCD* is a horizontal rectangular field.
*AB* = 50 m.
*BC* = 27 m.
*AT* is a vertical mast.

(a) The angle of elevation of *T* from *B* is 19°.
Calculate the length of *AT*.
Give your answer correct to 3 significant figures.

............................ m

**(3)**

(b) Calculate the distance from *C* to *T*.
Give your answer correct to 3 significant figures.

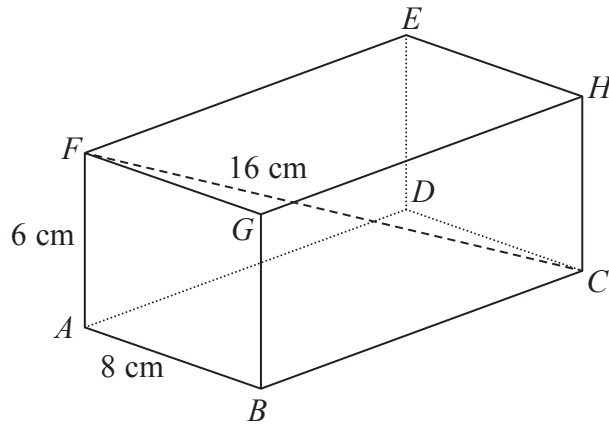............................ m

**(3)**

**3.** [5 marks]



Diagram **NOT** accurately drawn

The diagram shows a cuboid *ABCDEFGH*.
*AB* = 8 cm, *AF* = 6 cm and *FC* = 16 cm.

(a) Find the length of *BC*.
   Give your answer correct to 3 significant figures.

*BC* = ........................................ cm

**(3)**

(b) Find the size of the angle between the line *FC* and the plane *ABGF*.
   Give your answer correct to 1 decimal place.

........................................ °

**(2)**

The diagram shows a prism.

M
12 cm
P
Diagram **NOT**
accurately drawn
L
20 cm
N
Q
30°
R
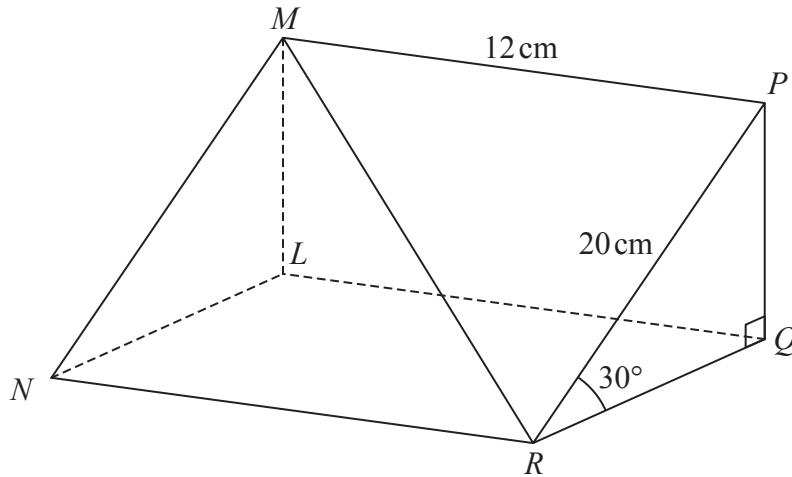
Triangle *PQR* is a cross section of the prism.

*PR* = 20 cm
*MP* = 12 cm
Angle *PRQ* = 30°
Angle *PQR* = 90°
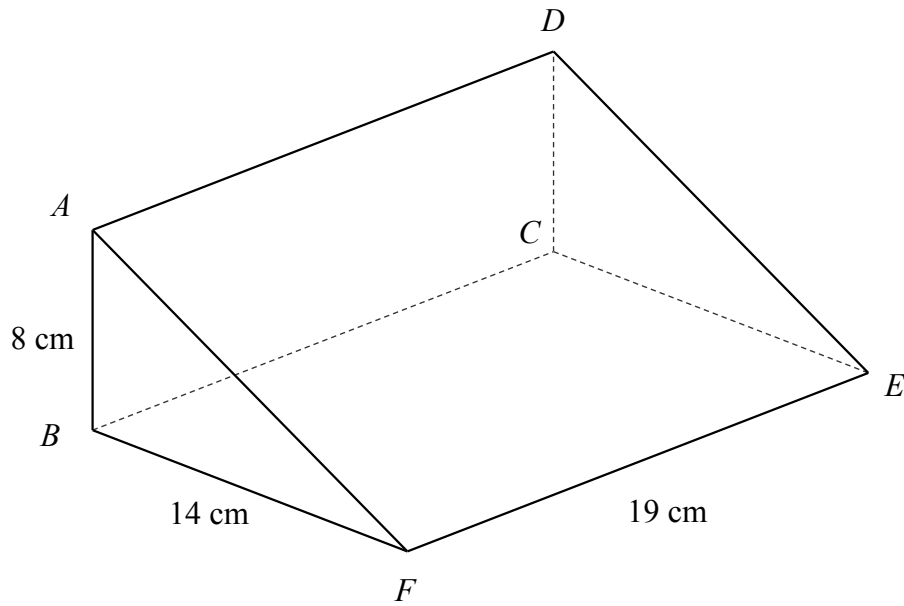
Calculate the size of the angle that the line *MR* makes with the plane *RQLN*.
Give your answer correct to 1 decimal place.

° 

...................................................

The diagram shows a triangular prism *ABCDEF*
*AB* = 8 cm
*BF* = 14 cm
*EF* = 19 cm



(a)   Calculate the distance between *A* and *E*.

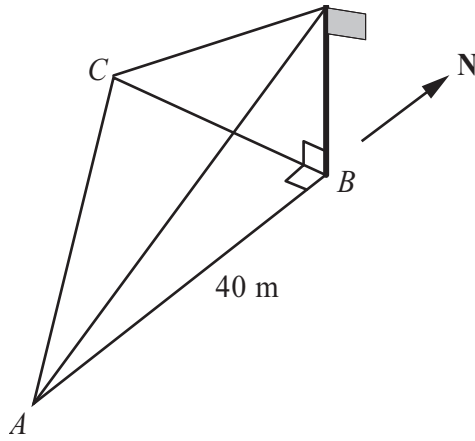(b)   Calculate the angle between *AE* and the plane *BCEF*.

Diagram **NOT** accurately drawn

*A*, *B* and *C* are points on horizontal ground.
*C* is due West of *B*.
*A* is due South of *B* and *AB* = 40 m.
There is a vertical flagpole at *B*.
From *A*, the angle of elevation of the top of the flagpole is 13°.
From *C*, the angle of elevation of the top of the flagpole is 19°.

Calculate the distance *AC*.
Give your answer correct to 3 significant figures.

........................... m

**7.** [4 marks]

The diagram shows a pyramid with a horizontal rectangular base *PQRS*.
*PQ* = 16 cm.
*QR* = 10 cm.
*M* is the midpoint of the line *PR*.
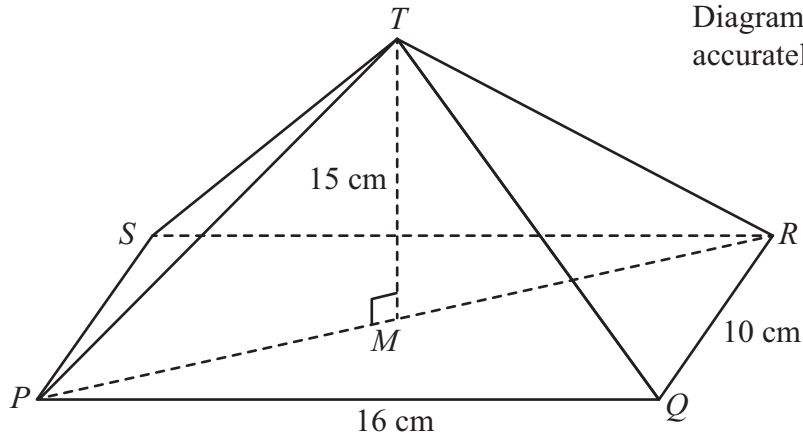The vertex, *T*, is vertically above *M*.
*MT* = 15cm.



Diagram **NOT** accurately drawn

Calculate the size of the angle between *TP* and the base *PQRS*.
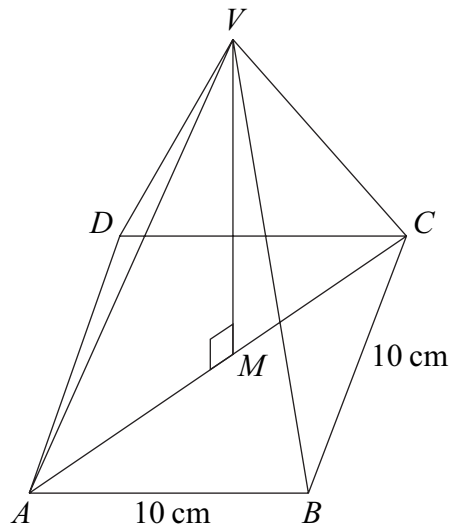Give your answer correct to 1 decimal place.

.............................................................. °

V

Diagram **NOT**
accurately drawn

D

C

M

10 cm

A

10 cm

B

The diagram shows a pyramid.
The base, *ABCD*, is a horizontal square of side 10 cm.
The vertex, *V*, is vertically above the midpoint, *M*, of the base.
*VM* = 12 cm.

Calculate the size of angle *VAM*.
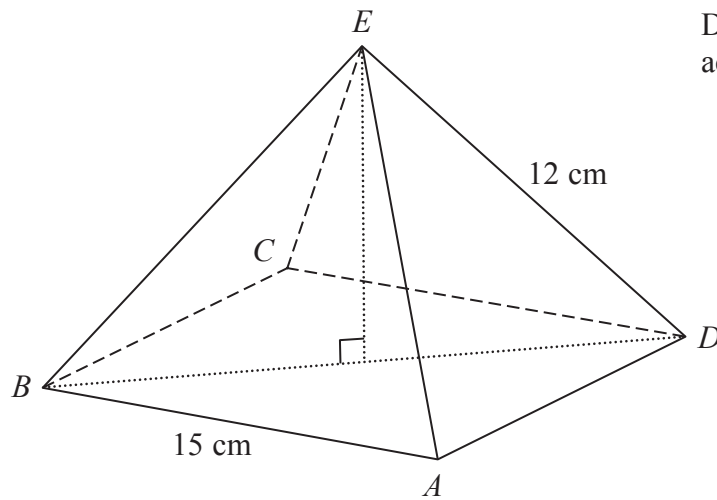
°
........................

*ABCDE* is a square-based pyramid.



Diagram **NOT** accurately drawn

*AE* = *BE* = *CE* = *DE* = 12 cm
*AB* = 15 cm

Calculate the size of angle *DEB*.
Give your answer to the nearest degree.

°
.................................................

The diagram shows a triangular prism with a horizontal rectangular base *ABCD*.
*AB* = 10 cm.  *BC* = 7 cm.
*M* is the midpoint of *AD*.
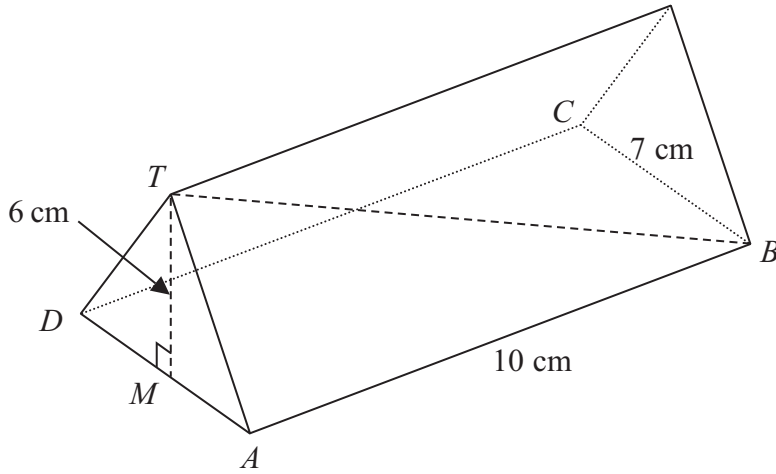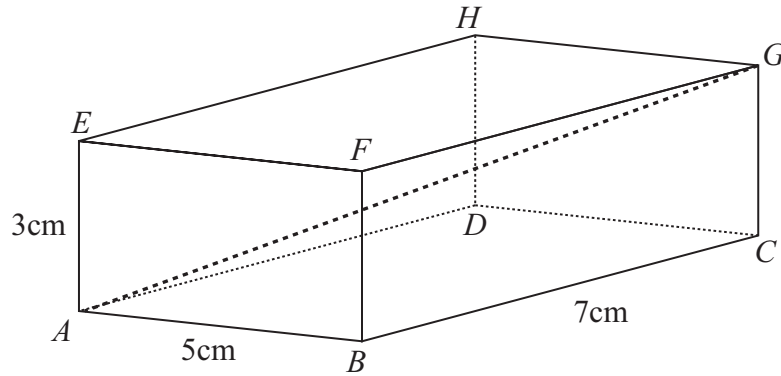The vertex *T* is vertically above *M*.
*MT* = 6 cm.



Diagram **NOT**
accurately drawn

Calculate the size of the angle between *TB* and the base *ABCD*.

Give your answer correct to 1 decimal place.

......................................... °

Diagram **NOT**
accurately drawn



The diagram shows a cuboid *ABCDEFGH*.
*AB* = 5cm
*BC* = 7cm
*AE* = 3cm

(a) Calculate the length of *AG*.
    Give your answer correct to 3 significant figures.

.............................................. cm

**(3)**

(b) Calculate the size of the angle between *AG* and the plane *ABCD*.
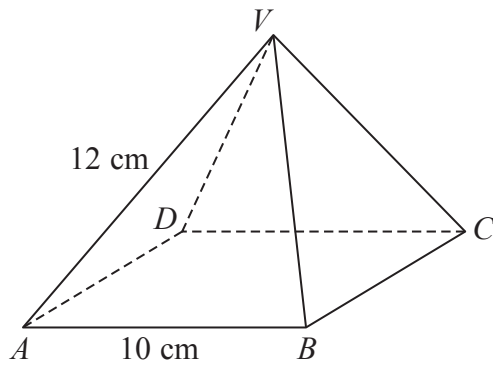    Give your answer correct to 1 decimal place.

.............................................. °

**(2)**

Diagram **NOT** accurately drawn

*ABCD* is the square base of the pyramid *VABCD*.

*AB* = *BC* = *CD* = *DA* = 10 cm.
*VA* = *VB* = *VC* = *VD* = 12 cm.

Calculate the height of the pyramid.
Give your answer correct to 3 significant figures.

A pyramid has a horizontal square base *ABCD* with sides of length 230 metres.
*M* is the midpoint of *AC*.
The vertex, *T*, is vertically above *M*.
The slant edges of the pyramid are of length 218 metres.

Calculate the height, *MT*, of the pyramid.
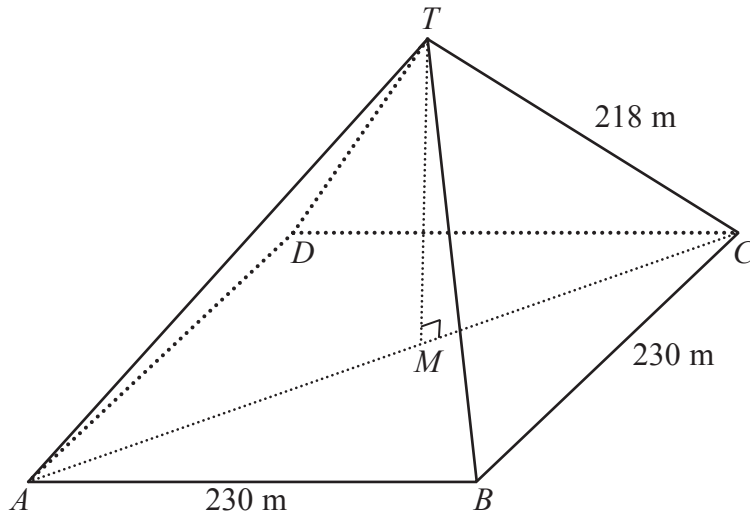Give your answer correct to 3 significant figures.
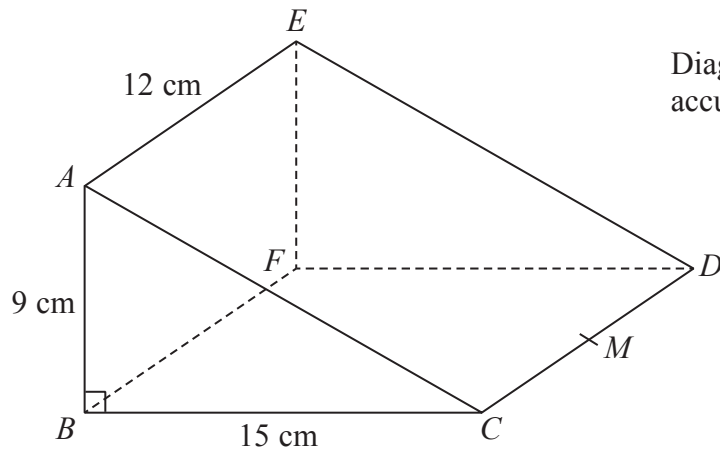


Diagram **NOT**
accurately drawn

.......................... m

Diagram **NOT** accurately drawn

*ABCDEF* is a triangular prism.
*AB* = 9 cm, *BC* = 15 cm and *AE* = 12 cm.
Angle *ABC* = 90°
*M* is the midpoint of *CD*.

Calculate the size of the angle between *AM* and the plane *BCDF*.
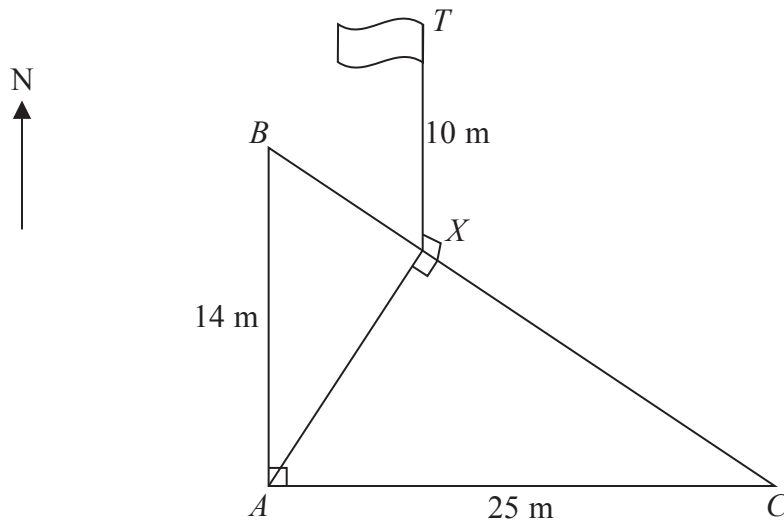Give your answer correct to 1 decimal place.

..........................°

*T*

Diagram **NOT**
accurately drawn

N

*B*

10 m

*X*

14 m

*A*    25 m    *C*

*A*, *B* and *C* are points on horizontal ground.
*B* is due North of *A* and *AB* is 14 m.
*C* is due East of *A* and *AC* is 25 m.

A vertical flagpole, *TX*, has its base at the point *X* on *BC* such that the angle *AXC* is a right angle.

The height of the flagpole, *TX*, is 10 m.

Calculate the size of the angle of elevation of *T* from *A*.
Give your answer correct to 1 decimal place.

......................................... °

The diagram shows a cube *ABCDEFGH*.
The sides of the cube are of length 5 cm.

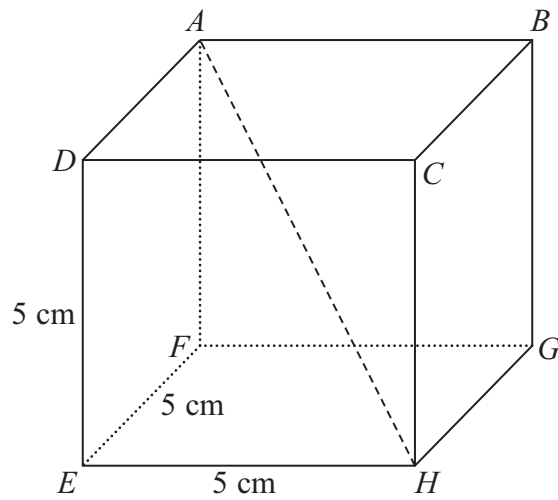Calculate the size of the angle between the diagonal *AH* and the base *EFGH*.
Give your answer correct to 1 decimal place.

Diagram **NOT**
accurately drawn

°
.......................................................