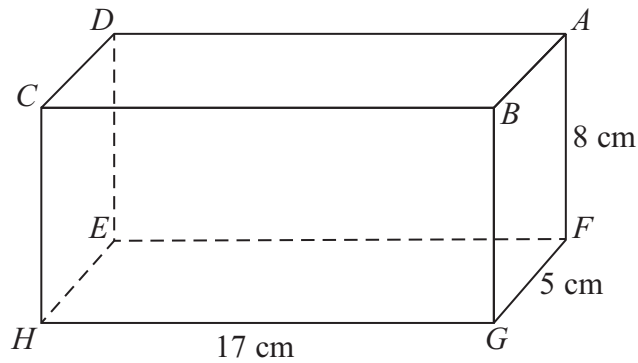**1.** **[4 marks]**

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*.
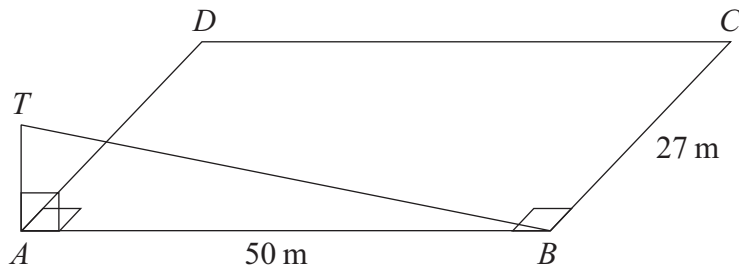Give your answer correct to 1 decimal place.

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.
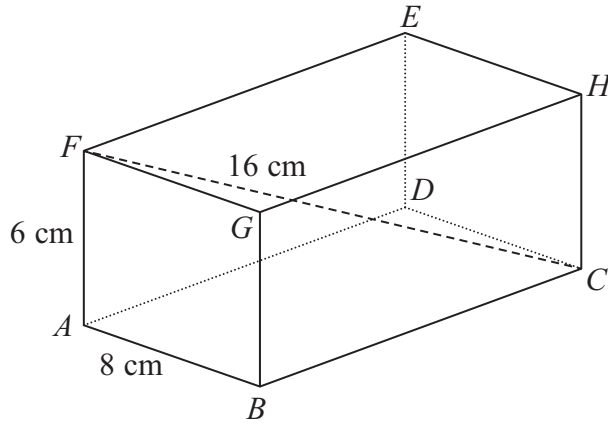
.... m

(3)

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.
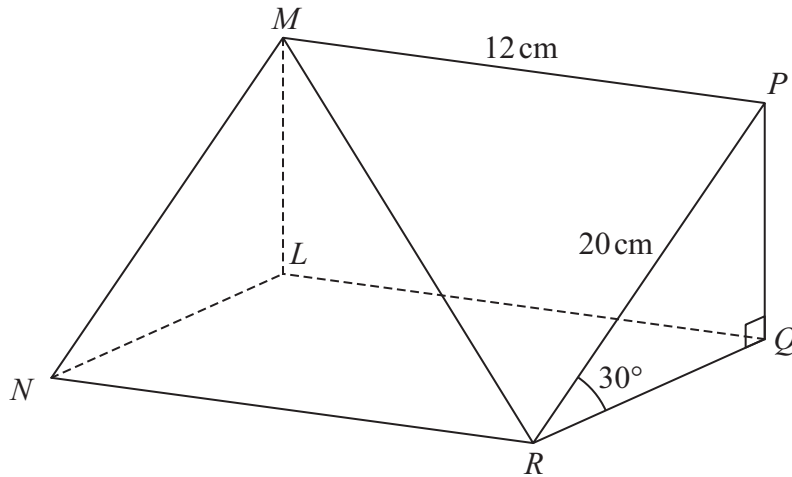
Diagram **NOT** accurately drawn

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*.
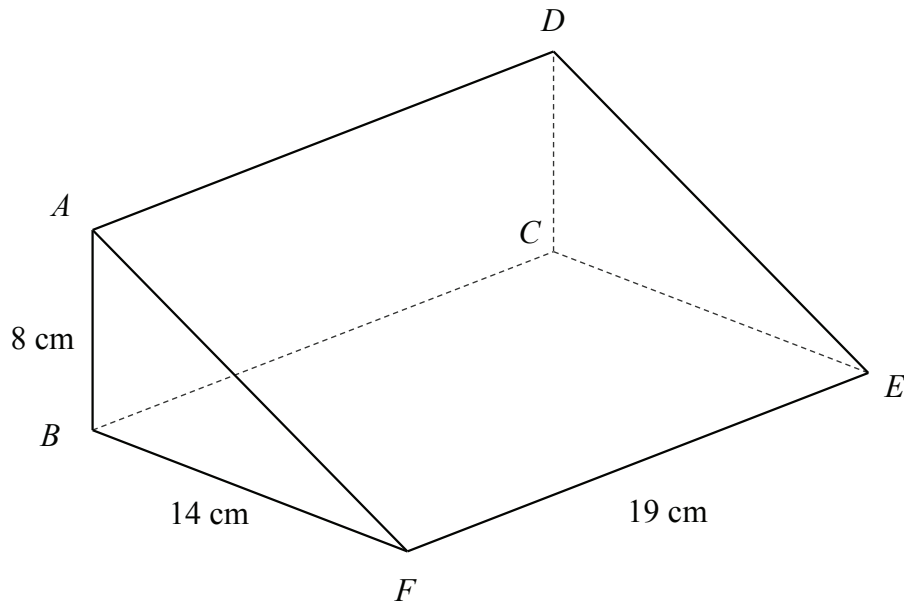Give your answer correct to 1 decimal place.

....°

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

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

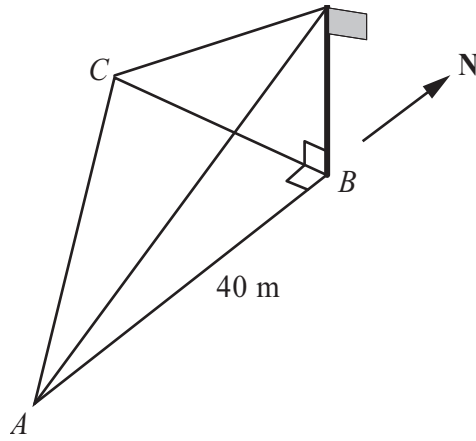(b)   Calculate the angle between *AE* and the plane *BCEF*.

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

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*.
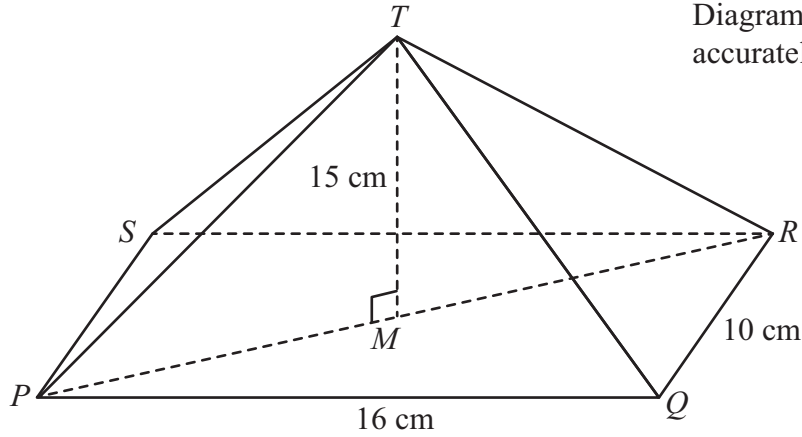
The vertex, *T*, is vertically above *M*.

MT = 15cm.

T

Diagram **NOT**
accurately drawn

15 cm

S

R

M

10 cm

P

16 cm

Q

Calculate the size of the angle between *TP* and the base *PQRS*.

Give your answer correct to 1 decimal place.

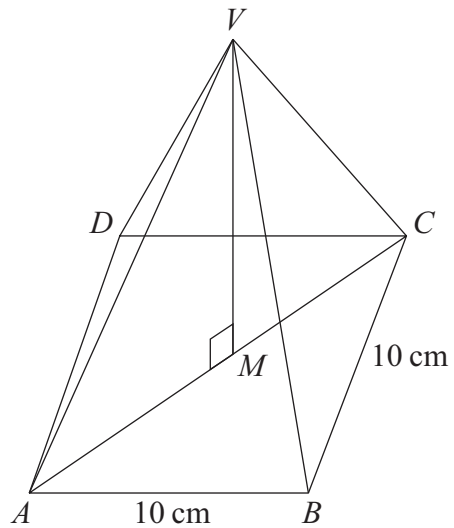... °

Diagram **NOT** accurately drawn

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.

E

Diagram **NOT**
accurately drawn

12 cm

C

D

B

15 cm

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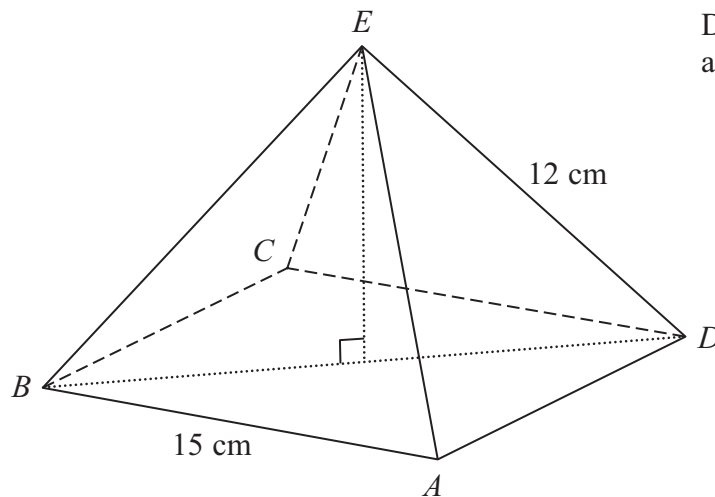
AE = BE = CE = DE = 12 cm
AB = 15 cm

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.
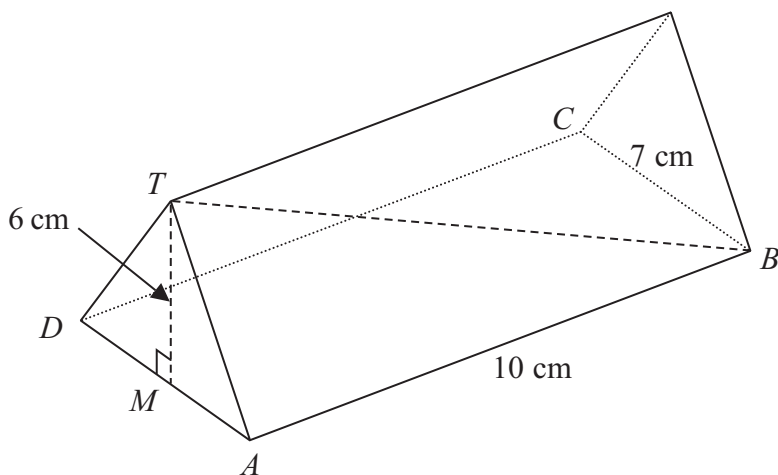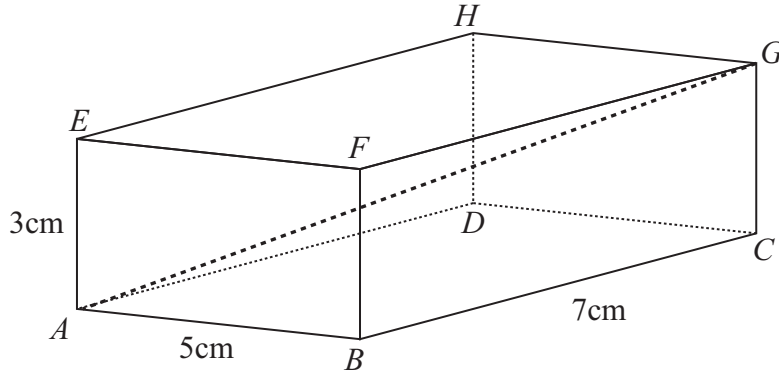

Diagram **NOT**
accurately drawn

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*.
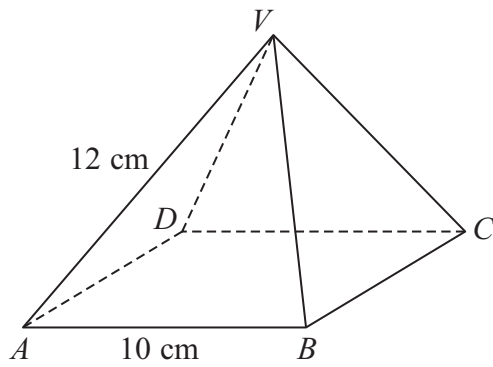Give your answer correct to 1 decimal place.

°
....

(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.
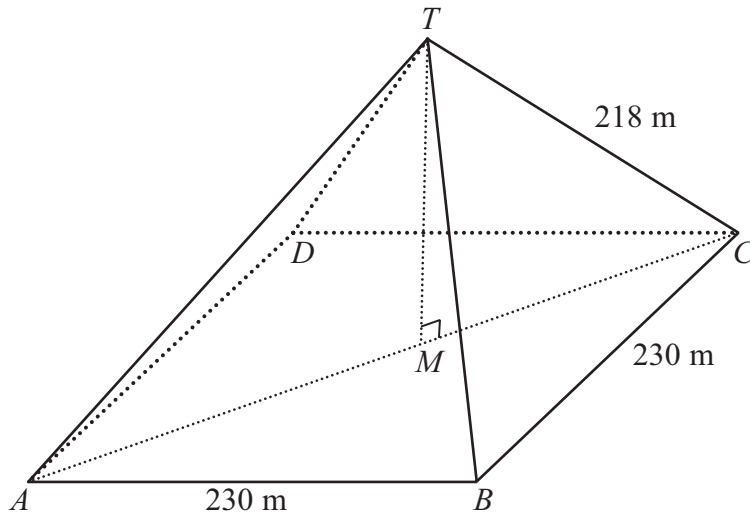Give your answer correct to 3 significant figures.
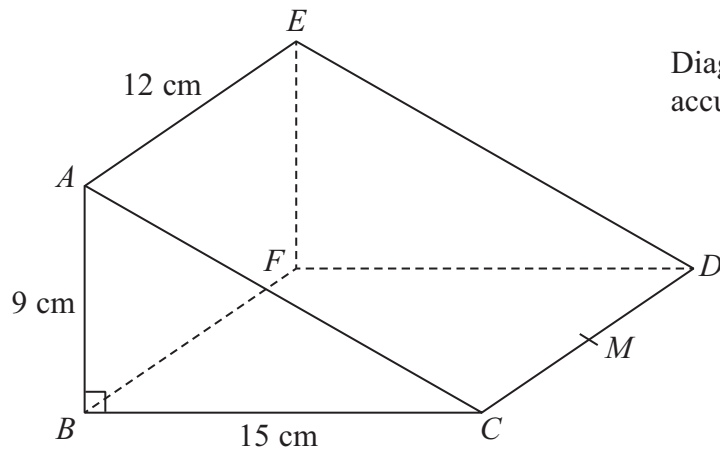
Diagram **NOT**
accurately drawn

218 m

230 m

230 m

.... 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*.
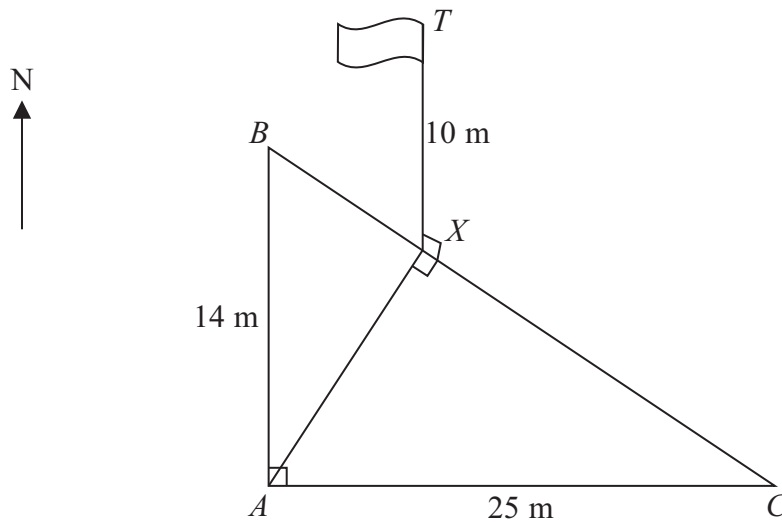Give your answer correct to 1 decimal place.

.... °

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.

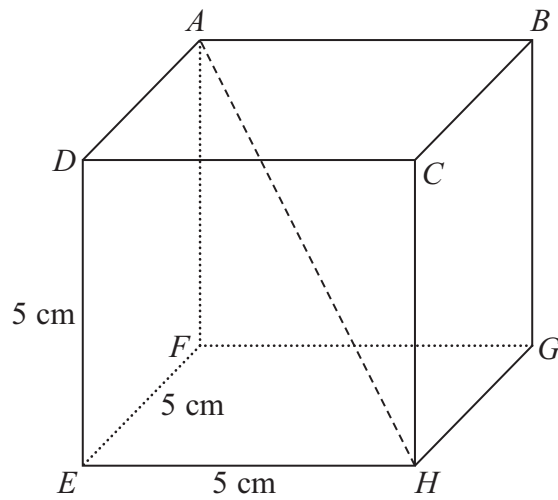Calculate the size of the angle between the diagonal *AH* and the base *EFGH*.
Give your answer correct to 1 decimal place.

Diagram **NOT**
accurately drawn

°
....