GCSE QUESTIONS

Q1. NON-CALCULATOR

(a) Write down the exact value of cos30°

....

(1)

(b)

12 cm

x cm

30°
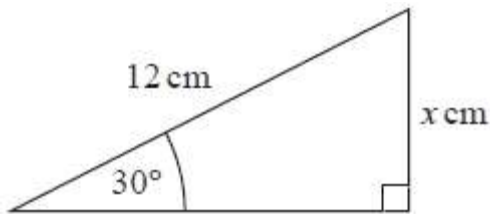
Given that sin30° = 0.5, work out the value of *x*.
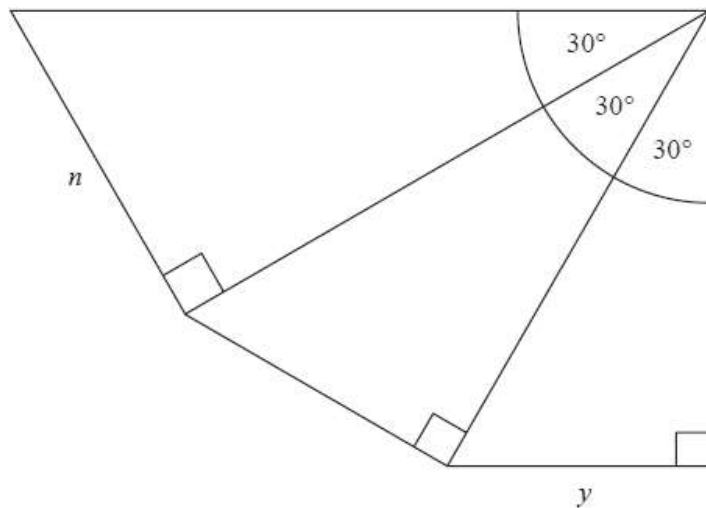
....

(2)

(Total for question is 3 marks)

Q2. NON-CALCULATOR

Find the exact value of tan 30° × sin 60°
Give your answer in its simplest form.

....

(Total for question = 2 marks)

Q3. NON-CALCULATOR

30°

30°

30°

n

y

The diagram shows three right-angled triangles.

Prove that $y = \dfrac{3}{4}n$

(Total for question = 4 marks)

Q4. CALCULATOR ALLOWED

Work out $\sqrt[3]{\dfrac{4.3 \times \tan 39°}{23.4 - 6.06}}$

Give your answer correct to 3 significant figures.

....
(Total for question is 2 marks)

Q5. CALCULATOR ALLOWED

Use your calculator to work out $\sqrt{\dfrac{\sin 25° + \sin 40°}{\cos 25° - \cos 40°}}$

(a) Write down all the figures on your calculator display.

....
(2)

(b) Write your answer to part (a) correct to 2 decimal places.

....
(1)
(Total for question = 3 marks)

Q6. CALCULATOR ALLOWED
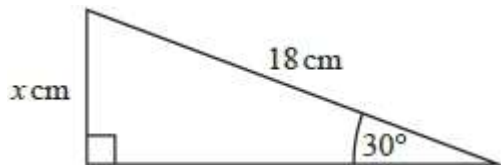
Work out the value of x.

....
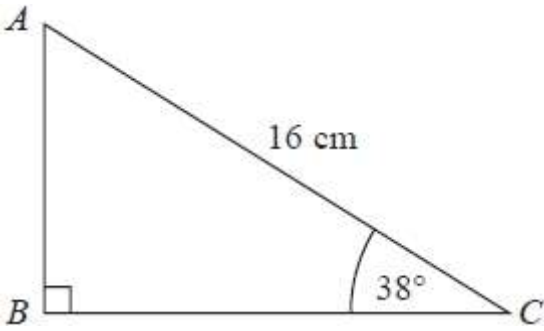**(Total for question = 2 marks)**

Q7. CALCULATOR ALLOWED

ABC is a right-angled triangle.

Calculate the length of *AB*.
Give your answer correct to 2 decimal places.

.... cm

(Total for question = 2 marks)

Q8. CALCULATOR ALLOWED
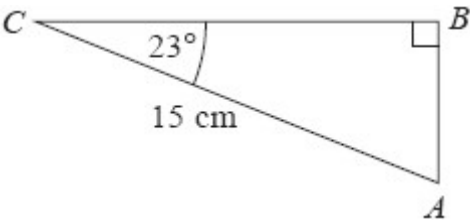
ABC is a right-angled triangle.

Calculate the length of *AB*.
Give your answer correct to 3 significant figures.

.... cm

(Total for question = 2 marks)

Q9. CALCULATOR ALLOWED

PQR is a right-angled triangle.
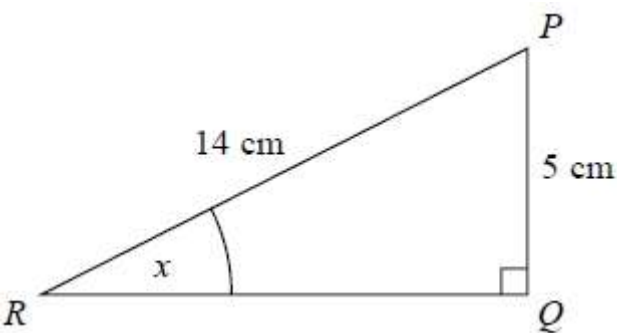
Work out the size of the angle marked *x*.
Give your answer correct to 1 decimal place.

....°

(Total for question = 2 marks)

Q10. CALCULATOR ALLOWED
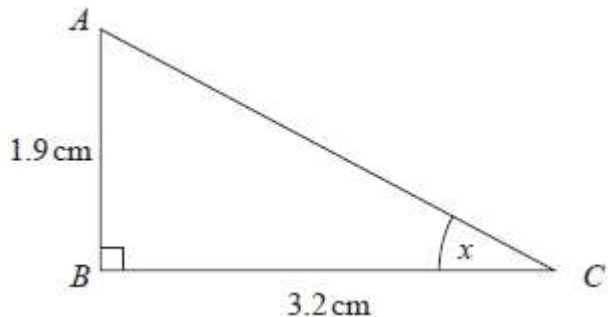
ABC is a right-angled triangle.

Work out the size of the angle marked *x*.
Give your answer correct to 1 decimal place.

.... °

(Total for question = 2 marks)

Q11. CALCULATOR ALLOWED

ABC is a right-angled triangle.
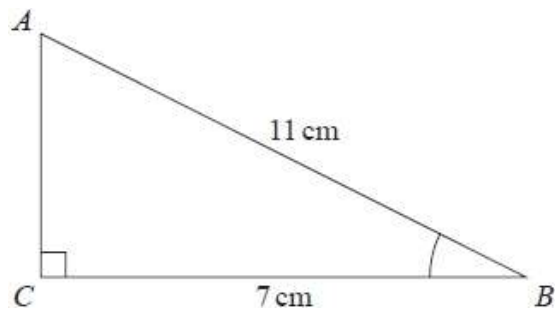
(a) Work out the size of angle *ABC*. Give your answer correct to 1 decimal place.

.... °

(2)

The length of the side *AB* is reduced by 1 cm.

The length of the side *BC* is still 7 cm.
Angle *ACB* is still 90°

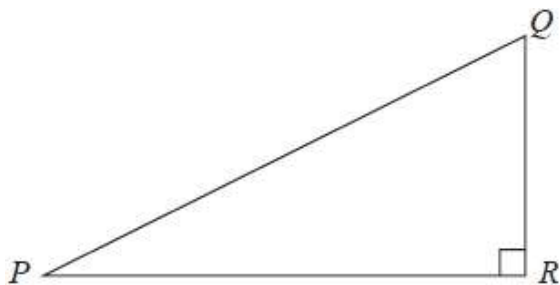(b) Will the value of cos *ABC* increase or decrease? You must give a reason for your answer.

....

....

(1)

(Total for question = 3 marks)

Q12. CALCULATOR ALLOWED

Here is triangle *PQR*.
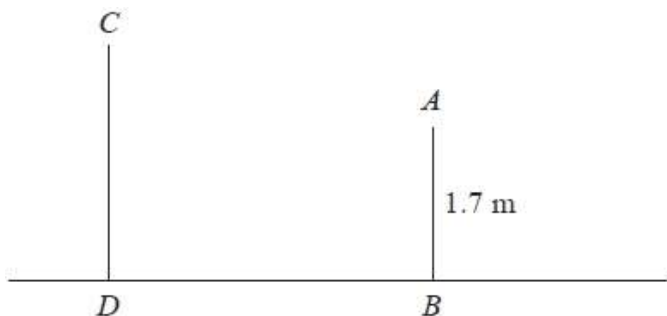

The length of *QR* is 60% of the length of *PR*.

Find the value of sin *QPR*.
Give your answer correct to 3 significant figures.

....

(Total for question = 3 marks)

Q13. CALCULATOR ALLOWED

The diagram shows two vertical posts, *AB* and *CD*, on horizontal ground.

AB = 1.7 m
CD : *AB* = 1.5 : 1

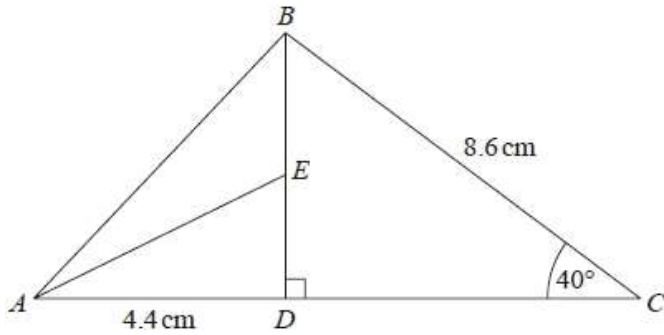The angle of elevation of *C* from *A* is 52°

Calculate the length of *BD*.
Give your answer correct to 3 significant figures.

....m

(Total for question is 4 marks)

Q14. CALCULATOR ALLOWED

The diagram shows triangle *ABC*.

ADC and *DEB* are straight lines.

AD = 4.4 cm   *BC* = 8.6 cm
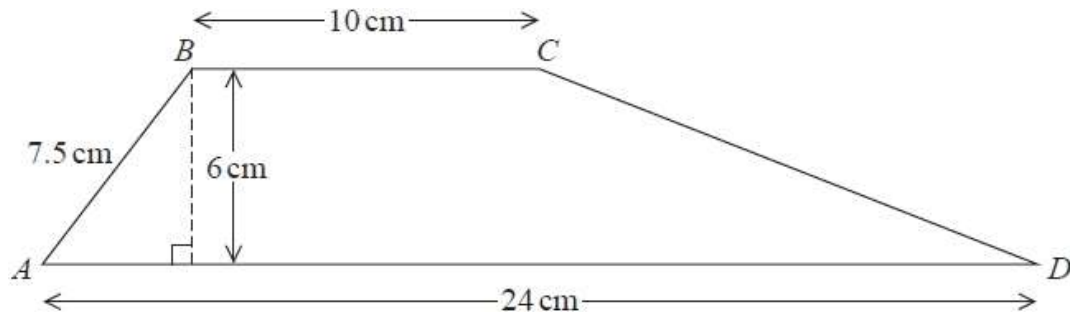*E* is the midpoint of *DB*.

Angle *CDB* = 90°   Angle *DCB* = 40°

Work out the size of angle *EAD*.
Give your answer correct to 1 decimal place. You must show all your working.

.... °

(Total for question = 4 marks)

Q15. CALCULATOR ALLOWED

ABCD is a trapezium.

Work out the size of angle *CDA*. Give your answer correct to 1 decimal place.

.... °

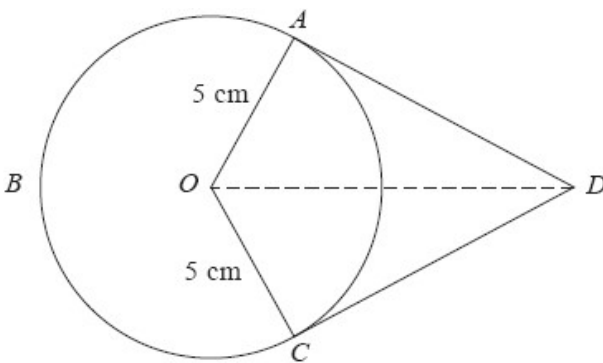**(Total for question = 5 marks)**

Q16. CALCULATOR ALLOWED
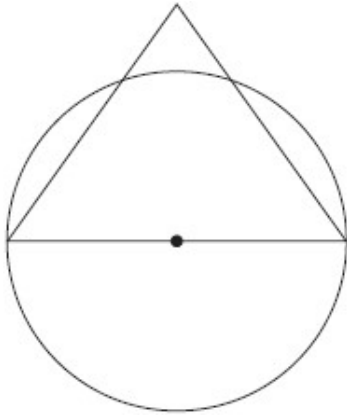
The diagram shows a circle and an equilateral triangle.

One side of the equilateral triangle is a diameter of the circle.
The circle has a circumference of 44 cm.

Work out the area of the triangle.
Give your answer correct to 3 significant figures.

.... cm^2

(Total for question = 3 marks)
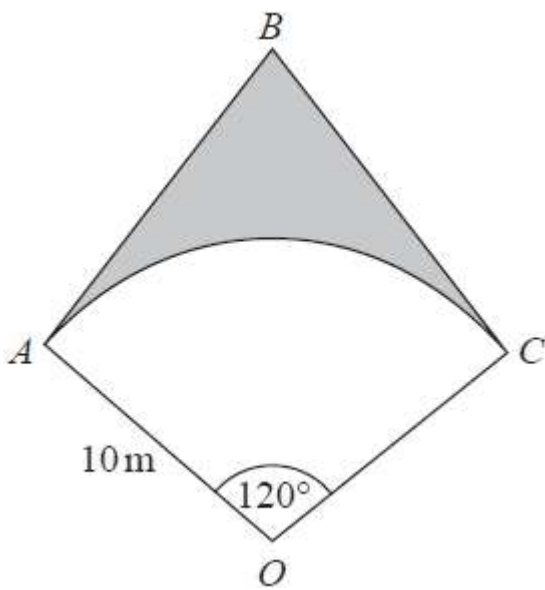
Q17. CALCULATOR ALLOWED

A, B and C are points on a circle of radius 5 cm, centre O.
DA and DC are tangents to the circle.
$DO = 9$ cm

Work out the length of arc ABC.
Give your answer correct to 3 significant figures.

.... cm

(Total for question = 5 marks)

Q18. CALCULATOR ALLOWED

OAC is a sector of a circle, centre *O*, radius 10 m.

BA is the tangent to the circle at point *A*.
BC is the tangent to the circle at point *C*.
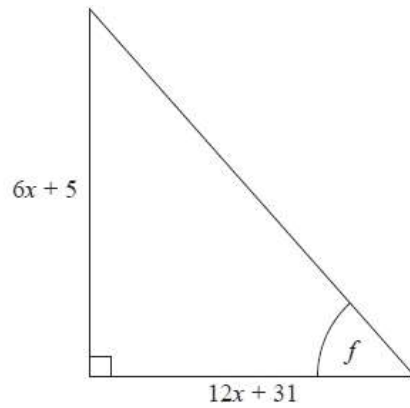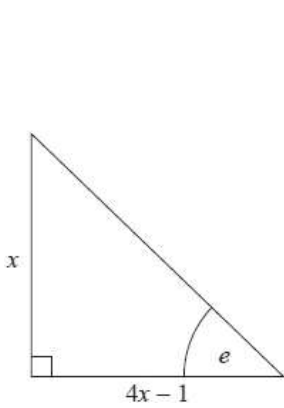
Angle *AOC* = 120°

Calculate the area of the shaded region.
Give your answer correct to 3 significant figures.

.... m²

(Total for question = 5 marks)

Q19. CALCULATOR ALLOWED

Here are two right-angled triangles. Given that:

tan e = tan f

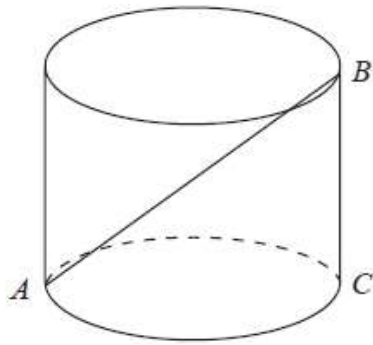find the value of x.

You must show all your working.

....

(Total for question = 5 marks)

Q20. CALCULATOR ALLOWED

The diagram shows a metal rod, *AB*, resting inside a cylindrical tin.

The tin is on a horizontal table.
AC is a diameter of the base of the tin.
B is on the top edge of the tin.
BC is vertical.
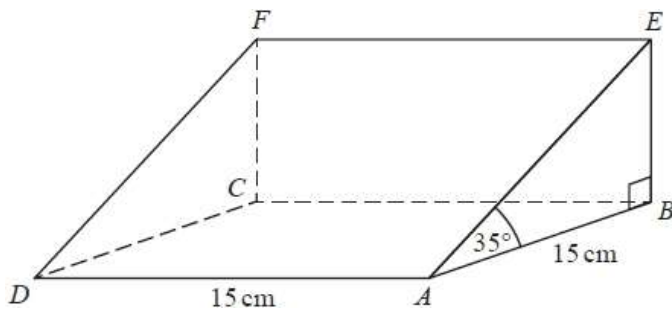
The radius of the base of the tin is 5 cm.
The volume of the tin is 1178 cm³

Find the angle between the rod and the base of the tin.
Give your answer correct to the nearest degree.

.... °

(Total for question = 4 marks)

Q21. CALCULATOR ALLOWED

The diagram shows a triangular prism.

The base, *ABCD*, of the prism is a square of side length 15 cm.
Angle *ABE* and angle *CBE* are right angles.
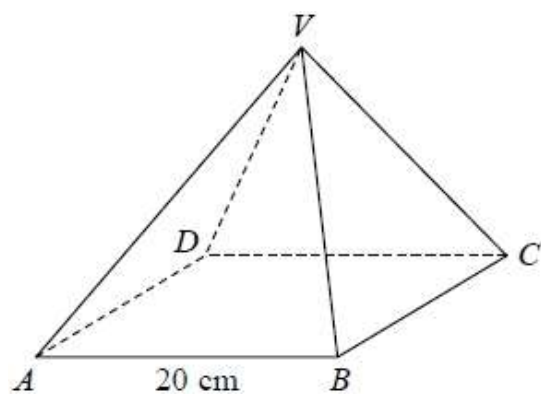Angle *EAB* = 35°

M is the point on *DA* such that

$$DM : MA = 2 : 3$$

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

.... °

(Total for question = 4 marks)

Q22. CALCULATOR ALLOWED

VABCD is a solid pyramid.

ABCD is a square of side 20 cm.

The angle between any sloping edge and the plane *ABCD* is 55°

Calculate the surface area of the pyramid.
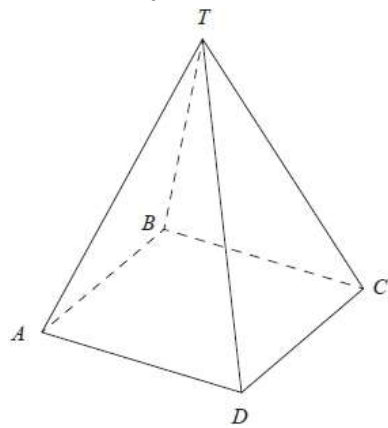Give your answer correct to 2 significant figures.

....cm^2

(Total for question = 5 marks)

Q23. CALCULATOR ALLOWED

Here is a pyramid with a square base *ABCD*.

AB = 5 m

The vertex *T* is 12 m vertically above the midpoint of *AC*.

Calculate the size of angle *TAC*.

.... °

(Total for question = 4 marks)

Q24. CALCULATOR ALLOWED

ABCDEFGH is a cuboid.
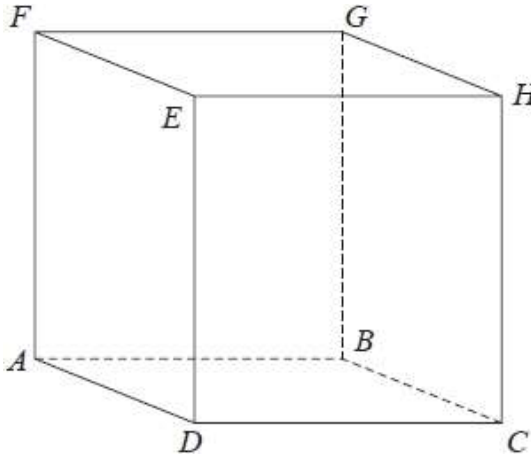
AB = 7.3 cm   *CH* = 8.1 cm   Angle *BCA* = 48°

Find the size of the angle between *AH* and the plane *ABCD*.
Give your answer correct to 1 decimal place.

.... °

(Total for question = 4 marks)