

Centre No.						Paper Reference				Surname Correction	Initial(s)		
Candidate No.						1	3	8	0	/	4	H	Signature M. Semar -

Paper Reference(s)

**1380/4H**

**Edexcel GCSE**

**Mathematics (Linear) – 1380**

Paper 4 (Calculator)

**Trigonometry**

Past Paper Questions

Arranged by Topic

Examiner's use only

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Team Leader's use only

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**Materials required for examination**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

**Items included with question papers**

Nil

**Instructions to Candidates**

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper.

**You must NOT write on the formulae page.**

**Anything you write on the formulae page will gain NO credit.**

If you need more space to complete your answer to any question, use additional answer sheets.

**Information for Candidates**

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 26 questions in this question paper. The total mark for this paper is 100.

There are 24 pages in this question paper. Any blank pages are indicated.

**Calculators may be used.**

If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.

**Advice to Candidates**

Show all stages in any calculations.

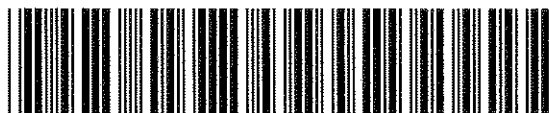
Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

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Compiled by Peter Bland



*Turn over*

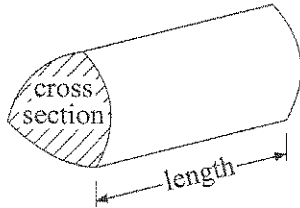
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GCSE Mathematics (Linear) 1380

Formulae: Higher Tier

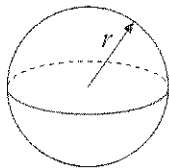
You must not write on this formulae page.  
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section  $\times$  length



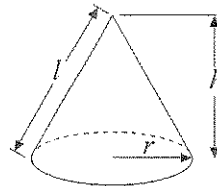
Volume of sphere =  $\frac{4}{3} \pi r^3$

Surface area of sphere =  $4\pi r^2$

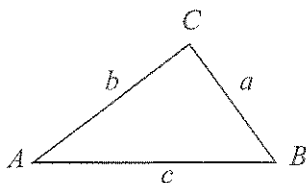


Volume of cone =  $\frac{1}{3} \pi r^2 h$

Curved surface area of cone =  $\pi r l$



In any triangle ABC



The Quadratic Equation

The solutions of  $ax^2 + bx + c = 0$   
where  $a \neq 0$ , are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

Sine Rule  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule  $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle =  $\frac{1}{2} ab \sin C$

1.

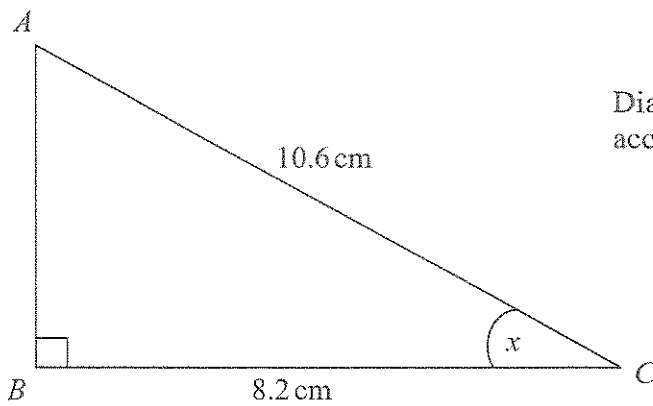


Diagram NOT  
accurately drawn

$ABC$  is a right-angled triangle.  
 $AC = 10.6$  cm.  
 $BC = 8.2$  cm.

SOHCAHTOA

Calculate the size of the angle marked  $x$ .  
 Give your answer correct to 3 significant figures.

$$\cos x = \frac{8.2}{10.6}$$

$$x = \cos^{-1}(8.2 \div 10.6) = 39.323$$

39.3

(Total 3 marks)

Q1

2. Here is a right-angled triangle.

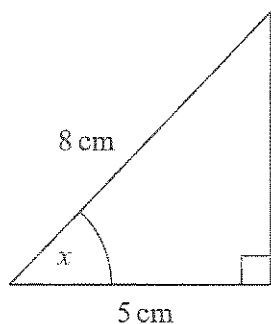


Diagram NOT accurately drawn

SOH CAH TOA

- (a) Calculate the size of the angle marked  $x$ .  
Give your answer correct to 1 decimal place.

$$\cos x = \frac{5}{8} \quad \therefore x = \cos^{-1}\left(\frac{5}{8}\right)$$

$$x = \frac{51.3}{(3)}$$

Here is another right-angled triangle.

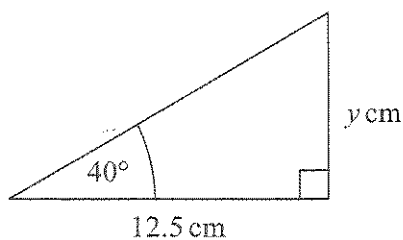


Diagram NOT accurately drawn

SOH CAH TOA

- (b) Calculate the value of  $y$ .  
Give your answer correct to 1 decimal place.

$$\tan 40 = \frac{y}{12.5}$$

$$y = 12.5 \times \tan 40 = 10.488$$

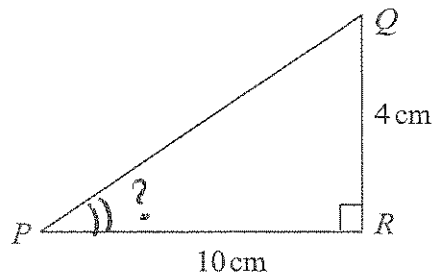
$$y = \frac{10.5 \text{ cm}}{(3)}$$

Q2

(Total 6 marks)

3.

Diagram NOT accurately drawn



$PQR$  is a right-angled triangle.

SOH CAH TDA

$QR = 4 \text{ cm}$   
 $PR = 10 \text{ cm}$

Work out the size of angle  $RPQ$ .  
 Give your answer correct to 3 significant figures.

$$\tan(\angle RPQ) = \frac{4}{10}$$

$$\angle RPQ = \tan^{-1}(4 \div 10)$$

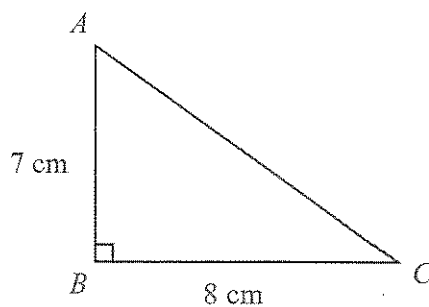
$$= 21.801$$

21.8 °

Q3

(Total 3 marks)

4.

Diagram NOT  
accurately drawn $ABC$  is a right-angled triangle. $AB = 7$  cm, $BC = 8$  cm.

(a) Work out the area of the triangle.

$$\text{Area} = \frac{8 \times 7}{2} = 28$$

$$\dots\dots\dots 28 \dots\dots\dots \text{cm}^2$$

(2)

(b) Work out the length of  $AC$ .

Give your answer correct to 2 decimal places.

$$\text{Pythagoras: } AC^2 = BC^2 + BA^2$$

$$AC^2 = 8^2 + 7^2 = 64 + 49$$

$$AC^2 = 113$$

$$\dots\dots\dots 10.63 \dots\dots\dots \text{cm}$$

(3)

$$AC = \sqrt{113} = 10.630$$

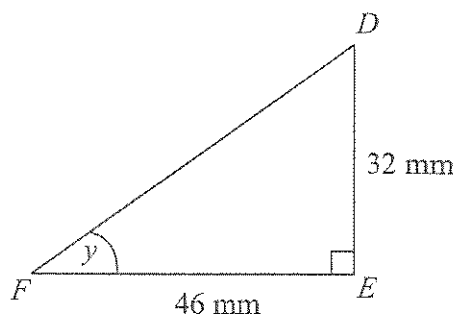


Diagram **NOT**  
accurately drawn

$DEF$  is another right-angled triangle.

$DE = 32$  mm,

$FE = 46$  mm.

SOH CAH TOA

- (c) Calculate the size of angle  $y$ .  
Give your answer correct to 1 decimal place.

$$\tan y = \frac{32}{46}$$

$$y = \tan^{-1}(32 \div 46)$$

$$= 34.82$$

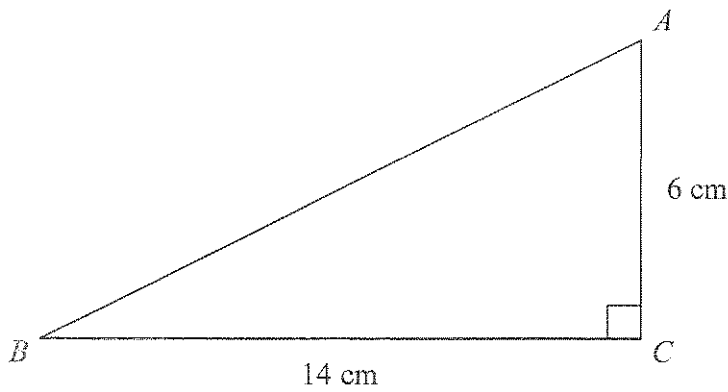
34.8 °

(3)

Q4

(Total 8 marks)

5.

Diagram NOT  
accurately drawn $ABC$  is a right-angled triangle. $AC = 6$  cm. $BC = 14$  cm.(a) Work out the area of triangle  $ABC$ .

$$\text{Area} = \frac{14 \times 6}{2} = 42$$

..... 42 .....  $\text{cm}^2$   
(2)

(b) Calculate the length of  $AB$ .

Give your answer correct to 2 decimal places.

$$\text{Pythagoras} = AB^2 = BC^2 + CA^2$$

$$AB^2 = 14^2 + 6^2$$

$$AB^2 = 232$$

$$AB = \sqrt{232}$$

$$= 15.231$$

..... 15.23 ..... cm  
(3)

Q5

(Total 5 marks)



6.

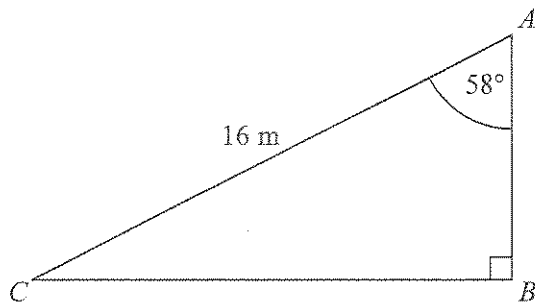


Diagram NOT accurately drawn

$ABC$  is a right-angled triangle.  
 $AC = 16$  m.  
 Angle  $CAB = 58^\circ$

SODHCAHTOA

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

$$\cos 58 = \frac{AB}{16} \quad \therefore AB = 16 \times \cos 58^\circ$$

$$AB = 8.4787$$

$$= 8.48 \text{ (3sf)}$$

8.48

..... m

(Total 3 marks)

Q6

7.

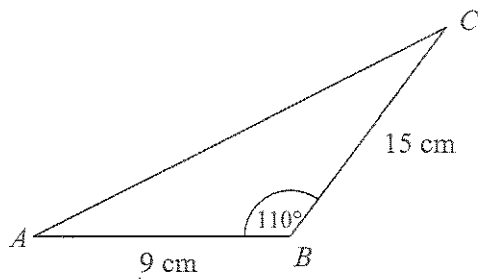


Diagram NOT accurately drawn

*ABC* is a triangle.  
*AB* = 9 cm  
*BC* = 15 cm  
 Angle *ABC* = 110°

$$\text{Area} = \frac{1}{2} ab \sin c$$

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

$$\begin{aligned} \text{Area} &= \frac{1}{2} \times 9 \times 15 \times \sin 110 \\ &= 63.429 \end{aligned}$$

63.4 ..... cm<sup>2</sup>  
 (Total 3 marks)

Q7

8. Town B is 4.5 km due West of town C.  
Town A is 2.4 km due North of town B.

SOH CAH TOA

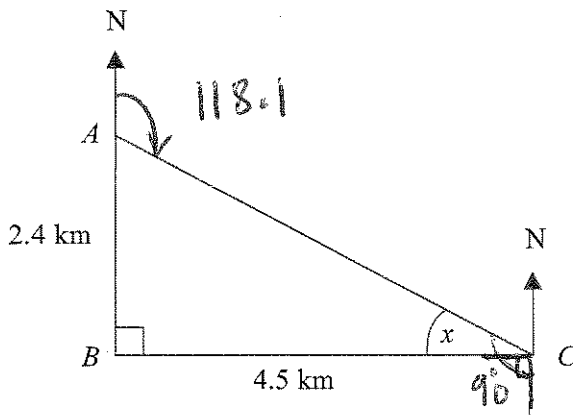


Diagram NOT accurately drawn

- (a) Calculate the size of the angle marked  $x$ .  
Give your answer correct to 3 significant figures.

$$\tan x = \frac{2.4}{4.5}$$

$$x = \tan^{-1}(2.4 \div 4.5)$$

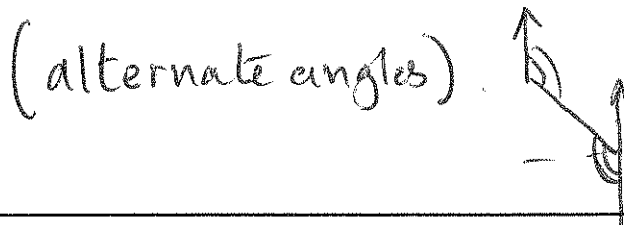
$$= 28.07$$

$$x = \underline{\underline{28.1}}^{\circ}$$

(3)

- (b) Find the bearing of town C from town A.  
Give your answer correct to 3 significant figures.

$$28.1 + 90 = 118.1$$



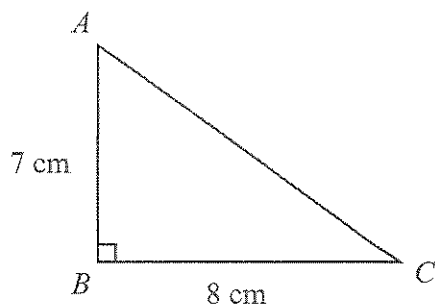
$$\underline{\underline{118}}^{\circ}$$

(1)

(Total 4 marks)

Q8

9.

Diagram NOT  
accurately drawn $ABC$  is a right-angled triangle. $AB = 7$  cm, $BC = 8$  cm.

(a) Work out the area of the triangle.

$$\text{Area} = \frac{8 \times 7}{2} = 28$$

$$\dots\dots\dots 28 \dots\dots\dots \text{cm}^2$$

(2)

(b) Work out the length of  $AC$ .

Give your answer correct to 2 decimal places.

$$AC^2 = 8^2 + 7^2 \quad (\text{Pythagoras})$$

$$AC^2 = 64 + 49$$

$$AC = \sqrt{113}$$

$$\dots\dots\dots 10.63 \dots\dots\dots \text{cm}$$

(3)

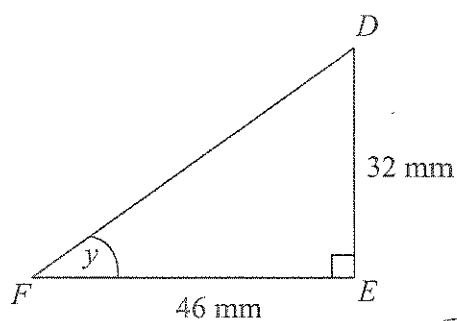


Diagram NOT accurately drawn

SOH CAH TOA

DEF is another right-angled triangle.

DE = 32 mm,

FE = 46 mm.

- (c) Calculate the size of angle  $y$ .  
Give your answer correct to 1 decimal place.

$$\tan y = \frac{32}{46} \quad \therefore y = \tan^{-1}(32 \div 46)$$

$$y = 34.82^\circ$$

34.8

(3)

Q9

(Total 8 marks)

10.

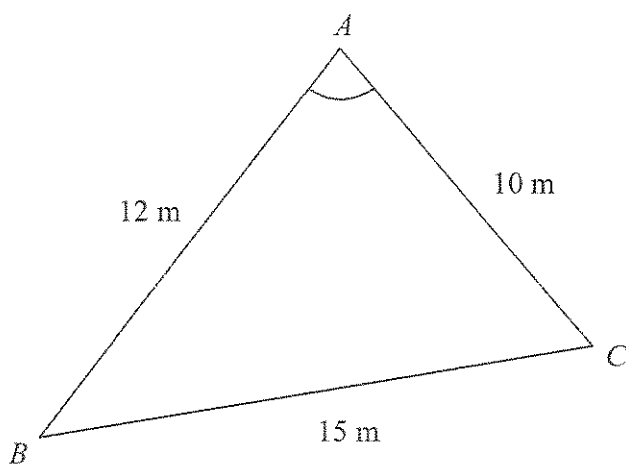


Diagram NOT accurately drawn

 $ABC$  is a triangle. $AB = 12$  m. $AC = 10$  m. $BC = 15$  m.Calculate the size of angle  $BAC$ .

Give your answer correct to one decimal place.

$$\text{Cosine rule: } a^2 = b^2 + c^2 - 2bc \cos A$$

$$2bc \cos A = b^2 + c^2 - a^2$$

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{12^2 + 10^2 - 15^2}{2 \times 12 \times 10}$$

$$A = \cos^{-1} \left( \frac{12^2 + 10^2 - 15^2}{2 \times 12 \times 10} \right) = 85.45^\circ$$

85.5 °

(Total 3 marks)

Q10

11.

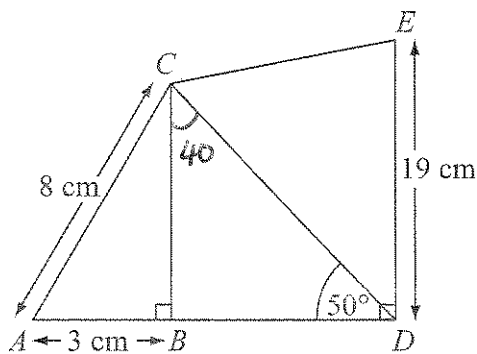


Diagram NOT accurately drawn

- $AC = 8 \text{ cm.}$
- $AB = 3 \text{ cm.}$
- $DE = 19 \text{ cm.}$
- Angle  $ABC = \text{angle } CBD = \text{angle } BDE = 90^\circ.$
- Angle  $BDC = 50^\circ.$

- (a) Calculate the length of  $CD$ .  
Give your answer correct to 3 significant figures.

$\angle BCD = 90 - 50 = 40^\circ$   
 $BC = \sqrt{8^2 - 3^2} = \sqrt{64 - 9} = \sqrt{55}$   
 $\cos 40 = \frac{BC}{CD} \therefore CD = \frac{BC}{\cos 40}$   
 $CD = \frac{\sqrt{55}}{\cos 40} = 9.68$  ..... cm  
 (4)

- (b) Calculate the length of  $CE$ .  
Give your answer correct to 3 significant figures.

$\angle CDE = 40^\circ$   
 $CE^2 = CD^2 + DE^2 - 2 CD \times DE \times \cos 40^\circ$   
 $CE^2 = 55 + 19^2 - 2 \times \sqrt{55} \times 19 \times \cos 40^\circ$   
 $CE = \sqrt{55 + 361 - 38\sqrt{55} \cos 40^\circ}$   
 $14.01$  ..... cm  
 (3)

(Total 7 marks)

Q11

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