



MATHEMATICS METHODS Year 11

Section One: Calculator-free

Your name _____

Teacher's name _____

Time and marks available for this section

Reading time for this section:	2 minutes
Working time for this section:	12 minutes
Marks available:	12 marks

Materials required/recommended for this section

To be provided by the supervisor

This Question/Answer Booklet
Formula Sheet

To be provided by the candidate

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: nil

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

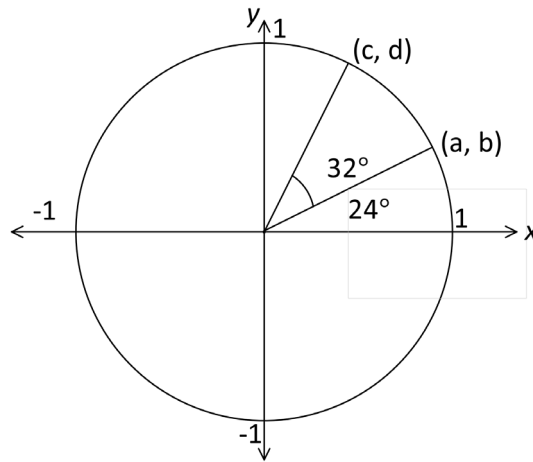
Instructions to candidates

1. The rules of conduct of the CCGS assessments are detailed in the Reporting and Assessment Policy. Sitting this assessment implies that you agree to abide by these rules.
2. Write your answers in this Question/Answer Booklet.
3. Answer all questions.
4. You must be careful to confine your response to the specific question asked and to follow any instructions that are specified to a particular question.
5. Supplementary pages for the use of planning/continuing your answer to a question have been provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.
6. **Show all your working clearly.** Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than two marks, valid working or justification is required to receive full marks. If you repeat an answer to any question, ensure that you cancel the answer you do not wish to have marked.
7. It is recommended that **you do not use pencil**, except in diagrams.

Question 1

(5 marks)

Use the unit circle below to determine each of the following values in terms of a, b, c and/or d.



(a) $\cos 56^\circ$

(1 mark)

(b) $\sin 156^\circ$

(2 marks)

(c) $\tan 336^\circ$

(2 marks)

Question 2**(4 marks)**

(a) Convert an angle of 135° to radian measure.
Give your answer in simplified form. (1 mark)

(b) Convert an angle of $\frac{7\pi}{6}$ radians to degrees. (1 mark)

(c) Evaluate $\sin 60^\circ \times \tan 30^\circ$. (1 mark)

(d) Evaluate $\cos\left(\frac{2\pi}{3}\right)$. (1 mark)

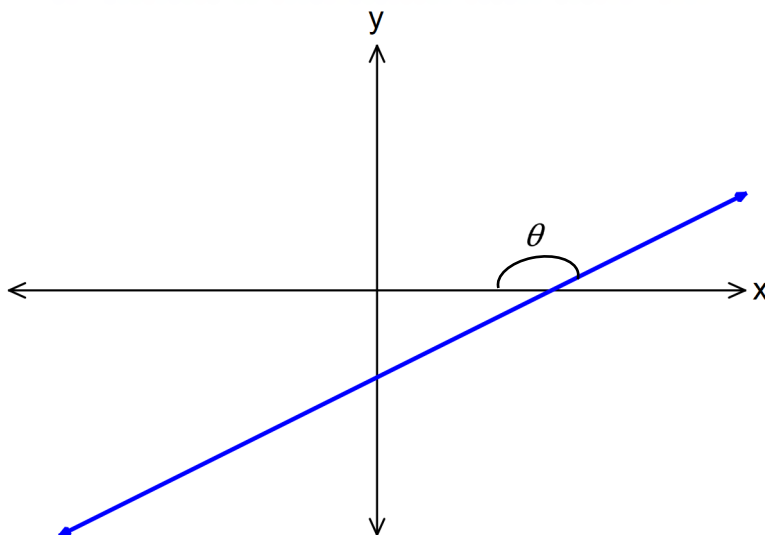
Question 3**(2 marks)**

A circular pizza is cut into 12 equal pieces.

If the arc length of each piece is 4 cm, then find the exact radius of the pizza.

Question 4**(1 mark)**

Write down the value of the gradient of the straight line below, in terms of θ .

**End of questions**

Additional working space

Question number: _____



MATHEMATICS METHODS Year 11

Section Two:

Calculator-assumed

Your name _____

Teacher's name _____

Time and marks available for this section

Reading time for this section:	3 minutes
Working time for this section:	28 minutes
Marks available:	28 marks

Materials required/recommended for this section

To be provided by the supervisor

This Question/Answer Booklet
Formula Sheet (retained from Section One)

To be provided by the candidate

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: drawing instruments, templates, notes on one unfolded sheet of A4 paper and up to three calculators approved for use in the WACE examinations

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Instructions to candidates

1. The rules of conduct of the CCGS assessments are detailed in the Reporting and Assessment Policy. Sitting this assessment implies that you agree to abide by these rules.
2. Write your answers in this Question/Answer Booklet.
3. Answer all questions.
4. You must be careful to confine your response to the specific question asked and to follow any instructions that are specified to a particular question.
5. Supplementary pages for the use of planning/continuing your answer to a question have been provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.
6. **Show all your working clearly.** Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than two marks, valid working or justification is required to receive full marks. If you repeat an answer to any question, ensure that you cancel the answer you do not wish to have marked.
7. It is recommended that **you do not use pencil**, except in diagrams.

Question 5**(6 marks)**

Peter and Stephen are sea-kayaking. From a buoy, Peter is 430 m away on a bearing of 113° . Stephen is 310 m from the buoy on a bearing of 210° .

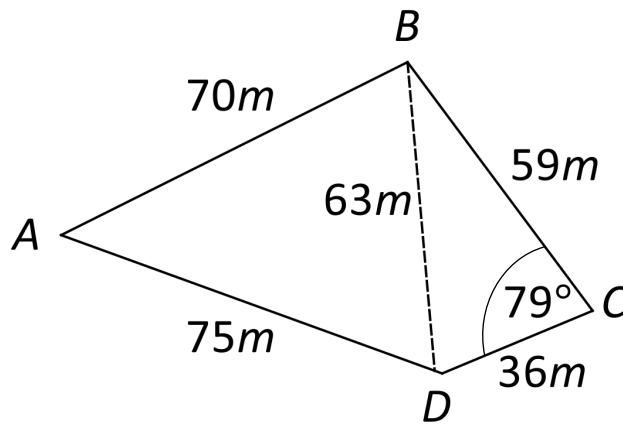
(a) What is the direct distance between Peter and Stephen? (3 marks)

(b) What is the bearing of Peter from Stephen? (3 marks)

Question 6

(5 marks)

Bill and Malcolm buy a plot of land. The sales agent provides a drawing of the plot of land, showing the following measurements:

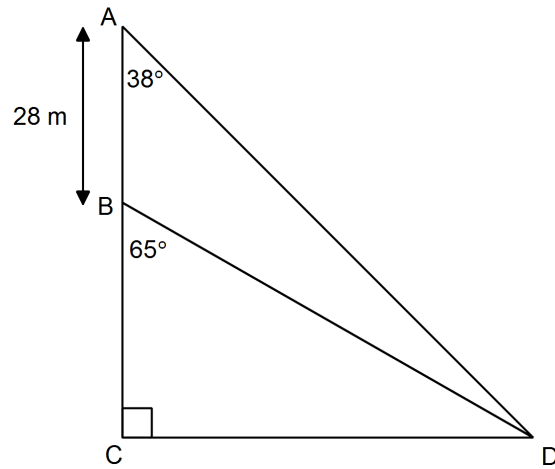


Calculate the area of the whole plot of land to the nearest m^2 .

Question 7

(4 marks)

Consider the diagram below:



Find to the nearest metre:

(a) length BD .

(2 marks)

(b) length CD .

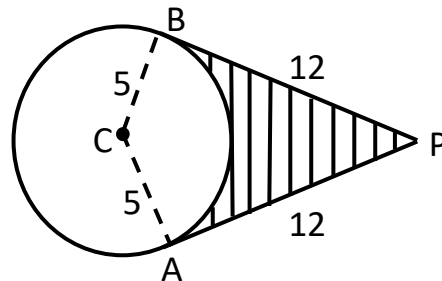
(2 marks)

Question 8

(8 marks)

AP and BP, each of length 12 cm, are tangents to the circle centred at C whose radius is 5 cm as shown below.

Note: Tangent BP is perpendicular to radius BC.

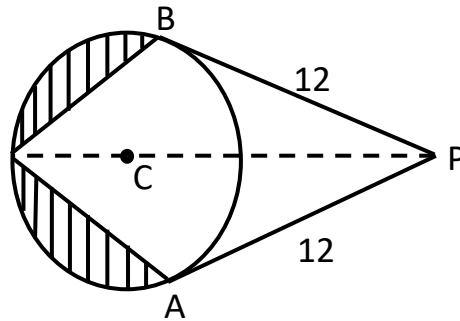


(a) Show that $\angle BCA = 134.8^\circ$, rounded to 1 decimal place. (2 marks)

(b) Find the area of the shaded region, rounded to 1 decimal place. (3 marks)

Question 8 Continued

- (c) PC is extended to meet the circle again as shown below. Find the area of the shaded region, rounded to 1 decimal place. (3 marks)



Question 9**(5 marks)**

The top of a vertical radio mast stands 35 m above the surrounding level ground.

From point A which is on the ground and due east of the base of the mast, the angle of elevation of the top of the mast is 50° .

From another point on the ground, C , which is 60 m away from A , the bearing of the base of the mast is 024° .

Calculate the angle of elevation of the top of the mast from point C .

Additional working space

Question number: _____

Additional working space

Question number: _____