|  |  |  |  |
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| Year 10 | | *Non Right Triangle Trigonometry* | Calculator Allowed |
| **Skills and Knowledge Assessed:**   * Apply Pythagoras’ theorem and trigonometry to solving three - dimensional problems in right- angled triangles (ACMMG276) * Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies (ACMMG274) * Solve simple trigonometric equations (ACMMG275) * Establish the sine, cosine and area rules for any triangle and solve related problems (ACMMG273) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | Use the sine rule to write an equation which could be used to find the value of *y* in  ………………………………………………  …………………………………………….... | | |
|  | Write a statement of the cosine rule that could be used to find the value of *f* in  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Use the cosine rule to find the length of PQ correct to 1 decimal place.    ………………………………………………  ……………………………………………....  ………………………………………………  ……………………………………………… | | |
|  | Use the sine rule to find the size of    ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | If  and  find all the possible values of  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Find the value of *a*, correct to the nearest mm.    ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | What is the value of  Answer to the nearest degree.  ………………………………………………    ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Find the area of  Answer to the nearest cm2.    ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Find the value of  Answer to the nearest degree.  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Find all possible values of  between 0o and 360o such that  Answer to the nearest degree.  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | What is the length of the interval AG in the rectangular prism shown?    ………………………………………………  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | From the top of a tower (*T*) the angles of depression of two points *A* and *B* are  and  respectively.  If *A* and *B* are 240 m apart in a direct line to the base of the tower, calculate the distance *BT,* correct to the nearest metre.  ………………………………………………………………………………………….……………  …………………………………………………………………………………….………………....  ………………………………………………………………………………….……………………  ………………………………………………………………………………………………………. | | |
|  | Find the length of  correct to the nearest mm.    …………………………………………..  …………………………………….........  ………………………………………………  ………………………………………………. | | |
|  | Two planes leave airports *M* and *N* at the same time, both flying to a third airport *O*.  The plane leaving *M* flies on a bearing of 114o and the plane from *N* flies on a bearing of 055o.  *M* is 1 125 km due north of *N*.  How far is *O* from *M*?  ……………………………………………....  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Use the table below to sketch   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 | |  | 0.00 | 0.50 | 0.87 | 1.00 | 0.87 | 0.50 | 0.00 | -0.50 | -0.87 | -1.00 | -0.87 | -0.50 | 0.00 | | | |

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| Year 10 | | *Non Right Triangle Trigonometry* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 2** Multiple Choice Section | | | |
| Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
|  | Which statement of the cosine rule could be used to find  in ∆*PQR?*  A.  B.  C.  D. | | |
|  | Which calculation using the sine rule could be used to find the size of  ?  A.  B.  C.  D. | | |
|  | Use the cosine rule to find the value of *w*, correct to 1 decimal place.  A. 8.0  B. 15.3  C. 17.0  D. 21.4 | | |
|  | Use the area formula to find the area of  correct to the nearest 10th of a square cm.  A. 19.2 cm2  B. 26.6 cm2  C. 53.3 cm2  D. 63.5 cm2 | | |
|  | Solve  A.  B.  C.  D. | | |
|  | Calculate the value of  correct to the nearest degree.    A.  B.  C.  D. | | |
|  | Find the value of  to the nearest degree.  A.  B.  C.  D. | | |
|  | Find the area of the triangle shown correct to 1 decimal place.  A. 2.2 m2  B. 2.5 m2  C. 3.4 m2  D. 4.4 m2 | | |
|  | The direct distance from ship A to the lighthouse L is 4.2 km and from ship B to the lighthouse is 3.8 km.  The two ships are in a straight line to the lighthouse and are 1.6 km apart.  What is the angle of elevation of the lighthouse from ship A?  A.  B.  C.  D. | | |
|  | An equilateral triangle is shown with the perpendicular bisector of one side drawn in.  Use the equilateral triangle to find the exact value of    A.  B.  C.  D. | | |
|  | Find the value of  correct to the nearest degree.  A. 30o  B. 69o  C. 111o  D. 150o | | |
|  | Ship *S* is 140 km on a bearing of 040o from Port *U*.  Ship *T* is 105 km on a bearing of 165o from Port *U*.  Calculate the distance *ST*, correct to the nearest 10th of a kilometre.  A. 117.3 km  B. 197.6 km  C. 217.9 km  D. 242.9 km | | |
|  | Which graph shows a sketch of  for    A. B.  C. D. | | |
|  | If ; for what values of *x* is ?  A.  B.  C.  D. | | |
|  | The rectangular prism shown measures 24 cm by 32 cm by 9 cm.  What is the size of  A.  B.  C.  D. | | |

*Multiple Choice Answer Sheet*

*Non Right Triangle Trigonometry*

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D

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| Year 10 | | *Non Right Triangle Trigonometry* | Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  |  | | Any of the equations shown at left. |
|  |  | |  |
|  |  | | 22.9 km |
|  |  | |  |
|  |  | |  |
|  |  | | 20.5 cm  or 205 mm |
|  |  | |  |
|  |  | | 1131 cm2 |
|  |  | |  |
|  |  | |  |
|  |  | | 65 cm |
|  |  | | 253 m |
|  |  | | 4.3 cm |
|  |  | | 1 075 km |
|  |  | | |

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| Year 10 | | *Non Right Triangle Trigonometry* | Calculator Allowed | |
| **Section 2** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  |  | | | A |
|  |  | | | D |
|  |  | | | B |
|  |  | | | B |
|  |  | | | B |
|  |  | | | C |
|  |  | | | D |
|  |  | | | A |
|  |  | | | C |
|  |  | | | C |
|  |  | | | B |
|  |  | | | C |
|  |  | | | A |
|  | Using a graph *x* = 90 and *x* = 270. | | | D |
|  | Using Pythagoras Theorem | | | A |

*Multiple Choice Answer Sheet*

*Non Right Triangle Trigonometry*

Name \_\_\_\_\_\_\_ANSWERS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D