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| Year 9 | | *Pythagoras Theorem* | Calculator Allowed |
| **Skills and Knowledge Assessed:**   * Investigate Pythagoras’ Theorem and its application to solving simple problems involving right angled triangles (ACMMG222) * Investigate the concept of irrational numbers, including π (ACMMG186) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper.  **Diagrams are not drawn to scale unless otherwise stated.** | | | |
|  | State Pythagoras Theorem for the triangle shown below.    ………………………………………………. | | |
|  | Find the value of *x*.    ………………………………………………  ………………………………………………  ……………………………………………....  ……………………………………………… | | |
|  | Find the value of *w*.    ………………………………………  ………………………………………  ………………………………………  …………………………………… | | |
|  | What is the length of *OM* ?  ………………………………………  ………………………………………  ………………………………………  ……………………………………… | | |
|  | Find the distance *XZ* to the nearest centimetre.    ………………………………………  ………………………………………  ………………………………………  ……………………………………… | | |
|  | Is a triangle with the dimensions below, right angled? Explain why?    …………………………………………………………………………………………….  …………………………………………………………………………………………….  ……………………………………………………………………………………………. | | |
|  | Find the length of *KL* (leave your answer as a surd).    ………………………………………  ………………………………………  ………………………………………  ……………………………………… | | |
|  | The ladder shown, leans against the top of the wall.  What is the height of the wall, correct to the nearest 10th of a metre?  ………………………………………  ………………………………………  ………………………………………  ……………………………………… | | |
|  | Are either of the following two sets of numbers, a Pythagorean triad (show your reasons)?  **Set A (48, 64, 80) Set B (50, 90, 105)**  …………………………………………………………………………………………….  …………………………………………………………………………………………….  ……………………………………………………………………………………………. | | |
|  | A plane *P* is known to be at an altitude of 2.5 km above point *C*.  It is viewed from point *A*, which is 800 m horizontally from C.  What is the distance *AP*?  ………………………………………  ………………………………………  ………………………………………  ……………………………………… | | |
|  | Gerald is building a gate to go in his fence.  He needs a diagonal brace to support the frame of the gate.  What is the length of the brace, correct to the nearest centimetre?  …………………………………………….  ……………………………………………  ……………………………………………  …………………………………………… | | |
|  | The height of the balcony could not be measured directly because of garden beds, so the measurements shown were taken.  Calculate the height of the balcony, to the nearest metre.  …………………………………….  …………………………………….  ……………………………………  ……………………………………  …………………………………… | | |
|  | What is the perimeter of the triangle *PQR*?  …………………………………………….  ……………………………………………  ……………………………………………  …………………………………………… | | |
|  | Also *XZ* = 120 cm, *WZ* = 90 cm and *YZ* = 64 cm.  Find the perimeter of triangle WXY.  …………………………………………….  ……………………………………………  ……………………………………………  …………………………………………… | | |
|  | *AC* = 77 m, *AB* = 51 m and *BD* = 24 m.  Calculate the distance *BC*.    …………………………………………….  ……………………………………………  ……………………………………………  …………………………………………… | | |

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| Year 9 | | *Pythagoras Theorem* | 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 side is the hypotenuse of the right triangle *STU*?    A. *ST*  B. *SU*  C. *TU*  D. *US* | | |
|  | Which is a correct statement of Pythagoras Theorem for the triangle shown below.    A.  B.  C.  D. | | |
|  | Find the length of *HI*  A. 21  B. 38  C. 51  D. 69 | | |
|  | Find the value of *b* in the triangle below.    A. 18 cm  B. 42 cm  C. 84 cm  D. 98 cm | | |
|  | Calculate the length of *EF*, correct to one decimal place.  A. 21.0 cm  B. 32.7 cm  C. 39.0 cm  D. 51.0 cm | | |
|  | Which of the following is a Pythagorean triad?    A. {21, 22, 29} B. {21, 48, 52} C. {21, 99, 101} D. {21, 28, 35} | | |
|  | Which of the triangles below are right angled?    A. Both triangles are right angled.  B. Neither triangle is right angled.  C. Only triangle *X* is right angled.  D. Only triangle *Y* is right angled. | | |
|  | A rectangular LED/LCD television screen measures 98 cm by 126 cm.  The size is described by the length of the diagonal of the television.  How would it be described?  A. A 160 cm LED/LCD television.  B. A 204 cm LED/LCD television.  C. A 224 cm LED/LCD television.  D. A 240 cm LED/LCD television. | | |
|  | What is the value of *x* in the triangle shown?  A.  B.  C.  D. | | |
|  | What is the length of *KL* in the triangle shown?  A.  B.  C.  D. | | |
|  | What is the perimeter of the triangle *DEF*?    A. 120 m  B. 144 m  C. 168 m  D. 188 m | | |
|  | What is the area of the triangle *PQR*?    A. 171 m2  B. 228 m2  C. 2 166 m2  D. 3 610 m2 | | |
|  | What is the area of the rectangle shown?  A. 5 292 m2  B. 7 056 m2  C. 8 820 m2  D. 11 025 m2 | | |
|  | In  What is the perimeter of the triangle?  A. 120 cm  B. 145 cm  C. 165 cm  D. 180 cm | | |
|  | What is the length of *JL* in the triangle shown?  A. 45 m  B. 91 m  C. 124 m  D. 136 m | | |

*Multiple Choice Answer Sheet*

*Pythagoras Theorem*

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 9 | | *Pythagoras Theorem* | Non Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | |  |
|  |  | | Not right, see working (required) |
|  |  | |  |
|  |  | | 5.9 m |
|  |  | | Only Set A is a Pythagorean triad  See working which is required. |
|  |  | | 2 600 m |
|  |  | | 1.86 m |
|  |  | | 20 m |
|  |  | | 252 cm |
|  |  | | 440 cm |
|  |  | | 40 cm |

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| Year 9 | | *Pythagoras Theorem* | Calculator Allowed | |
| **Section 2** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  | TU is the longest and opposite to the right angle. | | | C |
|  | W is the hypotenuse so | | | D |
|  |  | | | C |
|  |  | | | B |
|  |  | | | B |
|  |  | | | D |
|  | Both are right angled. | | | A |
|  |  | | | A |
|  |  | | | C |
|  |  | | | B |
|  |  | | | C |
|  |  | | | C |
|  |  | | | A |
|  |  | | | B |
|  |  | | | D |

*Multiple Choice Answer Sheet*

*Pythagoras Theorem*

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