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| Year  8 | | *Pythagoras Theorem* | Non Calculator  Section |
| **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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| *Answer all questions in the spaces provided on this test paper by:*  *Writing the answer in the box provided.*  *or*  *Shading in the bubble for the correct answer from the four choices provided.*  *Show any working out on the test paper. Calculators are* ***not*** *allowed.* | | | |
|  | For any questions in this non-calculator section, you may refer to the table of squares provided below.     |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  | | 9 | 81 | 16 | 256 | 23 | 529 | 30 | 900 | 37 | 1369 | 44 | 1936 | | 10 | 100 | 17 | 289 | 24 | 576 | 31 | 961 | 38 | 1444 | 45 | 2025 | | 11 | 121 | 18 | 324 | 25 | 625 | 32 | 1024 | 39 | 1521 | 46 | 2116 | | 12 | 144 | 19 | 361 | 26 | 676 | 33 | 1089 | 40 | 1600 | 47 | 2209 | | 13 | 169 | 20 | 400 | 27 | 729 | 34 | 1156 | 41 | 1681 | 48 | 2304 | | 14 | 196 | 21 | 441 | 28 | 784 | 35 | 1225 | 42 | 1764 | 49 | 2401 | | 15 | 225 | 22 | 484 | 29 | 841 | 36 | 1296 | 43 | 1849 | 50 | 2500 | | | |
|  | Which side is the hypotenuse of the right triangle ABC?    AB  AC  BC  BD | | |
|  | Which is a correct statement of Pythagoras Theorem for the triangle shown below. | | |
|  | Find the length of *FG*.  cm | | |
|  | Which of these is an irrational number? | | |
|  | Find the value of *w*.  *w* = | | |
|  | Find the length of *XY*  25  27  29  31 | | |
|  | Find the value of *k*.  *k* = 28  *k* = 30  *k* = 31  *k* = 33 | | |
|  | Which is the best estimate for the length of *AB* in the triangle?  It lies between 32 m and 33 m.  It lies between 38 m and 39 m.  It lies between 45 m and 46 m.  It lies between 49 m and 50 m. | | |
|  | What is the third (larger) number which would form a Pythagorean Triad with 12 and 35? | | |
|  | Is a triangle with the dimensions below, right angled?  Explain why.  …………………………………………………………………………………………….  ……………………………………………………………………………………………. | | |
|  | Find the length of *KL* (leave your answer as a surd).  cm | | |
|  | What is the value of *p* in the triangle shown? | | |
|  | A rectangular pet gate measures 27 cm by 36 cm and has a diagonal brace through the centre. What is the total length of metal that is needed to make the gate?    45 cm.  81 cm.  108 cm.  171 cm. | | |
|  | What is the area of the triangle *EFG*?  Area = cm2 | | |
|  | Which of the triangles below are right angled?    Both triangles are right angled.  Neither triangle is right angled.  Only triangle A is right angled.  Only triangle B is right angled. | | |

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| Year  8 | | *Pythagoras Theorem* | Calculator Allowed  Short Answer  Section |
|  | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| *Answer all questions in the spaces provided on this test paper by:*  *Writing the answer in the box provided.*  *or*  *Shading in the bubble for the correct answer from the four choices provided.*  *Show any working out on the test paper. Calculators are allowed.* | | | |
|  | What is the length of *RS*, correct to 1 decimal place?    cm | | |
|  | Write a statement of Pythagoras Theorem for triangle HIJ, shown. | | |
|  | The length of *AB* in the triangle below is:  2.5 cm  3.5 cm  10.4 cm  13.4 cm | | |
|  | Find the distance EF to the nearest metre.  *EF* = m. | | |
|  | Find the value of *d* in the triangle below.  2.5 cm  3.5 cm  13.4 cm  21.6 cm | | |
|  | Which of the following are Pythagorean triads?    More than one could be a Pythagorean triad, so mark all that are.  {15, 39, 45} {15, 36, 39} {16, 28, 34} {24, 70, 74} | | |
|  | 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?  Height is metres. | | |
|  | A plane is shown coming in to land. It is 1.5 km horizontally from the point where it will touch down and 1.8 km in a straight line from the point.  What is it’s altitude to the nearest metre?  Altitude is metres. | | |
|  | Tarquin is building a shed.  He needs a beam for the roof, to go from A to B on the diagram.  What is the length of the beam?  Length is metres. | | |
|  | Shade the bubbles of the two triangles which are right angled below. | | |
|  | Measurements were taken to help calculate the width of the river.  The distance across the bridge AC = 120 m.  The distance along the bank BC =86 m.  Calculate the width of the river (AB), to the nearest metre.  Width is m. | | |
|  | What is the perimeter of the triangle STU?  65 m  89 m  121 m  154 m | | |
|  | What is the length of CD?  12.5 m  18.9 m  21.4 m  45.6 m | | |
|  | Calculate the distance SU.  SU = m. | | |
|  | Find the area of triangle XYZ, to the nearest 10th of a square centimetre.    Area = cm2 | | |

Pythagoras Theorem

ANSWERS

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| Non Calculator Section ( 1 mark each) | |
|  | | For any questions in this non-calculator section, you may refer to the table of squares provided below.     |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  | | 9 | 81 | 16 | 256 | 23 | 529 | 30 | 900 | 37 | 1369 | 44 | 1936 | | 10 | 100 | 17 | 289 | 24 | 576 | 31 | 961 | 38 | 1444 | 45 | 2025 | | 11 | 121 | 18 | 324 | 25 | 625 | 32 | 1024 | 39 | 1521 | 46 | 2116 | | 12 | 144 | 19 | 361 | 26 | 676 | 33 | 1089 | 40 | 1600 | 47 | 2209 | | 13 | 169 | 20 | 400 | 27 | 729 | 34 | 1156 | 41 | 1681 | 48 | 2304 | | 14 | 196 | 21 | 441 | 28 | 784 | 35 | 1225 | 42 | 1764 | 49 | 2401 | | 15 | 225 | 22 | 484 | 29 | 841 | 36 | 1296 | 43 | 1849 | 50 | 2500 | | |
|  | | Which side is the hypotenuse of the right triangle *ABC*?    AB  AC  BC  BD | |
|  | | Which is a correct statement of Pythagoras Theorem for the triangle shown below. | |
|  | | Find the length of *FG*.    25  cm | |
|  | | Which of these is an irrational number? Not in the table of squares. | |
|  | | Find the value of *w*.    40  *w* = | |
|  | | Find the length of *XY*    25  27  29  31 | |
|  | | Find the value of *k*.    *k* = 28  *k* = 30  *k* = 31  *k* = 33 | |
|  | | Which is the best estimate for the length of *AB* in the triangle?    It lies between 32 m and 33 m.  It lies between 38 m and 39 m.  It lies between 45 m and 46 m.  It lies between 49 m and 50 m. | |
|  | | What is the third (larger) number which would form a Pythagorean Triad with 12 and 35?    37 | |
|  | | Is a triangle with the dimensions below, right angled? Explain why?      …………………………………………………………………………………………….  ……………………………………………………………………………………………. | |
|  | | Find the length of *KL* (leave your answer as a surd).      cm | |
|  | | What is the value of *p* in the triangle shown? | |
|  | | A rectangular pet gate measures 27 cm by 36 cm and has a diagonal brace through the centre. What length of metal is needed to make the gate?      45 cm.  81 cm.  108 cm.  171 cm. | |
|  | | What is the area of the triangle *EFG*?    336  Area = cm2 | |
|  | | Which of the triangles below are right angled?    Both triangles are right angled.      Neither triangle is right angled.  Only triangle A is right angled.  Only triangle B is right angled. | |

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| Calculator Allowed Short Answer Section ( 1 mark each) | |
|  | | What is the length of *RS*, correct to 1 decimal place?      18.4  cm | |
|  | | Write a statement of Pythagoras Theorem for triangle HIJ, shown | |
|  | | The length of *AB* in the triangle below is:    2.5 cm  3.5 cm  10.4 cm  13.4 cm | |
|  | | Find the distance EF to the nearest metre..      132  *EF* = m. | |
|  | | Find the value of *d* in the triangle below.  2.5 cm    3.5 cm  13.4 cm  21.6 cm | |
|  | | Which of the following are Pythagorean triads?    More than one could be a Pythagorean triad, so mark all that are.          {15, 39, 45} {15, 36, 39} {16, 28, 34} {24, 70, 74} | |
|  | | 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?  3.9  Height is metres. | |
|  | | A plane is shown coming in to land. It is 1.5 km horizontally from the point where it will touch down and 1.8 km in a straight line from the point.  What is it’s altitude to the nearest metre?    995  Altitude is metres. | |
|  | | Tarquin is building a shed.    He needs a beam for the roof, to go from A to B on the diagram.  What is the length of the beam to the nearest centimetre?  2.06  Length is metres. | |
|  | | Shade the bubbles of the two triangles which are right angled below. | |
|  | | Measurements were taken to help calculate the width of the river.  The distance across the bridge AC = 120 m.  The distance along the bank BC =86 m.  Calculate the width of the river (AB), to the nearest metre.    84  Width is m. | |
|  | | What is the perimeter of the triangle STU?  65 m    89 m  121 m  154 m | |
|  | | What is the length of CD?    12.5 m  18.9 m  21.4 m  45.6 m | |
|  | | Calculate the distance SU.    23.8  SU = m. | |
|  | | Find the area of triangle XYZ, to the nearest 10th of a square centimetre.        805.9  Area = cm2 | |