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| Name: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | Date: *\_\_\_\_\_\_\_\_\_\_\_* |
|  | **Year 12 Essentials Mathematics**  **Test 1, 2018**  **Topic –Pythagoras’ Theorem and Trigonometry** | | | 45  = % |
| **Total Time:** | ***50*** *minutes* |  | | |
| **Total Reading:** | *5**minutes* |
| **Total Working:** | *55**minutes* |
| **Weighting:** | *5% of the year.* |
| **Equipment:** | *1x A4 page notes (front and back), Scientific Calculator* | | | |
| ***Full working out must be shown to get full marks.***  ***All units must be noted or marks will be deducted.***  ***Attempt all questions*** | | | | |
| **1.** | **[6 marks: 3,3]** | | | |
|  | Determine the value of the pronumeral in each of the following HINT Use Pythagoras Theorem | | | | | | |
| **a)** |  | | | | | | |
| **b)** |  | | | | | | |

|  |  |
| --- | --- |
| **2.** | **[3 marks: ]** |
|  | A fireman has a ladder that is 13 metres long. If he wants to reach a window that is 12 metres above the ground, how far from the wall should he put the bottom of his ladder? | |

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| **3.** | **[3 marks: ]** |
|  | Laura is buying a television. It has a 34 inch screen. If it is 16 inches tall, how wide is the screen? Her television cabinet is 19 inches wide. Will the television fit in it? | |

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| **4.** | **[2 marks: 1, 1]** |
|  | Label the sides Hypotenuse, Opposite and Adjacent sides on the following right angled triangles: | |
|  | a) | b) |

|  |  |
| --- | --- |
| **5.** | **[2 marks: 1, 1]** |
|  | Label the angle  in the correct place on the following right angled triangles: | |
| **a)** |  |  |

|  |  |  |
| --- | --- | --- |
| **6.** | **[9 marks, 3, 3, 3, ]** | |
|  | Determine the value of the pronumeral in each of the following HINT Use Trigonometry | |
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|  | | **Hint**: find the missing angle.  23m |

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| **7.** | **[3 marks ]** |
|  | A boy notices a bird sitting at the very top of a 10m tall tree. If he is standing 8m from the base of the tree, what is the distance between his eye and the top of the tree? |
|  |  |

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| **8.** | **[4 marks ]** |
|  | The school council needs to have a ramp build over the steps of each of the building exits, to accommodate a student in a wheelchair. If the junior school building is 35cm off the ground and has steps that reach out 50cm, calculate the length of the ramp  (Sketch a diagram of the scenario). |
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| **9.** | **[3 marks ]** |
|  | A 25 m flagpole casts a 42 m shadow. What is the angle the sun makes with the flagpole |
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| --- | --- |
| **10.** | **[4 marks ]** |
|  | From the top of a 25 m lighthouse, on a 314 m tall cliff, the angle of depression to a sailing boat out in the ocean is 40°. How far is the sailing boat from the base of the cliff?  (Sketch a diagram of the scenario). |
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| **11.** | **[6 marks ]** |
|  | From an observer at O who is 200m from a building, the angles of elevation to the bottom and top of a flagpole are 36º and 38 º respectively. Find the height of the flagpole. |
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**~ END OF TEST ~**