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| --- | --- | --- |
| Name:  Class: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  SCORE:  /    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| Logo, company name  Description automatically generated | **Year 12 General**  **2021**  **Topic – Right Angle Triangles and Geometry** | |
| **Total Time:** | 50 minutes |  |
| **Weighting:** | % |
| **Equipment:** | To be provided by the student: Pen, pencil, ruler, scientific calculator, 1 single sided page of A4 notes | |

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| **Question 1**  *4* **marks (2, 2)** |

Use the provided trigonometric ratio to calculate the missing value in the right angle triangle below:

[2, 2 = 4 marks]

* 1. Calculate the side length of *x.*

A picture containing diagram

Description automatically generated

**15mm**

* 1. Calculate the angle size of

A picture containing diagram

Description automatically generated

|  |
| --- |
| **Question 2**  *6* **marks (3, 3, 3)** |

Determine the value of the pronumeral in each of the following HINT Use Pythagoras Theorem

Diagram

Description automatically generateda) b)

A picture containing chart

Description automatically generated

|  |
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| **Question 3**  *6* **Marks (3,3)** |

Chart, line chart

Description automatically generated

A ladder is used during the concrete manufacturing process. It is left leaning against the wall as shown above.

1. Determine the length of the ladder.

1. Determine the angle of inclination (or angle of elevation) α.

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| **Question 4**  *8* **Marks (2, 2, 2, 2)** |

The stair manufacturer also produces pre-cast concrete ramps to allow wheelchair access. A proposed design is shown below, using the dimensions of the stairs from question 1.

A picture containing antenna

Description automatically generated

1. Determine the length of the ramp from point X to point Y as shown on the diagram above using the dimensions from question 1.

1. The ramp shown above is obviously too steep for wheelchair access. If the ramp length from point X to point Y is to be 20 metres long and the ramp must still reach the same height as the stairs, determine the horizontal length of the ramp from point X to point Z.

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| **Question 7** ***7* Marks (3, 1, 1, 2)** |

**:** Find a° in the following diagrams. Give a mathematical reason as to how you got your answer. **4 marks**

|  |  |
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| 1. Diagram     Description automatically generated   Answer: | 1. Diagram, shape, polygon     Description automatically generated   Answer: |

|  |
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| **Question 7** ***7* Marks (3, 1, 1, 2)** |

The angle of depression from the top of a tower that is 25 metres to a car on the ground is 62 degrees. Find the direct distance from the top of the tower to the car.