

Geometry and Trigonometry

2 Marks

20. Pedro is building a triangular roof for a house. He would like to build it as steep as possible so snow does not accumulate on the roof.

A) State whether Pedro's roof should be an equilateral or isosceles triangle. (1 mark)

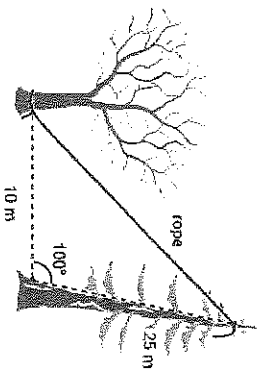
127

B) Justify your answer from Part A. (1 mark)

128

2 Marks

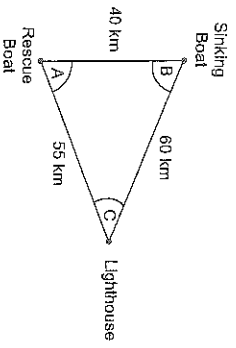
21. A gardener has been hired to stabilize a spruce tree that was damaged in a wind storm. The gardener decides to attach a rope from 25 metres up the spruce tree to the base of another tree 10 metres away. Calculate the length of the rope between the 2 trees, as shown in the diagram (excluding the knots).



129

2 Marks

22. Given the following situation:



A) Identify the formula that would be most appropriate to solve for angle A. (1 mark)

130

a) $\cos A = \frac{\text{adj}}{\text{hyp}}$

b) $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

c) $\frac{\sin A}{a} = \frac{\sin B}{b}$

d) $\sin A = \frac{\text{opp}}{\text{hyp}}$

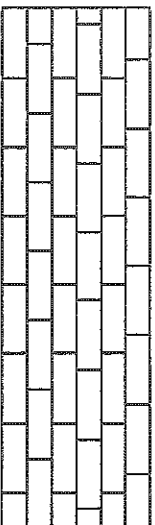
Answer: _____

B) Justify your choice from Part A. (1 mark)

131

2 Marks

23. Bob is building a brick wall using rectangular bricks.



State 2 properties of polygons that allow for a rectangular wall to be completed using the bricks.

Note: Place one response per line.

Property 1: _____

Property 2: _____

132

2 Marks

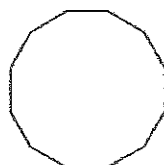
24. Consider a regular polygon with 17 sides.

A) State the number of diagonals in this polygon. (1 mark)

133

2 Marks

25. A regular dodecagon is a 12-sided figure.



Dodecagon

A) State the sum of the interior angles. (1 mark)

135

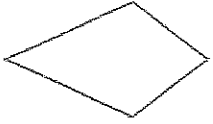
B) State the central angle of this polygon. (1 mark)

134

B) State the measure of one interior angle. (1 mark)

136

26. A kite is a type of polygon. State 2 properties of this polygon.



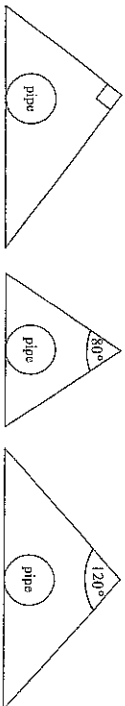
Note: Place one response per line.

Property 1: _____

Property 2: _____

Geometry and Trigonometry

20. Martha is building a triangular ramp over a drainage pipe. She is considering the following designs:



A) Choose the letter that best completes the statement below. (1 mark)

The type of triangular ramp that allows a wheelbarrow to be pushed smoothly over the pipe with the least amount of effort from either side is:

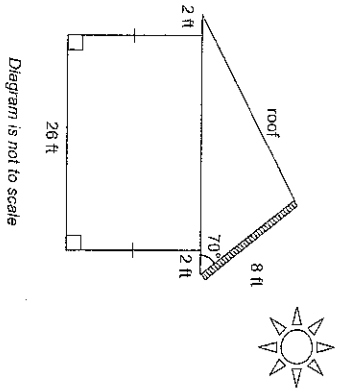
- a) acute
- b) equilateral
- c) obtuse
- d) right

Answer: _____

B) Justify why this type of triangle should be used for the ramp, making reference to the base angles. (1 mark)

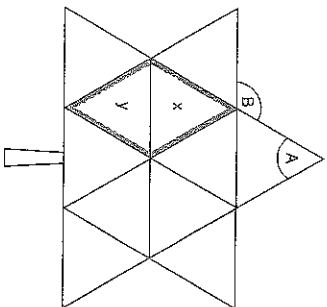
3 Marks

21. A manufacturer of solar panels states that panels should be installed at a 70° angle with the horizontal base of the roof. Calculate the length of the roof as identified in the diagram.



3 Marks

22. Canada's Centennial Maple Leaf is made up of 11 equilateral triangles.



- A) State the measure of angle A. (1 mark)

129

- B) State the measure of angle B. (1 mark)

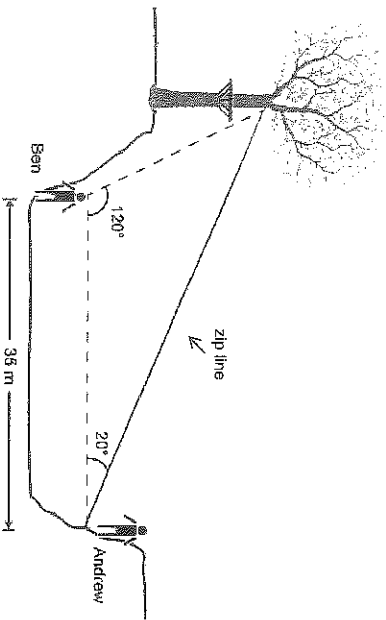
130

- C) State the type of quadrilateral created by combining triangles x and y. (1 mark)

131

3 Marks

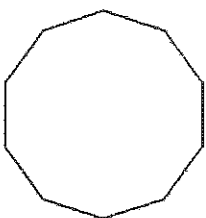
24. Andrew and Ben are building a zip line across a ravine.



Calculate the length of the zip line.

10

25. Consider a regular decagon.



A) State the sum of all interior angles. (1 mark)

B) State the measure of an interior angle for the regular decagon. (1 mark)

2 Marks

15

155

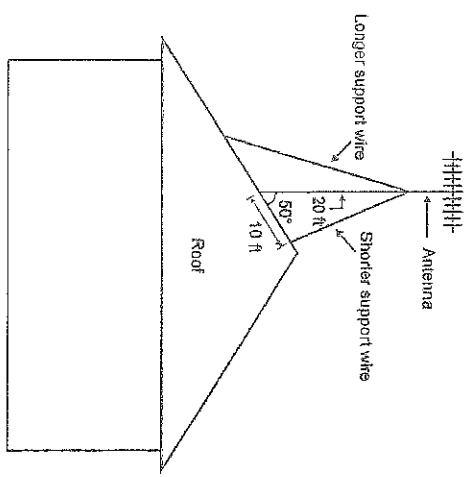
136

Geometry and Trigonometry

2 Marks

20. A construction company needs to calculate the length of support wires required to install an antenna on a roof. Calculate the length of the shorter support wire.

131



22. A regular polygon has central angles of 45° .

2 Marks

A) State the number of sides for this polygon. (1 mark)

134

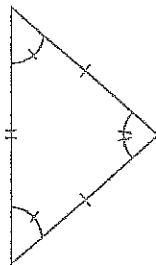
B) State the name of this polygon. (1 mark)

135

1 Mark

23. Choose the letter that best completes the statement below.

The following triangle is:



- a) scalene
- b) equilateral
- c) isosceles
- d) right

Answer: _____

136

24. Sketch a rhombus and label all of the congruent parts.

2 Marks

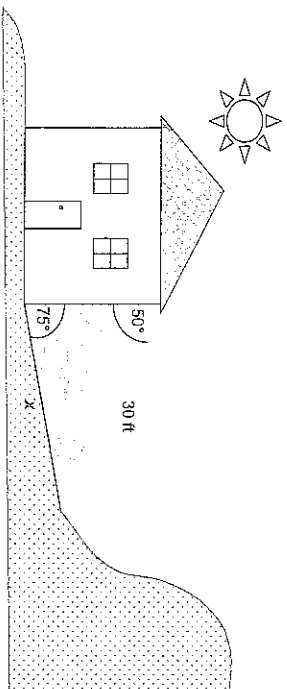
137

Geometry and Trigonometry

2 Marks

139

26. A building is on the side of a hill. Calculate the length of shadow (x) the building will cast on the ground.



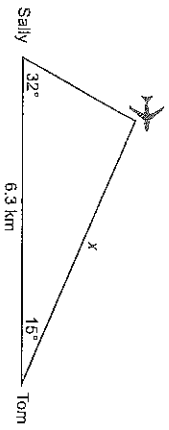
2 Marks

125

20. Determine the number of diagonals in a regular octagon.

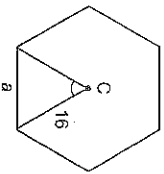
Number of diagonals: _____

21. Sally spots an airplane in the sky flying away from her at an angle of elevation of 32° . At the same time, Tom who is 6.3 km away from Sally sees the same airplane flying towards him at an angle of elevation of 15° .



Calculate how far the plane is from Tom.

23. Given a regular hexagon with centre C:



- A) Determine the measure of the central angle of the hexagon. (1 mark)

- B) Determine the length of side a . Justify your response. (2 marks)