MATH 4153-2

Geometric representation in general context 1

RALLYE MATH

Your Path to Success

Marie-Ève Côté
Martin Francoeur

ÉDITIONS MARIE FRANCE

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Geometric Representation in a General Context 1

RALLYE MATHÉMATICS

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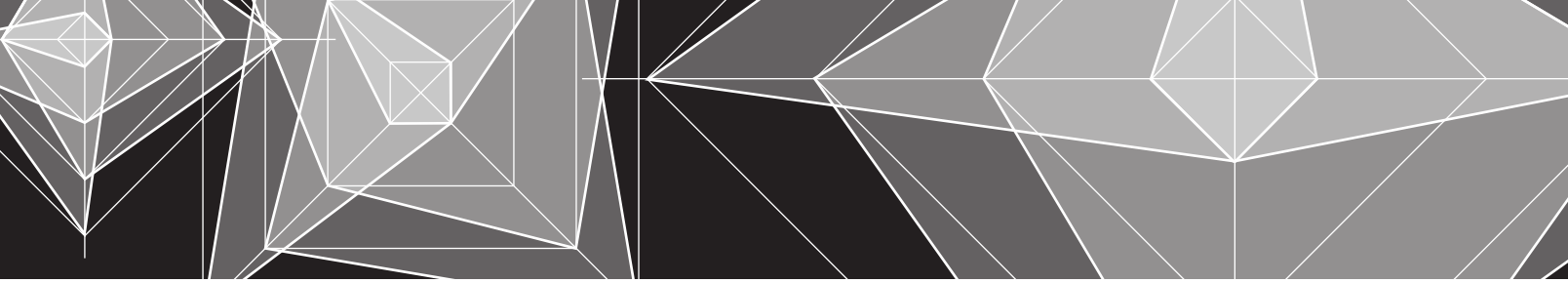
TABLE OF CONTENTS



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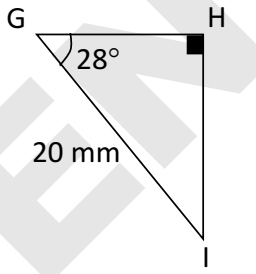
3 TRIGONOMETRY (Right Triangles)

Corrected from the notebook, p. 63

Concept exercises

1. What is the measurement of $\overline{GH}$ in triangle GHI?



A) ≈ 10.63 mm

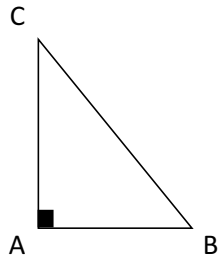
B) ≈ 28.28 mm

C) ≈ 9.39 mm

D) ≈ 17.66 mm

Answer: _____

2. Which of the following is not an accurate statement about triangleABC to the right?



A) $\cos C = \frac{\overline{AB}}{\overline{BC}}$

B) $\sin B = \frac{\overline{AC}}{\overline{BC}}$

C) $\tan C = \frac{\overline{AB}}{\overline{AC}}$

D) $\cos B = \frac{\overline{AB}}{\overline{BC}}$

Answer: _____

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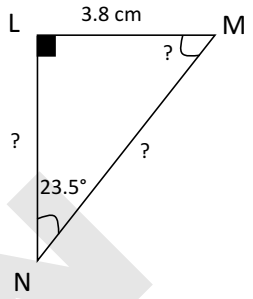
Corrected from the notebook, p. 63

Application exercises

3. Observe triangle LMN to the right.

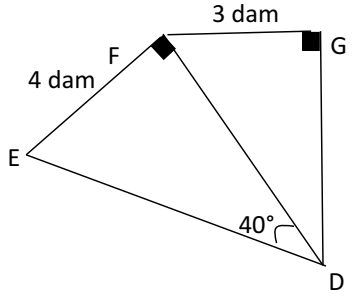
What measurements are missing?



Answer: _____

4. The following DEF and DFG triangles are similar.

What is the value of the tangent of angle FDG angle?



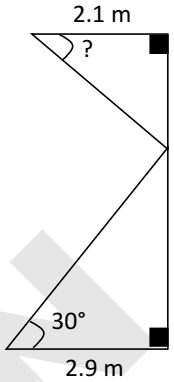
Answer: _____

Corrected from the notebook, p. 63

Context exercices

5. Ulric is responsible for the stage sets at a theater and must install a curtain for a new production. The height of the small shutter must be half of that of the large shutter.

From the ceiling, what should be the angle of the small shutter so that the curtain respects the plan shown to the right?



Answer: _____

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978-2-89661-309-0

Corrected from the notebook, p. 63

Context exercices (*continued*)

6. At a national park, a lookout standing at a height of 28 m makes it possible to observe ruins through a telescope. Visitors must adjust the telescope so that it has a depression angle of 34° relative to the horizon.

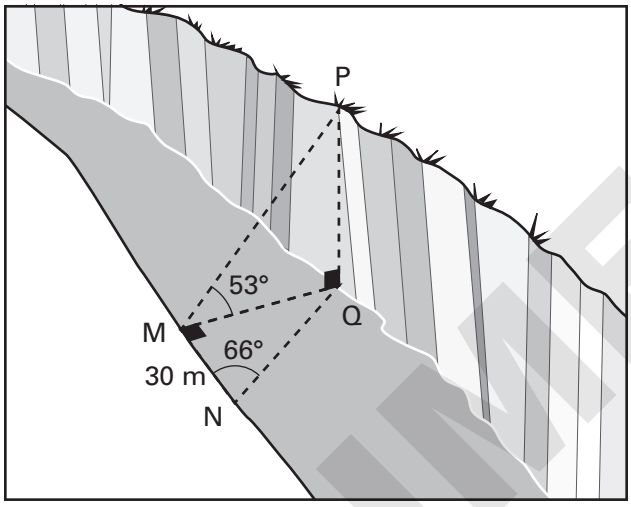
How far from the bottom of the lookout are the ruins?

Answer: _____

Corrected from the notebook, p. 63

Task 7 The bridge

A bridge between two banks must be built, but one bank is higher than the other (see diagram). Therefore, a concrete structure on the lowest bank must be installed so that it is the same height as the north shore, to create a bridge deck.



Measurements were taken from two observation points to determine the height between the two banks and the width of the river:

From M;

- $\angle QMP = 53°$

From N;

- $\angle QNM = 66°$
- $\overline{MN} = 35m$
- $\angle MQP$ is right
- $\angle QMN$ is right

If the shape of the concrete structure is cylindrical and 3 m wide, how much concrete should be provided for the structure?

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Corrected from the notebook, p. 63

Task 7 The bridge (*continued*)

Answer: _____

_____

Corrected from the notebook, p. 63

Task 8 Urban planning

In recent weeks, several citizens have expressed that a new communication antenna atop of the city's tallest building negatively affects the aesthetic of the landscape.

City council therefore seeks consultation from urban planners, regarding the height of the antenna, which must not exceed one third the height of a building.

An official is sent to the site to establish necessary steps. The observation point from which the advisor takes measurements is located 70 m from the base of the building. The official calculate an elevation angle of 46.3° between the ground and the top of the building and an elevation angle of 57.5° between the ground and the top of the antenna.

With this information, what decision will the official have to make?

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978-2-89661-309-0

Corrected from the notebook, p. 63

Task 8 Urban planning (*continued*)

Answer: _____

_____

_____

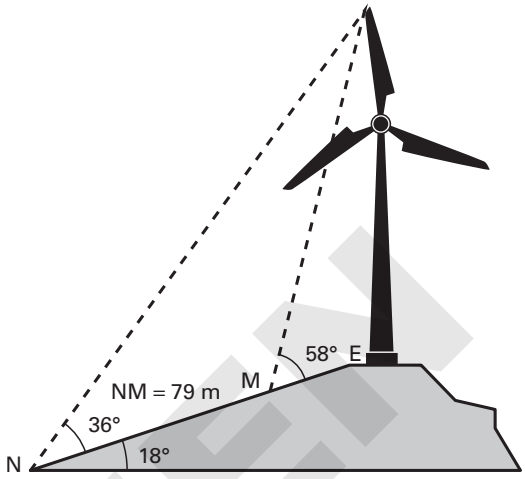
Corrected from the notebook, p. 63

Task 9 Wind farm turbines

A new wind farm has been built near a village. Some villagers fear that turbines are too close to their homes as the noise they emit is rather loud.

An environmental standard state that the minimum distance between a wind turbine and a home must be more than 10 times the height of the wind turbine.

Measurements near a wind turbine were taken in order to verify adherence to this environmental standard. The image to the right shows the measurements that were obtained:



Knowing that the house closest to the wind turbines is 1.2 km away, is the environmental standard being respected?

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Corrected from the notebook, p. 63

Task 9 Wind farm turbines (*continued*)

Answer: _____

_____

_____