CHAPTER

1

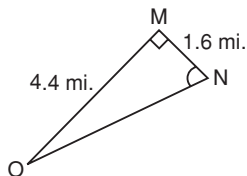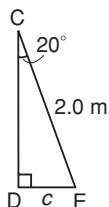**1.** Use primary trigonometric ratios to determine each measure.

   a) Side c **b)** $\angle N$

2. Sketch and solve each triangle.

   a) $\triangle ABC$ with $\angle A = 15°$, $\angle C = 90°$, and $c = 8$ cm

   b) $\triangle CDE$ with $\angle E = 90°$, $e = 14.0$ yards, and $c = 9.2$ yards

   c) $\triangle XYZ$ with $\angle Y = 67°$, $\angle Z = 90°$, and $y = 21$ m

   d) $\triangle PQR$ with $\angle P = 90°$, $\angle R = 51°$, and $q = 150$ mm

   e) $\triangle GHI$ with $\angle I = 90°$, $g = 1.5$ m, and $h = 1.2$ m

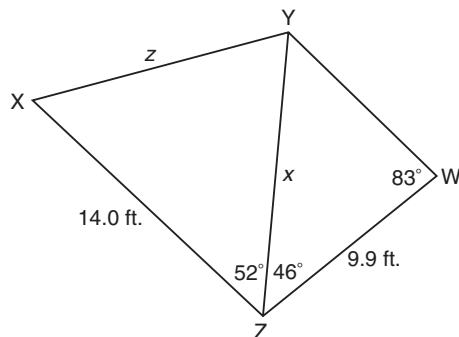**3.** Determine the measure of obtuse $\angle D$ for each ratio.

   a) $\sin D = 0.45$ **b)** $\cos D = -0.21$

   c) $\tan D = -0.43$ **d)** $\sin D = 0.60$

   e) $\cos D = -0.99$ **f)** $\tan D = -0.84$

4. Decide whether you use the Sine Law or the Cosine Law to solve each triangle. Then, solve each triangle.
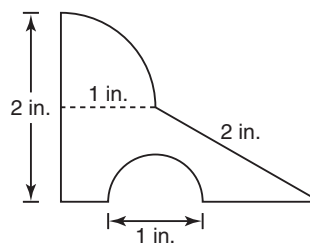
   a)   **b)**
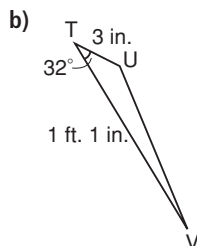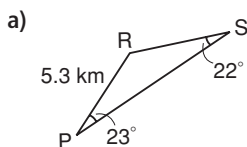
5. Determine z.

6. Two ships sail out from a harbour at the same time. One sails on a bearing of 015° and travels a distance of 32 miles. The other ship sails 47 miles on a bearing of 165°.

   a) How far apart are the ships?

   b) What is the bearing from the first ship to the second ship?

2

7. a) Determine the area of this composite figure. All curves are quarter circles or semicircles.

   b) Determine the surface area and volume of this composite object.
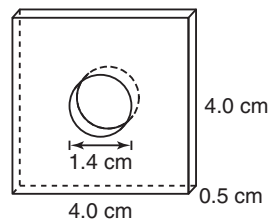
**8.** For each perimeter, what are the dimensions of the rectangle with the maximum area? What is the area?

a) 28 m
b) 44 inches
c) 10 cm
d) 94 feet

9. Gizelle is designing an art project for children at her day care. She will have them use 10 paper clips to create a border for an art project. She is debating whether to use a rectangular or triangular border.

a) Each paper clip is 2 inches long. What are the side lengths of the rectangles and triangles she can construct?

b) What is the greatest rectangular or triangular area she can enclose? What shape does it have?

10. For each volume, what are the dimensions of the rectangular prism with the minimum surface area? What is the surface area?

a) 64 cubic feet
b) 729 m^3
c) 225 cm^3
d) 3000 cubic inches

11. Evan is creating a rectangular planter with square ends. He will use 200 ceramic tiles to create a design on the sides and bottom of the planter. Each tile is a square with side length 1 inch.

a) What are possible dimensions for the planter?

b) What is the maximum volume of soil the planter can contain?
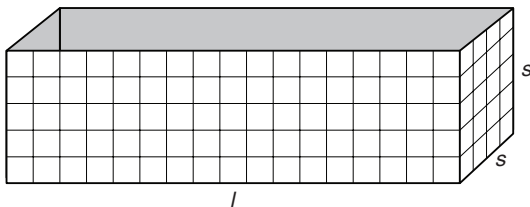
12. Avery created this graph using data from the Statistics Canada Web site.

Incidence of Lung Cancer in Ontario by Gender, 2006
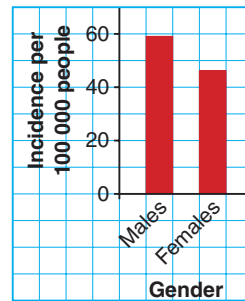
a) What type of graph is it?

b) Avery concluded that since the graph is comparing lung cancer incidence rate and gender, it is displaying two-variable data. Is Avery correct? Justify your answer.

13. For each scenario, state whether you think the two variables have a positive correlation, a negative correlation, or no correlation.

a) Number of air conditioners sold and average daily summer temperature

b) Hours spent sleeping and hours spent awake

c) Number of applicants for a job and probability that you will get the job

d) Number of kilometres driven and total fuel cost of trip

14. For each of these variables, describe a variable that could be correlated with it.

a) The price of oil and …

b) The age of a car and …

c) The number of cigarettes a person smokes per day and …

15. Select the line of best fit for the data. Justify your choice.

Graph A

Graph B
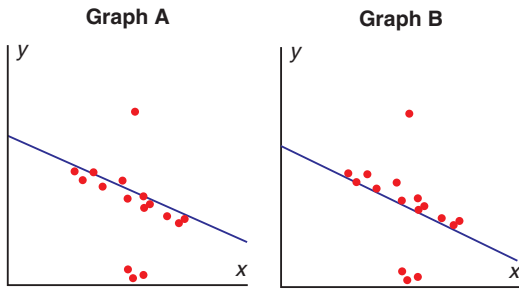
16. a) For each scatter plot, describe the relationship between x and y.
  b) Would you model each relationship with a linear or non-linear model? Justify your answers.

i)

ii)
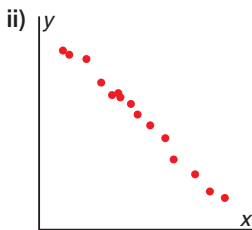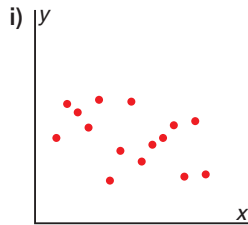
17. Determine the quartiles for each data set.
  a) 7, 6, 1, 6, 2, 1, 10, 10, 4, 1, 3, 8
  b) 107, 109, 102, 113, 102, 110, 108, 104, 116, 108, 109

18. For each population, determine how many people should be surveyed to include 15% of the population.
  a) 20 people   **b)** 120 people
  c) 360 people   **d)** 11 500 people

19. Carmelo and his friends oppose switching to year-round schooling. They survey about 100 students in their high school to find out their opinions on year-round schooling.
  • Carmelo asks each person in his math class her or his opinion and records the answers.
  • 3 of his friends each choose one of their classes and ask everyone in that class.
  a) Explain why the sampling technique the students use is not random.
  b) Describe a random sampling technique for this survey.
  c) Which sampling technique from parts a and b do you think would produce a more representative sample? Explain your thinking.
  d) How might the survey technique Carmelo uses affect his results? What changes would you suggest to improve the survey? Explain.

20. A box of doggie dental chews contains a flyer with this graph. What additional information would you need before deciding whether the claim is valid?

DOGS PREFER THE TASTE OF
YummyBone
over other dental chews

■ YummyBone Chew   ■ Other Dental Chews