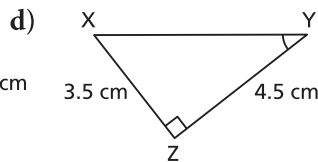
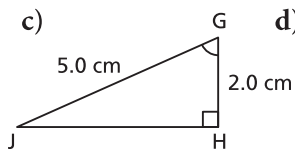
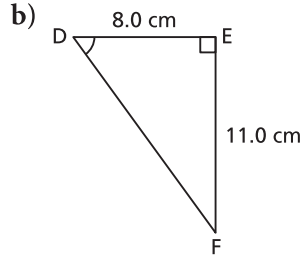
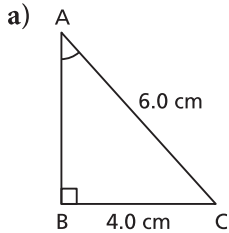


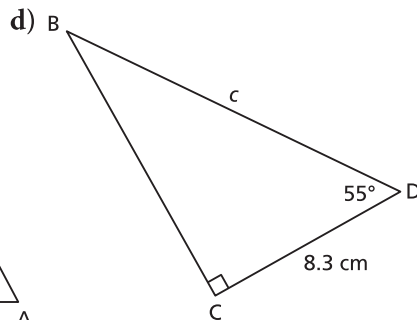
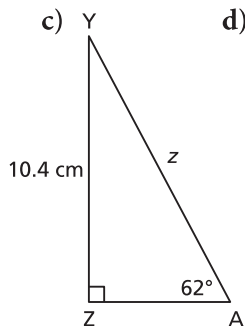
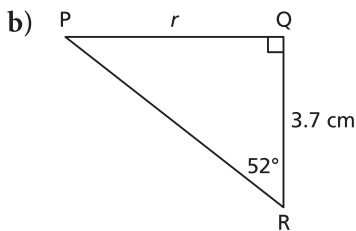
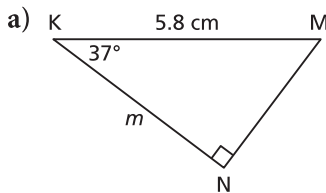
# Exercises

## A

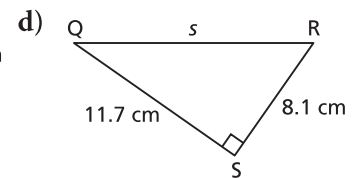
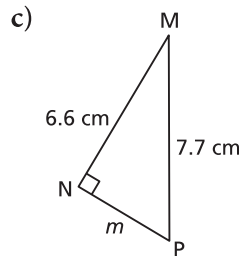
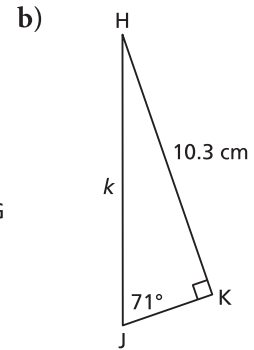
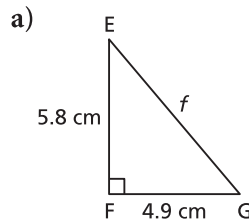
3. To determine the measure of each indicated angle, which trigonometric ratio would you use? Why?



4. Determine the length of each indicated side to the nearest tenth of a centimetre. Which trigonometric ratio did you use? Why?

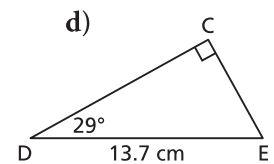
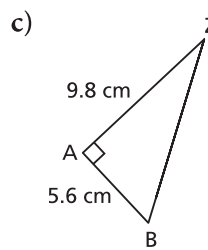
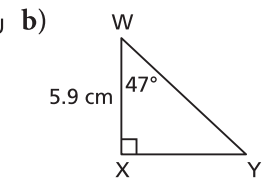
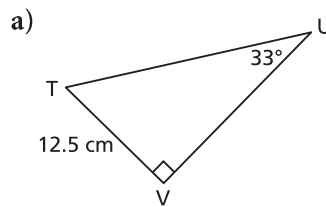


5. To determine the length of each indicated side, which strategy would you use? Why?



## B

6. Solve each right triangle. Give the measures to the nearest tenth.



7. An architect draws this diagram of a wheelchair entrance ramp for a building.



- a) Determine the length of the ramp.  
b) Determine the horizontal distance the ramp will take up.

Give the measures to the nearest centimetre.

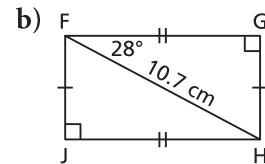
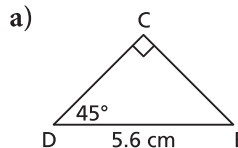
8. The world's tallest totem pole is in Alert Bay, B.C., home of the Nimpkish First Nation. Twenty feet from the base of the totem pole, the angle of elevation of the top of the pole is  $83.4^\circ$ . How tall is the totem pole to the nearest foot?



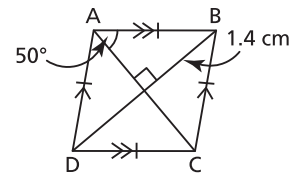
9. A helicopter leaves its base, and flies 35 km due west to pick up a sick person. It then flies 58 km due north to a hospital.
- When the helicopter is at the hospital, how far is it from its base to the nearest kilometre?
  - When the helicopter is at the hospital, what is the measure of the angle between the path it took due north and the path it will take to return directly to its base? Write the angle to the nearest degree.
10. A road rises 1 m for every 15 m measured along the road.
- What is the angle of inclination of the road to the nearest degree?
  - How far does a car travel horizontally when it travels 15 m along the road? Give the answer to the nearest tenth of a metre.
11. A roof has the shape of an isosceles triangle with equal sides 7 m long and base 12 m long.
- What is the measure of the angle of inclination of the roof to the nearest degree?
  - What is the measure of the angle at the peak of the roof to the nearest degree?



12. Determine the perimeter and area of each shape. Give the measures to the nearest tenth.



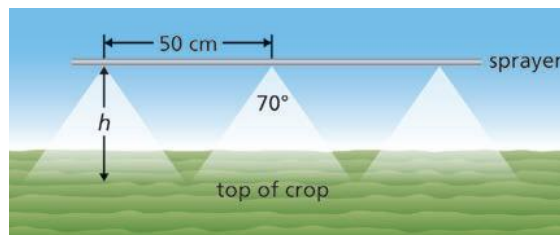
13. Determine the perimeter of this rhombus to the nearest tenth of a centimetre.



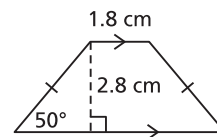
14. A candle has the shape of a right prism whose bases are regular polygons with 12 sides. On each base, the distance from one vertex to the opposite vertex, measured through the centre of the base, is approximately 2 in. The candle is 5 in. high.
- What is the area of the base, to the nearest square inch?
  - What is the volume of wax in the candle, to the nearest cubic inch?

### C

15. To irrigate crops, a farmer uses a boom sprayer pulled by a tractor. The nozzles are 50 cm apart and spray at an angle of  $70^\circ$ . To the nearest centimetre, how high should the sprayer be placed above the crops to ensure that all the crops are watered?



16. Determine the perimeter and area of this isosceles trapezoid. Give the measures to the nearest tenth.



### Reflect

How does the information you are given about a right triangle determine the steps you take to solve the triangle? Include examples with your explanation.

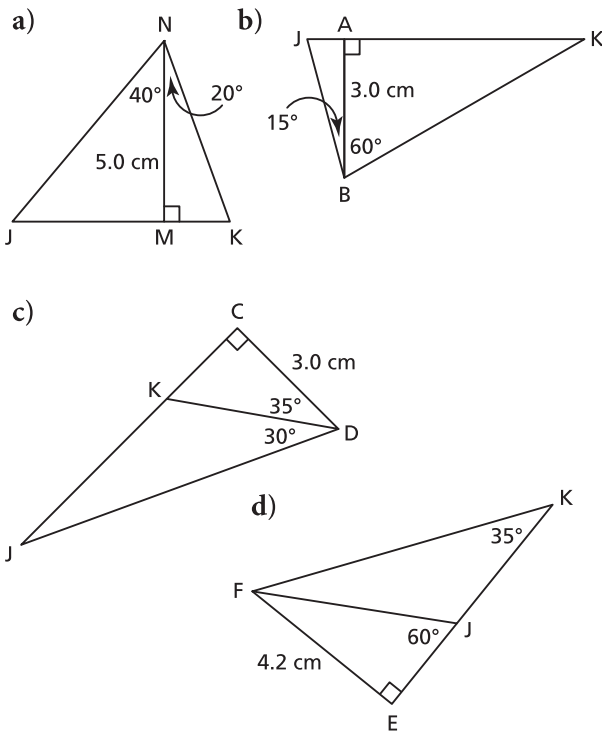
## Discuss the Ideas

1. What do you have to think about when you draw a diagram with triangles in three dimensions?
2. When you have to solve a problem that involves two right triangles, how do you decide where to begin?

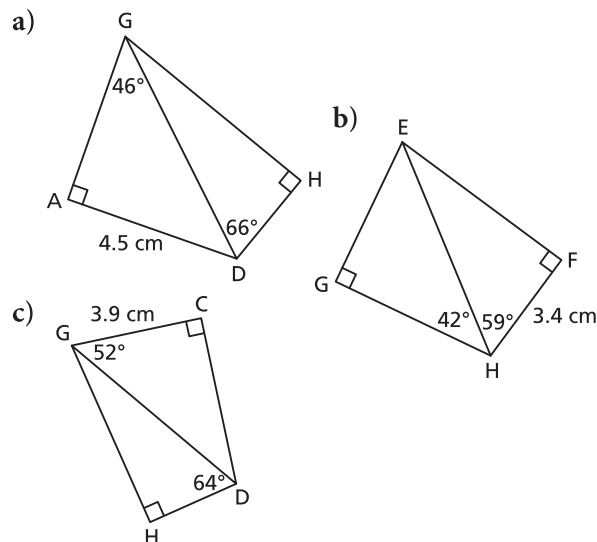
## Exercises

### A

3. In each triangle, determine the length of JK to the nearest tenth of a centimetre.

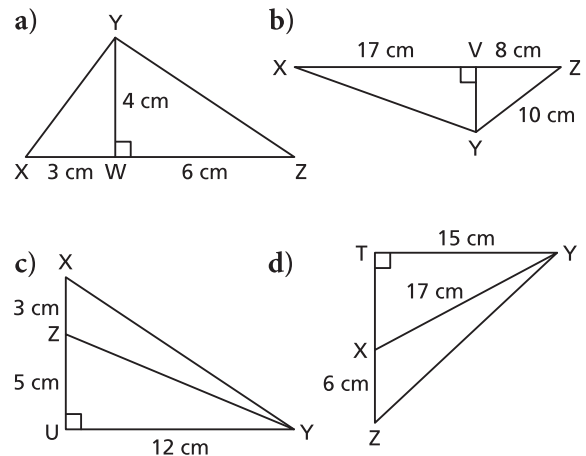


4. In each quadrilateral, calculate the length of GH to the nearest tenth of a centimetre.

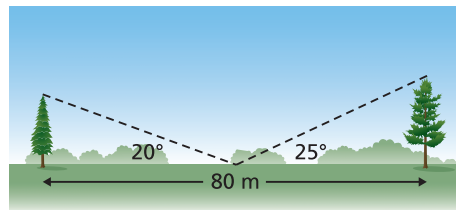


### B

5. In each diagram, calculate the measure of each  $\angle XYZ$  to the nearest tenth of a degree.



6. Two trees are 80 m apart. From a point halfway between the trees, the angles of elevation of the tops of the trees are measured. What is the height of each tree to the nearest metre?



7. At the Muttart Conservatory, the arid pyramid has 4 congruent triangular faces. The base of each face has length 19.5 m and the slant height of the pyramid is 20.5 m. What is the measure of each of the three angles in the face? Give the measures to the nearest degree.

