

The Dragon Academy
G11 Functions and Applications
Term 4
Assignment 4
Due date: Tue May. 21 2019

May 17, 2019

1 Problem list

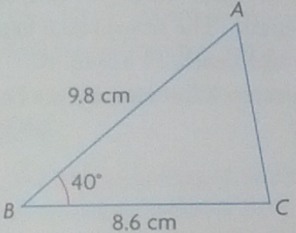
The following lists the exercises numbers and their corresponding page number of our textbook:

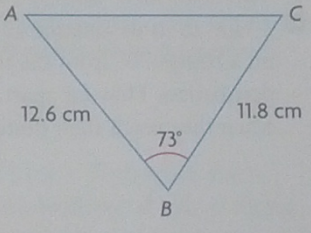
- Pag. 299 — Exer.: 2*, 3*
- Pag. 300 — Exer.: 7
- Pag. 316 — Exer.: 2*, 4*, 6, 8

Problems marked with asterisk should be faced first. They represent the minimum we must know about the sine and cosine laws.

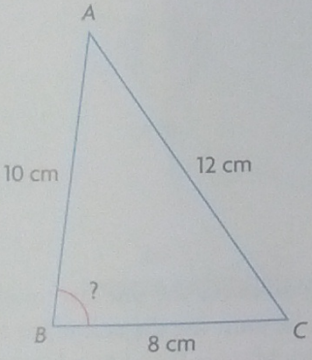
2 Book pages

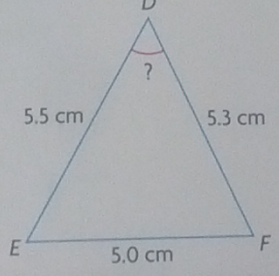
2. Determine the length of each unknown side to the nearest tenth of a centimetre.

a) 

b) 

3. Determine each indicated angle to the nearest degree.

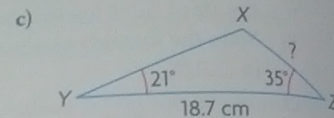
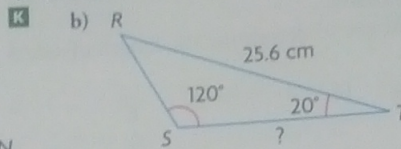
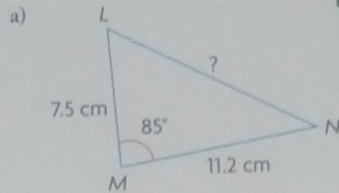
a) 

b) 

Chapter 5 Trigonometry and Acute Triangles **299**

PRACTISING

4. Determine each indicated length to the nearest tenth of a centimetre.



5. Solve each triangle. Round each length to the nearest tenth of a centimetre and each angle to the nearest degree.

a) $\triangle ABC$: $\angle A = 68^\circ$, $b = 10.1$ cm, $c = 11.1$ cm

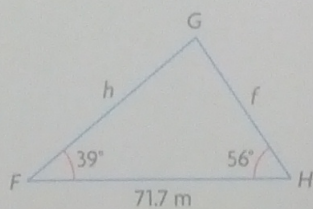
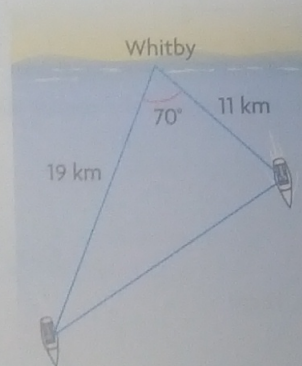
b) $\triangle DEF$: $\angle D = 52^\circ$, $e = 7.2$ cm, $f = 9.6$ cm

c) $\triangle HIF$: $\angle H = 35^\circ$, $i = 9.3$ cm, $f = 12.5$ cm

d) $\triangle PQR$: $p = 7.5$ cm, $q = 8.1$ cm, $r = 12.2$ cm

6. A triangle has sides that measure 5 cm, 6 cm, and 10 cm. Do any of the angles in this triangle equal 30° ? Explain.

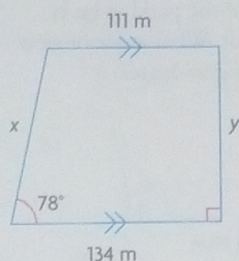
7. Two boats leave Whitby harbour at the same time. One boat heads 19 km to its destination in Lake Ontario. The second boat heads on a course 70° from the first boat and travels 11 km to its destination. How far apart, to the nearest kilometre, are the boats when they reach their destinations?



8. Louis says that he has no information to use the sine law to solve $\triangle FGH$ shown at the left and that he must use the cosine law instead. Is he correct? Describe how you would solve for each unknown side and angle.

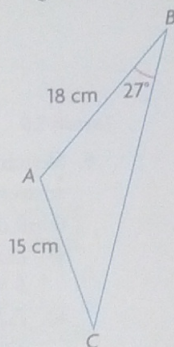
5

Chapter Self-Test

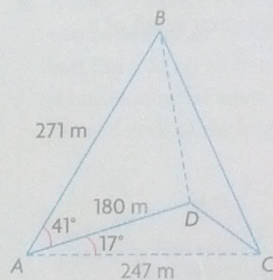
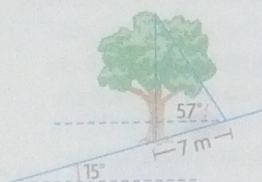
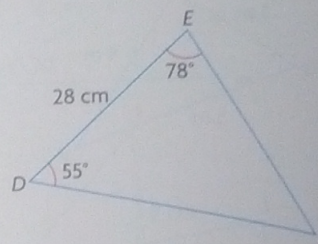


1. A 3 m ladder can be used safely only at an angle of 75° with the horizontal. How high, to the nearest metre, can the ladder reach?
2. A road with an angle of elevation greater than 4.5° is steep for large vehicles. If a road rises 61 m over a horizontal distance of 540 m, is the road steep? Explain.
3. A surveyor has mapped out a property as shown at the left. Determine the length of sides x and y to the nearest metre.
4. Solve each triangle. Round each length to the nearest centimetre and each angle to the nearest degree.

a)



b)



5. A 5.0 m tree is leaning 5° from the vertical. To prevent it from leaning any farther, a stake needs to be fastened 2 m from the top of the tree at an angle of 60° with the ground. How far from the base of the tree, to the nearest metre, must the stake be?
6. A tree is growing vertically on a hillside that is inclined at an angle of 15° to the horizontal. The tree casts a shadow uphill that extends 7 m from the base of its trunk when the angle of elevation of the Sun is 57° . How tall is the tree to the nearest metre?
7. Charmaine has planned a nature walk in the forest to visit four stations: A, B, C, and D. Use the sketch shown at the left to calculate the total length, to the nearest metre, of the nature trail, from A to B, B to C, C to D, and D back to A.
8. A weather balloon at a height of 117 m has an angle of elevation of 41° from one station and 62° from another. If the balloon is directly above the line joining the stations, how far apart, to the nearest metre, are the two stations?