HIGHER

7.12 The Sine Rule: 30-minute Pack

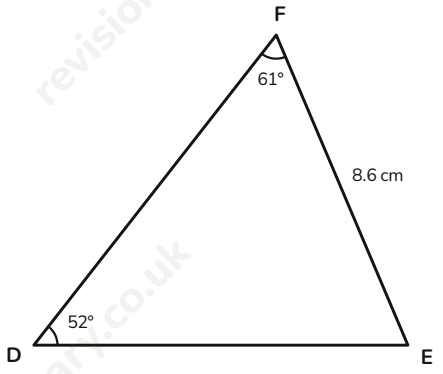
EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

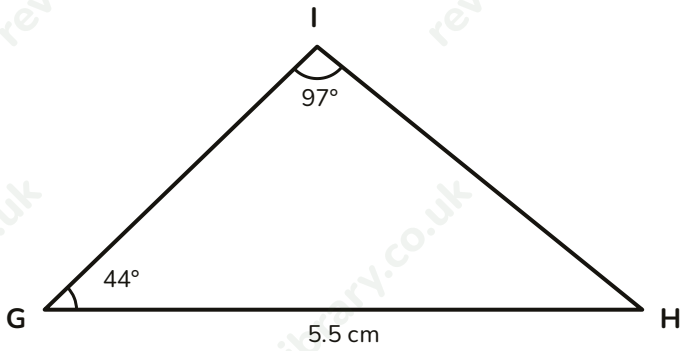
1 In triangle DEF, angle D = 52 degrees, angle F = 61 degrees, and EF = 8.6 cm (EF is opposite angle D). Calculate the length of DE (opposite angle F). Give your answer correct to 3 significant figures.



(Total for Question 1 is 2 marks)

© Revision Library | revisionlibrary.co.uk

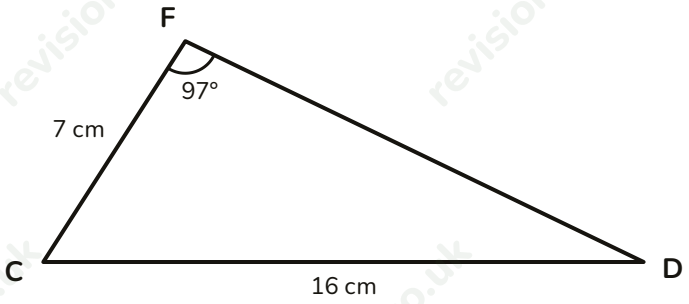
2 In triangle GHI, angle G = 44 degrees, angle I = 97 degrees, and GH = 5.5 cm (GH is opposite angle I). Calculate the length of HI (opposite angle G). Give your answer correct to 3 significant figures.



(Total for Question 2 is 2 marks)

---

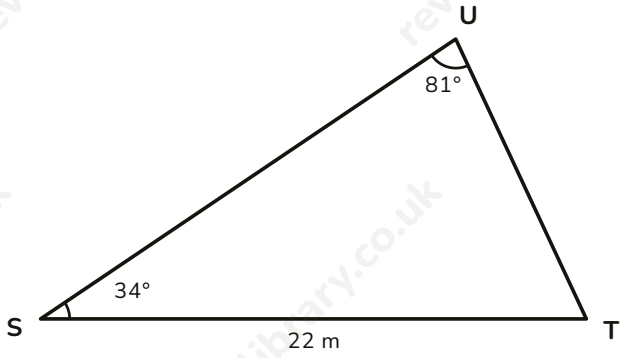
3 In triangle CDF, angle F = 97 degrees, CD = 16 cm (opposite angle F), and CF = 7 cm (opposite angle D). Calculate the size of angle D. Give your answer correct to 1 decimal place.



(Total for Question 3 is 2 marks)

© Revision Library | revisionlibrary.co.uk

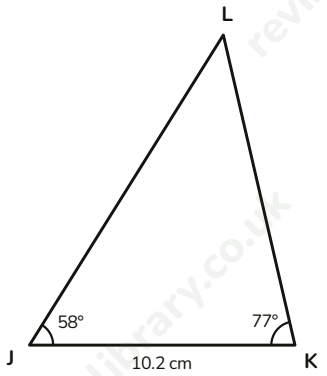
4 In triangle STU, angle S = 34 degrees, angle U = 81 degrees, and ST = 22 m (ST is opposite angle U). Calculate the length of TU (opposite angle S). Give your answer correct to 3 significant figures.



(Total for Question 4 is 2 marks)

© Revision Library | revisionlibrary.co.uk

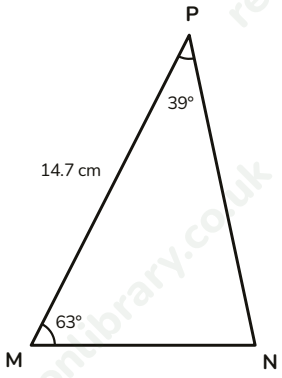
5 In triangle JKL, angle J = 58 degrees, angle K = 77 degrees, and JK = 10.2 cm (JK is opposite angle L). Calculate the length of KL (opposite angle J). Give your answer correct to 3 significant figures.



(Total for Question 5 is 3 marks)

---

6 In triangle MNP, angle M = 63 degrees, angle P = 39 degrees, and MP = 14.7 cm (MP is opposite angle N). Calculate the length of NP (opposite angle M). Give your answer correct to 3 significant figures.

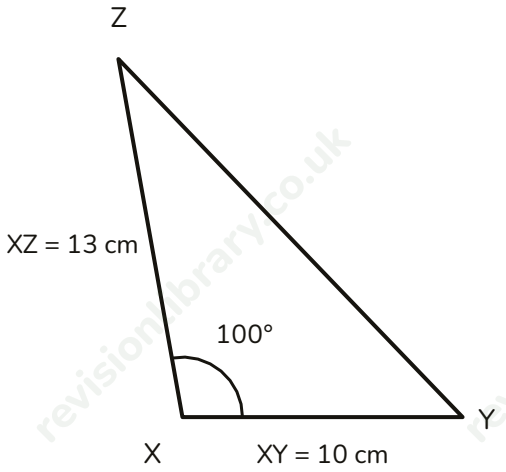


(Total for Question 6 is 3 marks)

© Revision Library | revisionlibrary.co.uk

7 In triangle XYZ, XZ = 13 cm (opposite angle Y), XY = 10 cm (opposite angle Z), and angle X = 100 degrees. Calculate angle Z. Give your answer correct to 1 decimal place.

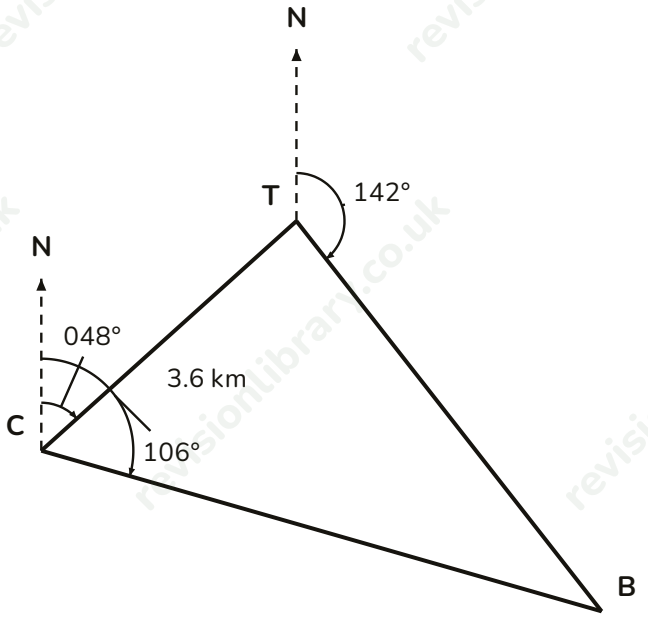
Diagram NOT accurately drawn



(Total for Question 7 is 3 marks)

© Revision Library | revisionlibrary.co.uk

8 A footpath runs from a car park C to a trig point T on a bearing of 048 degrees, a distance of 3.6 km. A bench B lies on a bearing of 106 degrees from C, and on a bearing of 142 degrees from T.



(a) Show that angle BCT = 58 degrees and angle CTB = 86 degrees. **(2)**

(b) Hence calculate the distance TB from the trig point to the bench. Give your answer correct to 3 significant figures. **(3)**

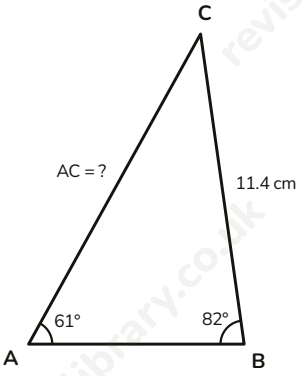
.....

(Total for Question 8 is 5 marks)

© Revision Library | revisionlibrary.co.uk

9 In triangle ABC, angle A = 61 degrees, angle B = 82 degrees and BC = 11.4 cm. Work out the length of AC. Give your answer correct to 3 significant figures.

Diagram NOT accurately drawn



(Total for Question 9 is 3 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 7.12 The Sine Rule: 30-minute Pack

Question 1

DE/sin(61) = 8.6/sin(52) oe **M1**

awrt 9.55 (cm) **A1**

Answer: DE = 9.55 cm (3 s.f.)

Question 2

HI/sin(44) = 5.5/sin(97) oe **M1**

awrt 3.85 (cm) **A1**

Answer: HI = 3.85 cm (3 s.f.)

Question 3

sin(D)/7 = sin(97)/16 oe **M1**

awrt 25.7 (degrees) **A1**

Answer: angle D = 25.7 degrees (1 d.p.)

Question 4

TU/sin(34) = 22/sin(81) oe **M1**

awrt 12.5 (m) **A1**

Answer: TU = 12.5 m (3 s.f.)

Question 5

angle L = 180 - 58 - 77 = 45 (degrees) **M1**

KL/sin(58) = 10.2/sin(45) oe **M1**

awrt 12.2 (cm) **A1**

Answer: KL = 12.2 cm (3 s.f.)

Question 6

angle N = 180 - 63 - 39 = 78 (degrees) **M1**

NP/sin(63) = 14.7/sin(78) oe **M1**

awrt 13.4 (cm) **A1**

Answer: NP = 13.4 cm (3 s.f.)

Question 7

$YZ^2 = 13^2 + 10^2 - 2(13)(10)\cos 100$ oe (cosine rule for side opposite the given angle) **M1**

YZ = 17.7 (cm) so sinZ/10 = sin100/17.7 oe **M1**

33.8 degrees awrt **A1**

Answer: 33.8 degrees (1 dp)

Question 8

(a) angle BCT = 106 - 48 = 58 (degrees), from the difference of the two bearings at C **B1**

(a) angle CTB = (48 + 180) - 142 = 86 (degrees), using the back bearing from T to C (048 + 180 = 228) and subtracting 142 **B1**

(a) Answer: angle BCT = 58 degrees; angle CTB = 86 degrees

(b) angle CBT = 180 - 58 - 86 = 36 (degrees) **M1**

(b) TB/sin(58) = 3.6/sin(36) oe **M1**

(b) awrt 5.19 (km) **A1**

(b) Answer: TB = 5.19 km (3 s.f.)

Question 9

AC/sin 82 = 11.4/sin 61 **M1**

rearranges to make the unknown side the subject **M1**

12.9 cm cao **A1**

Answer: 12.9 cm

© Revision Library | revisionlibrary.co.uk