High School Mathematics Test 2013

Year 9

Right Triangle Trigonometry

Calculator Allowed

Skills and Knowledge Assessed:

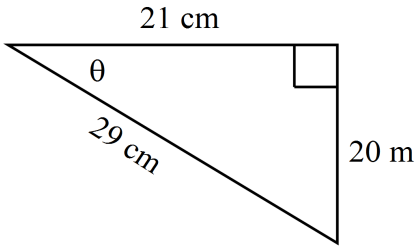
- Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right - angled triangles (ACMMG223)
- Apply trigonometry to solve right - angled triangle problems (ACMMG224)
- Solve right- angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)

Name_____

Section 1 Short Answer Section

Write all working and answers in the spaces provided on this test paper.

1. What is the value of *sin* θ for the triangle below?



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2. Find the value of 16 *tan* 34° correct to 3 significant figures.

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3. Find the length of BC.

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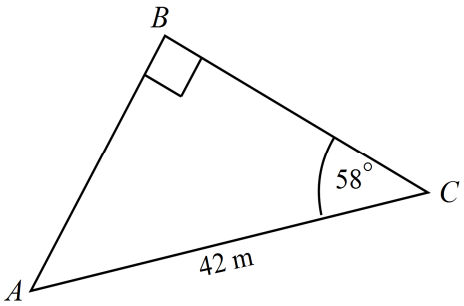
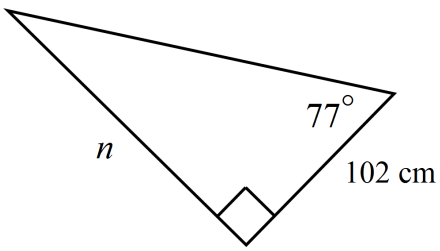


4. Find the value of *n*, correct to the nearest cm.



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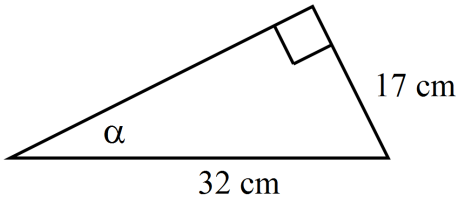
5. Find the value of α, correct to the nearest degree.



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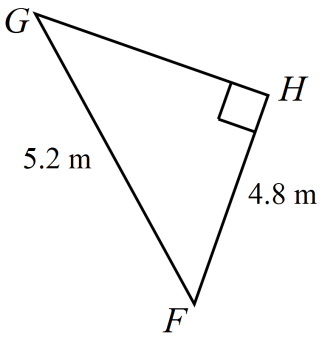
6. Find the size of $\angle F$, correct to the nearest minute.



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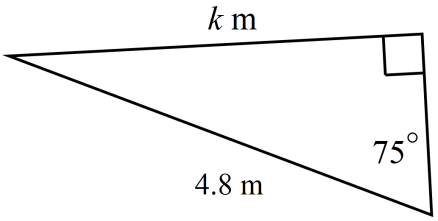
7. Find the value of k, correct to 3 significant figures.



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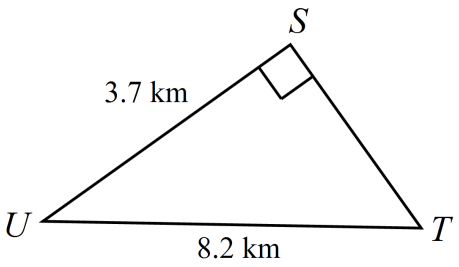
8. What is the size of $\angle T$, correct to the nearest degree ?



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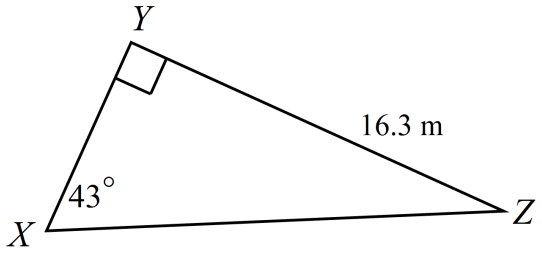
9. Find the length of the hypotenuse of this triangle.



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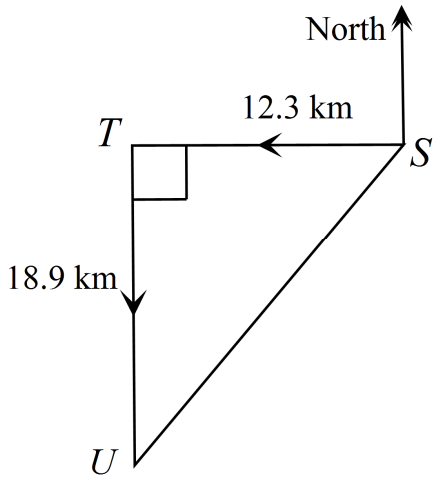
10. A plane flies due west from Smithtown (S) for 12.3 km to Torin (T). It then turns and flies due south for a distance of 18.9 km to Uxbridge (U). What is the bearing of Smithtown from Uxbridge?



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High School Mathematics Test 2013

Right Triangle Trigonometry

Year 9

Calculator Allowed

Name_____

Section 2 Multiple Choice Section

Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section.

1. What is the value of $\frac{15}{\sin 35^\circ}$ correct to the nearest 10^{th} ?

   A. 8.6 B. 18.3 C. 20.2 D. 26.2

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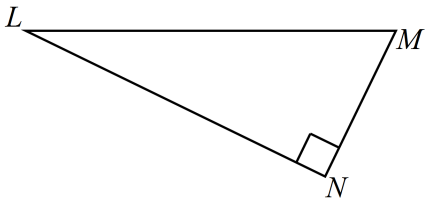
2. In the triangle *LMN*, *sin M* =?

   A. $\frac{LN}{LM}$ B. $\frac{MN}{LM}$

   C. $\frac{LN}{MN}$ D. $\frac{LM}{LN}$



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3. If $\cos \alpha = \frac{2}{3}$, what is the size of angle α to the nearest degree?

   A. 34° B. 42° C. 48° D. 56°

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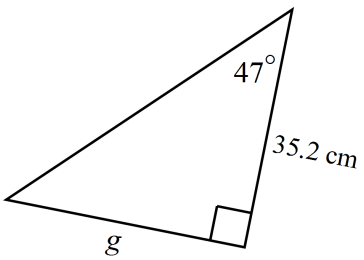
4. Find the value of *g*, correct to one decimal place.

   A. 25.7 cm
   B. 37.7 cm
   C. 47.0 cm
   D. 48.1 cm



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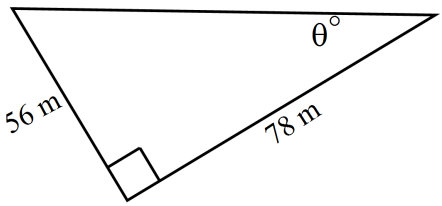
5. Find the value of θ , correct to the nearest degree.

   A. 36°
   B. 44°
   C. 46°
   D. 54°



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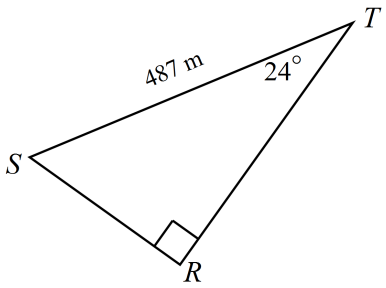
6. Find the length of RS, correct to the nearest metre.

A. 198 m

B. 217 m

C. 445 m

D. 1 197 m



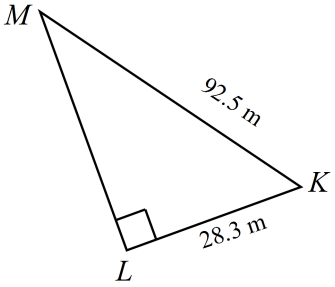
7. Find the size of $\angle K$, to the nearest degree.

A. 17^o

B. 18^o

C. 72^o

D. 73^o



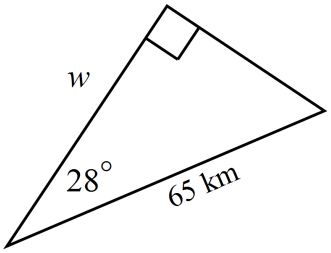
8. What is the value of w, correct to the nearest 10^{th} of a kilometre?

A. 30.5 km

B. 34.6 km

C. 57.4 km

D. 73.6 km



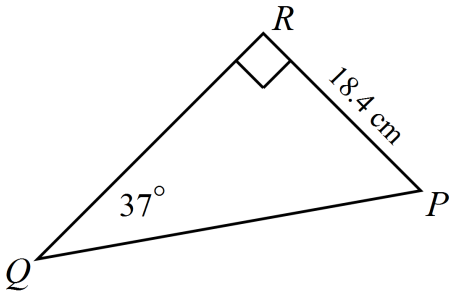
9. Calculate the length of PQ, correct to 3 significant figures.

A. 11.1 cm

B. 23.0 cm

C. 24.4 cm

D. 30.6 cm



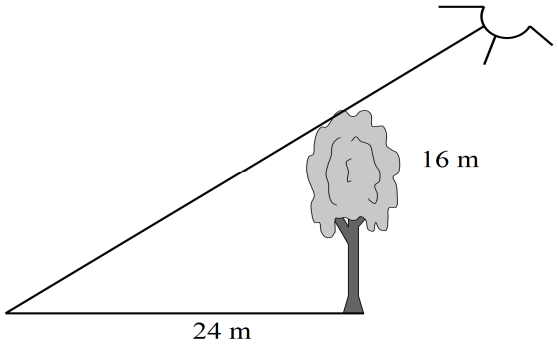
10. What is the angle of elevation of the sun at the time when a 16 m tree casts a 24 m long shadow on level ground?

A. 24^o

B. 34^o

C. 42^o

D. 48^o



High School Mathematics Test 2013

Year 9

Right Triangle Trigonometry

Calculator Allowed

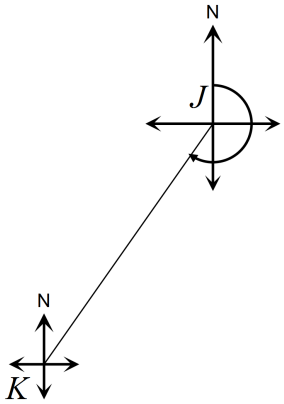
Name_____

Section 3 Longer Answer Section

Write all working and answers in the spaces provided on this test paper.

Marks

1. A ship sails from Jonestown on a bearing 220^{o} for a distance of 250 nautical miles to Kingston.



a) Lisben is due west of Jonestown and due north of Kingston. Mark the position of Lisben on the diagram above. **1**

b) Show by calculations that the distance Lisben from Kingston is 192 M. **2**

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c) The ship then sails from Kingston to Marksport which is 200 km due west of Lisben. On what bearing does it sail? **2**

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High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name _____

Completely fill the response oval representing the most correct answer.

1.	A ⬭	B ⬭	C ⬭	D ⬭
2.	A ⬭	B ⬭	C ⬭	D ⬭
3.	A ⬭	B ⬭	C ⬭	D ⬭
4.	A ⬭	B ⬭	C ⬭	D ⬭
5.	A ⬭	B ⬭	C ⬭	D ⬭
6.	A ⬭	B ⬭	C ⬭	D ⬭
7.	A ⬭	B ⬭	C ⬭	D ⬭
8.	A ⬭	B ⬭	C ⬭	D ⬭
9.	A ⬭	B ⬭	C ⬭	D ⬭
10.	A ⬭	B ⬭	C ⬭	D ⬭

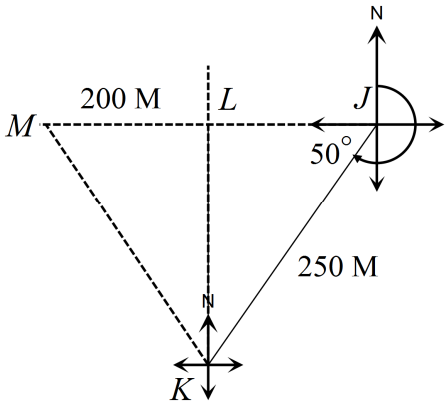
High School
Mathematics Test 2013
Right Triangle
Trigonometry

ANSWERS

Section 1	
1.	$\sin\theta = \frac{20}{29}$
2.	$16 \tan 34^\circ = 10.8$
3.	$\cos 58^\circ = \frac{BC}{42}$ $BC = 42 \cos 58^\circ$ $= 22.3\ m$
4.	$\tan 77^\circ = \frac{m}{102}$ $m = 102 \tan 77^\circ$ $= 442$ cm
5.	$\sin\alpha = \frac{17}{32}$ $\alpha = \sin^{-1}\left(\frac{17}{32}\right)$ $= 32^\circ$
6.	$\cos F = \frac{4.8}{5.2}$ $F = \cos^{-1}\left(\frac{4.8}{5.2}\right)$ $= 22.6$ $= 22^\circ\ 37'$
7.	$\sin 75^\circ = \frac{k}{4.8}$ $k = 4.8 \sin 75^\circ$ $k = 4.64\ m$
8.	$\sin T = \frac{3.7}{8.2}$ $T = \sin^{-1}\left(\frac{3.7}{8.2}\right)$ $T = 27^\circ$

9.	$\sin 43^\circ = \frac{16.3}{XZ}$ $XZ = \frac{16.3}{\sin 43^\circ}$ $= 24\ m$
10.	$\tan \angle TUV = \frac{12.3}{18.9}$ $\angle TUV = \tan^{-1}\left(\frac{12.3}{18.9}\right)$ $\angle TUV = 33^\circ$ Bearing $= 033^\circ$

Section 2	
1.	D
2.	A
3.	C
4.	B
5.	A
6.	A
7.	C
8.	C
9.	D
10.	B

Section 3	
1.	a) 
	b) $\sin 50^\circ = \frac{KL}{250}$ $KL = 250 \sin 50^\circ$ $= 192\ M$ (*Nearest M*)
	c) $\tan \angle LKM = \frac{200}{192}$ $\angle LKM = \tan^{-1}\left(\frac{200}{192}\right)$ $= 46^\circ$ Bearing $= 360 - 46$ $= 314^\circ$

High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name Marking Sheet

Completely fill the response oval representing the most correct answer.

1.	A ○	B ○	C ○	D ●
2.	A ●	B ○	C ○	D ○
3.	A ○	B ○	C ●	D ○
4.	A ○	B ●	C ○	D ○
5.	A ●	B ○	C ○	D ○
6.	A ●	B ○	C ○	D ○
7.	A ○	B ○	C ●	D ○
8.	A ○	B ○	C ●	D ○
9.	A ○	B ○	C ○	D ●
10.	A ○	B ●	C ○	D ○