MATHLETICS

Trigonometry

Teacher Book - Series J-1

Mathletics Instant Workbooks

Trigonometry

Topic Test — PART A

Time allowed: 15 minutes **Total marks = 15**

Marks

1 Use your calculator to find cos 48° correct to two decimal places. [1]

Ⓐ 0·74 Ⓑ 1·11 Ⓒ 0·67 Ⓓ none of these

2 Evaluate 25 tan 63° correct to two decimal places. [1]

Ⓐ 1·96 Ⓑ 49·07 Ⓒ 29·38 Ⓓ 22·28

3 Find the value of $\frac{\cos 32°}{43·27}$ correct to two decimal places. [1]

Ⓐ 0·01 Ⓑ 0·02 Ⓒ 0·03 Ⓓ 0·0196

4 If $\sin \theta = \frac{5}{9}$, calculate the size of angle θ to the nearest degree. [1]

Ⓐ 31° Ⓑ 32° Ⓒ 33° Ⓓ 34°

5 The hypotenuse of a right-angled triangle is 41 cm. If one side is 40 cm, the third side is [1]

Ⓐ 1 cm Ⓑ 9 cm Ⓒ 10 cm Ⓓ 81 cm

6 If $\cos \theta = \frac{1}{2}$, find the size of angle θ. [1]

Ⓐ 30° Ⓑ 45° Ⓒ 60° Ⓓ 72°

7 28·65° equals [1]

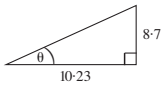
Ⓐ 29°5' Ⓑ 28°39' Ⓒ 29°39' Ⓓ 28°5'

8 The three sides of a right-angled triangle measure 15 cm, 17 cm and 8 cm. The length of the hypotenuse is [1]

Ⓐ 8 cm Ⓑ 15 cm Ⓒ 17 cm Ⓓ 25 cm

9 Find the size of angle θ to the nearest degree. [1]

Ⓐ 40° Ⓑ 41° Ⓒ 42° Ⓓ 58°



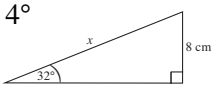
10 In a △ABC, the angle B is 90°, AB is 8 m and AC is 10 m. Find the size of angle A correct to the nearest degree. [1]

Ⓐ 36° Ⓑ 39° Ⓒ 53° Ⓓ 37°

11 A road rises uniformly 30·6 m for every 600 m along the road. Find the angle of elevation of this road correct to the nearest degree. [1]

Ⓐ 1° Ⓑ 2° Ⓒ 3° Ⓓ 4°

12 Find the hypotenuse of this triangle in centimetres correct to 1 decimal place. [1]



Ⓐ 9 cm Ⓑ 15·1 cm Ⓒ 12·8 cm Ⓓ none of these

13 Use your calculator to find 7·9 cos 63° correct to three significant figures. [1]

Ⓐ 3·58 Ⓑ 3·59 Ⓒ 7·03 Ⓓ 7·04

14 Evaluate $\frac{\sin 54°}{28·65}$ correct to two decimal places. [1]

Ⓐ 0·02 Ⓑ 0·03 Ⓒ 0·04 Ⓓ 0·05

15 Find the size of the acute angle θ to the nearest degree if $\tan \theta = \frac{12·5}{19·34}$ [1]

Ⓐ 40° Ⓑ 32° Ⓒ 33° Ⓓ none of these

Total marks achieved for PART A ____/15

Trigonometry

Topic Test — PART B

Time allowed: 15 minutes **Total marks = 15**

Marks

Question 1

a Find the value of each expression correct to two decimal places.

i $\frac{\cos 72°}{8{\cdot}93} =$ _____ [1]

ii $\frac{72{\cdot}54}{\tan 68°} =$ _____ [1]

iii $\frac{34{\cdot}20}{\sin 56°} =$ _____ [1]

b Find acute angle A to the nearest degree.

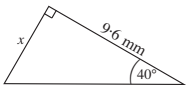
i sin A = 0·6835 _____ [1]

ii tan A = 1·4862 _____ [1]

Question 2

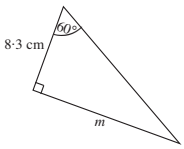
Find the value of the pronumeral in each triangle correct to two decimal places.

a



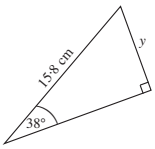
_____ [1]

b



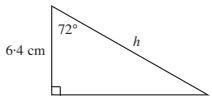
_____ [1]

c



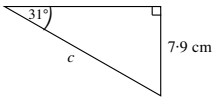
_____ [1]

d



_____ [1]

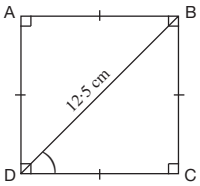
e



_____ [1]

Question 3

The diagonal of a square is 12·5 cm long.



a Find the length of one side correct to the nearest mm. _____ [1]

b Find the size of ∠BDC. _____ [1]

Find the following correct to three decimal places.

c sin ∠BDC _____ [1]

d cos ∠DBC _____ [1]

e tan ∠ABD _____ [1]

Total marks achieved for PART B 15

Answers – Trigonometry

Page 1 **1 a** opp, adj, hyp **b** hyp, adj, opp **c** adj, hyp, opp **2 a** a = opp, b = adj, c = hyp **b** d = opp, e = adj, f = hyp **c** g = opp, i = adj, h = hyp **d** k = opp, l = adj, j = hyp **e** n = opp, m = adj, o = hyp **f** r = opp, q = adj, p = hyp **3 a** AB **b** DF **c** GI **d** JK **e** MN **f** PQ

Page 2 **1 a** $\frac{40}{41}$ **b** $\frac{5}{13}$ **c** $\frac{8}{17}$ **2 a** $sin\ \theta = \frac{1}{\sqrt{17}}$, $sin\ \alpha = \frac{4}{\sqrt{17}}$ **b** $\sin\theta = \frac{a}{b}$, $\sin\alpha = \frac{2}{b}$ **c** $\sin\theta = \frac{m}{n}$, $\sin\alpha = \frac{6}{n}$ **3 a** BC = 5, $\sin\theta = \frac{5}{13}$ **b** EF = 4, $\sin\theta = \frac{4}{5}$ **c** PQ = 37, $\sin\theta = \frac{12}{37}$ **4 a** $\sin A = \frac{3}{5}$, $\sin B = \frac{4}{5}$ **b** $\sin P = \frac{5}{13}$, $\sin Q = \frac{12}{13}$ **c** $\sin D = \frac{9}{41}$, $\sin E = \frac{40}{41}$ **5 a** sin A, sin B **b** sin D, sin E **c** sin P, sin Q

Page 3 **1 a** $\frac{4}{5}$ **b** $\frac{15}{17}$ **c** $\frac{3}{\sqrt{58}}$ **2 a** $\cos\theta = \frac{8}{b}$, $\cos\alpha = \frac{a}{b}$ **b** $\cos\theta = \frac{p}{q}$, $\cos\alpha = \frac{5}{q}$ **c** $\cos\theta = \frac{x}{y}$, $\cos\alpha = \frac{4}{y}$ **3 a** AB = $\sqrt{58}$, $\cos\theta = \frac{7}{\sqrt{58}}$ **b** DE = $\sqrt{29}$, $\cos\theta = \frac{2}{\sqrt{29}}$ **c** QR = $\sqrt{65}$, $\cos\theta = \frac{\sqrt{65}}{9}$ **4 a** $\cos A = \frac{3}{5}$, $\cos B = \frac{4}{5}$ **b** $\cos D = \frac{12}{13}$, $\cos E = \frac{5}{13}$ **c** $\cos P = \frac{15}{17}$, $\cos Q = \frac{8}{17}$ **5 a** cos A, cos B **b** cos D, cos E **c** cos P, cos Q

Page 4 **1 a** $\frac{1}{3}$ **b** $\frac{5}{2}$ **c** $\frac{5}{12}$ **2 a** $\tan\theta = \frac{b}{a}$, $\tan\alpha = \frac{a}{b}$ **b** $\tan\theta = \frac{p}{8}$, $\tan\alpha = \frac{8}{p}$ **c** $\tan\theta = \frac{7}{a}$, $\tan\alpha = \frac{a}{7}$ **3 a** AC = $\sqrt{56}$, $\tan\theta = \frac{5}{\sqrt{56}}$ **b** DF = 7, $\tan\theta = \frac{12}{7}$ **c** QR = $\sqrt{133}$, $\tan\theta = \frac{6}{\sqrt{133}}$ **4 a** $\tan A = \frac{4}{3}$, $\tan B = \frac{3}{4}$ **b** $\tan D = \frac{9}{40}$, $\tan E = \frac{40}{9}$ **c** $\tan P = \frac{4}{3}$, $\tan Q = \frac{3}{4}$ **5 a** tan A, tan B **b** tan D, tan E **c** tan P, tan Q

Page 5 **1 a** 0·56 **b** 2·75 **c** 0·97 **d** 0·52 **e** 0·77 **f** 0·62 **g** 8·14 **h** 0·50 **i** 2·05 **2 a** 0·287 **b** 0·055 **c** 23·073 **d** 0·312 **e** 0·059 **f** 25·519 **g** 0·077 **h** 0·356 **i** 1542·844 **3 a** 1·66 **b** 1·49 **c** 0·814 **d** 4·02 **e** 0·428 **f** 0·935 **g** 0·475 **h** 3·50 **i** 0·440 **4 a** 39° **b** 68° **c** 68° **d** 55° **e** 38° **f** 50° **g** 59° **h** 16° **i** 10° **5 a** 30° **b** 30° **c** 50° **d** 67° **e** 60° **f** 65° **6 a** 35° **b** 67° **c** 35° **d** 30° **e** 42° **f** 40°

Page 6 **1 a** x = 4·2 **b** a = 7·6 **c** y = 13·1 **2 a** n = 28·14 **b** m = 9·77 **c** p = 9·92 **3 a** q = 3·35 **b** t = 18·36 **c** l = 12·16 **d** c = 6·27 **e** d = 23·90 **f** k = 10·01 **4** 1·94 m **5** 5·75 cm

Page 7 **1 a** 16·6 cm **b** 15·6 cm **c** 16·7 cm **2 a** 16·00 cm **b** 14·15 cm **c** 19·30 cm **3 a** 31·4 cm **b** 34·7 cm **c** 24·4 cm **d** 20·2 cm **e** 12·0 cm **f** 19·5 cm **4** x = 24 cm **5** 43 m

Page 8 **1 a** $\theta = 31°$ **b** $\alpha = 57°$ **c** $\beta = 76°$ **2 a** $\beta = 68°$ **b** $\theta = 24°$ **c** $\alpha = 37°$ **3 a** $\beta = 71°$ **b** $\alpha = 35°$ **c** $\theta = 60°$ **d** $\theta = 74°$ **e** $\alpha = 69°$ **f** $\beta = 23°$ **4** $\angle P = 51°$ **5** $\angle ACD = 25°$

Page 9 **1 a** 564 m **b** 81·04 m **c** 2° **2 a** 27 m **b** 54° **c** 55°

Page 10 **1** C **2** B **3** B **4** D **5** B **6** C **7** B **8** C **9** A **10** D **11** C **12** B **13** B **14** B **15** C

Page 11 **1 a i** 0·03 **ii** 29·31 **iii** 41·25 **b i** 43° **ii** 56° **2 a** x = 8·06 cm **b** m = 14·38 cm **c** y = 9·73 cm **d** h = 20·71 cm **e** c = 15·34 cm **3 a** 8·8 cm **b** 45° **c** 0·707 **d** 0·707 **e** 1·000