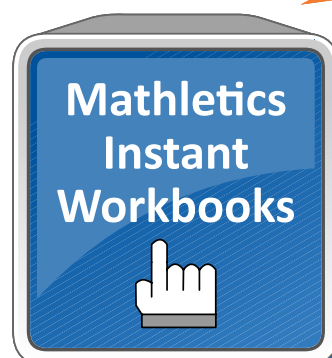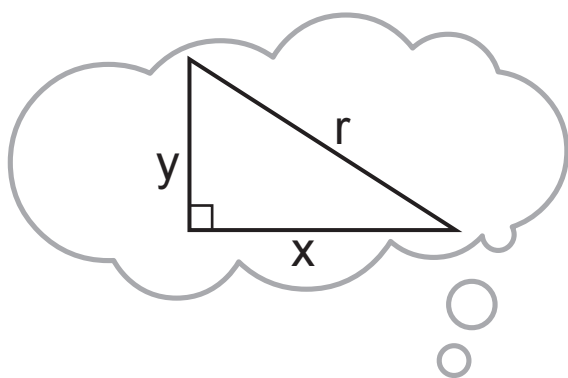# MATHLETICS

Pythagoras' Theorem

Teacher Book - Series I-1

Pythagoras' theorem

Topic Test

<div align="right">

PART A

</div>

Instructions   This part consists of 12 multiple-choice questions

Each question is worth 1 mark

Fill in only ONE CIRCLE for each question

Calculators are NOT allowed

Time allowed: 15 minutes   **Total marks = 12**

Marks

1   A triangle is said to satisfy the rule $c^2 = a^2 + b^2$ for which special triangle?

(A) acute angled   (B) right angled   (C) obtuse angled   (D) none of these   `1`

2   The longest side of a right angled triangle is called the

(A) shortest side   (B) middle side   (C) hypotenuse   (D) none of these   `1`

3   Given that $c^2 = a^2 + b^2$ and $a = 8$, $b = 15$, what is the value of c?

(A) 17   (B) 23   (C) 289   (D) 529   `1`

4   Pythagoras' theorem can be applied to

(A) acute angled triangles   (B) obtuse angled triangles

(C) right angled triangles   (D) any triangle   `1`

5   The hypotenuse of a right angled triangle is 17 cm. If one side is 15 cm, the third side is

(A) 14 cm   (B) 12 cm   (C) 10 cm   (D) 8 cm   `1`

6   If two sides of a right angled triangle are 2.4 m and 1 m then the hypotenuse is

(A) 2.4 m   (B) 2.6 m   (C) 3.4 m   (D) 3.8 m   `1`

7   The Pythagorean result for a triangle ABC right angled at C is

(A) $a^2 = b^2 + c^2$ (B) $b^2 = a^2 + c^2$ (C) $c^2 = a^2 + b^2$ (D) none of these   `1`

8   The hypotenuse of a right angled triangle is opposite to the

(A) acute angle   (B) right angle   (C) obtuse angle   (D) none of these   `1`

9   If two shorter sides of a right angled triangle are 7 m and 8 m, then the hypotenuse is

(A) $\sqrt{65}$ (B) $\sqrt{85}$ (C) $\sqrt{113}$ (D) $\sqrt{193}$ `1`

10   In a triangle ABC right angled at C, the hypotenuse is named as

(A) a (B) b (C) c (D) none of these   `1`

11   If two sides of a right angled triangle are 6 cm and 8 cm, then the hypotenuse is

(A) 10 cm   (B) 9.4 cm   (C) 12 cm   (D) 14 cm   `1`

12   If $n^2 = 2304$ then n equals

(A) 38   (B) 42   (C) 48   (D) 52   `1`
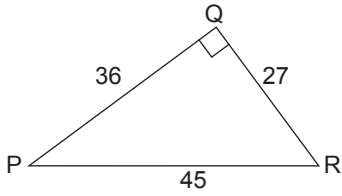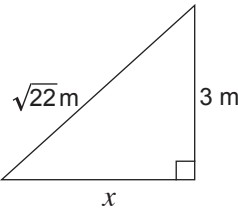
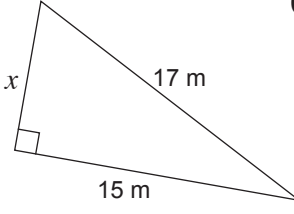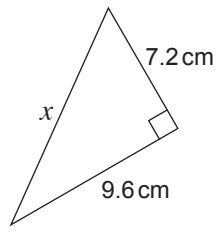**Total marks achieved for PART A**   `12`

Pythagoras' theorem
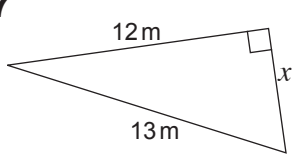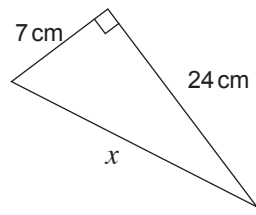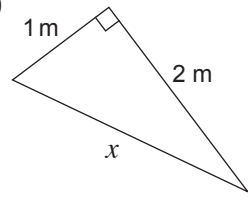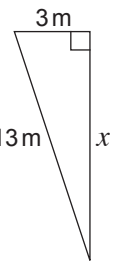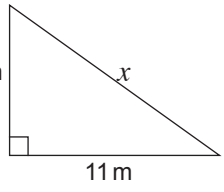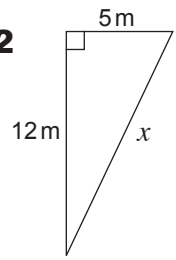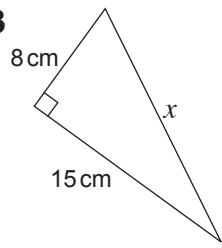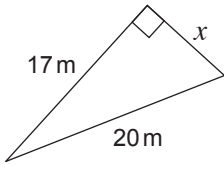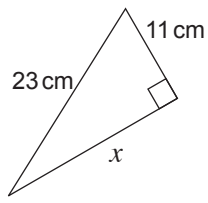
Topic Test

PART B

Instructions   This part consists of 15 questions

Each question is worth 1 mark

Write answers in the answers-only column

Time allowed: 20 minutes   **Total marks = 15**

Questions	Answers only	Marks

1   If $n^2 = 3844$ then find the value of n

2   Is {6, 8, 10} a Pythagorean triad?

3   Prove that ΔPQR is a right angled triangle.

Find the length of the unknown side in the following triangles correct to two decimal places.

4

5

6

7

8

9

10

11

12

13

14

15

Answers only

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

11 _____

12 _____

13 _____

14 _____

15 _____

Marks

1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1 · 1

Total marks achieved for PART B   /15

Answers – Pythagoras' theorem

PAGE 1 **1 a** c **b** r **c** n **d** RS **e** UV **f** JK **2 a** AC **b** PR **c** LM **d** PT **e** CD **f** FG **3 a** d **b** e **c** f **d** f **e** d^2 **f** f^2

PAGE 2

	a	b	c	a²	b²	c²	a² + b²
1	3	4	5	9	16	25	25
2	12	5	13	144	25	169	169
3	6	8	10	36	64	100	100
4	16	12	20	256	144	400	400
5	15	8	17	225	64	289	289
6	9	12	15	81	144	225	225
7	10	24	26	100	576	676	676
8	20	15	25	400	225	625	625
9	30	16	34	900	256	1156	1156

PAGE 3 **1** a **2** c **3** b **4** a **5** a **6** b **7** b **8** a **9** a **10** a **11** b **12** a

PAGE 4 **1 a** 225 **b** 169 **c** 1600 **d** 784 **e** 25 **f** 4761 **g** 100 **h** 289 **i** 6561 **j** 64 **k** 1681 **l** 9801 **2 a** 13 **b** 29 **c** 24 **d** 69 **e** 10 **f** 38 **g** 12 **h** 21 **i** 40 **j** 53 **k** 28 **l** 75 **3 b, c, e, i, j, k, l** **4 a** $3^2 + 4^2 = 5^2$ **b** $12^2 + 5^2 = 13^2$

PAGE 5 **1 a** 5 cm **b** 25 cm **c** 10 cm **d** 13 cm **e** 34 cm **f** 26 cm **2 a** 6.1 cm **b** 5.8 cm **c** 8.2 cm **d** 8.1 cm **e** 3.6 cm **f** 7.4 cm

PAGE 6 **1 a** 5 cm **b** 16 cm **c** 8 cm **d** 8 cm **e** 9 cm **f** 24 cm **2 a** 12.4 cm **b** 12.6 cm **c** 13.3 cm **d** 14.4 cm **e** 11.4 cm **f** 13.3 cm

PAGE 7 **1 a** 13 cm **b** 10 cm **c** 12 cm **d** $y = 5$ cm, $x = 5.4$ cm **e** 16 cm **f** 18 cm **2 a** 10.82 cm **b** 11.62 cm **c** 8.06 cm **d** 11.66 cm **e** 23.47 cm **f** 14.70 cm

PAGE 8 **1** 7.07 cm **2** 37 cm **3** 13.86 cm **4** 14.46 m **5** 13.4 cm **6** 24 cm **7** 36 cm **8 a** 10.20 cm **b** 13.42 cm **c** 13.42 cm **d** 15 cm **e** 65 cm **f** 73.43 cm **9** 41.7 mm, 100.7 mm

PAGE 9 **1** B **2** C **3** A **4** C **5** D **6** B **7** C **8** B **9** C **10** C **11** A **12** C

PAGE 10 **1** 62 **2** yes **3** $36^2 + 27^2 = 45^2$ **4** 3.61 m **5** 8 m **6** 12 cm **7** 5 m **8** 25 cm **9** 2.24 m **10** 12.65 m **11** 13.60 m **12** 13 m **13** 17 cm **14** 10.54 m **15** 20.20 cm