



## 4.9F Pythagoras: Foundation Tier Practice

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 50 minutes

Total Marks

Name: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**Answer ALL questions. Show all your working.**

- 1** Work out the length of the hypotenuse of a right-angled triangle with legs 3 cm and 4 cm.

(Total for Question 1 is 1 mark)

- 2** A right triangle has hypotenuse 13 m and one shorter side 5 m. Work out the length of the other shorter side.

(Total for Question 2 is 2 marks)

- 3** Work out the hypotenuse of a right triangle with legs 7 cm and 24 cm.

(Total for Question 3 is 2 marks)

- 4** A rectangle measures 6 m by 8 m. Work out the length of the diagonal of the rectangle.

(Total for Question 4 is 2 marks)

- 5** A ladder of length 5.0 m leans against a wall and reaches 4.0 m up the wall. Work out the distance from the foot of the ladder to the wall. Give your answer in metres.

(Total for Question 5 is 2 marks)

- 6** A triangle has sides 8 cm, 15 cm and 17 cm. Is this triangle right-angled? Give a reason for your answer.

(Total for Question 6 is 2 marks)

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- 7** A square garden has side length 9.0 m. Work out the length of the diagonal of the garden. Give your answer to 1 decimal place.

(Total for Question 7 is 3 marks)

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- 8** A right-angled triangle has hypotenuse 20 cm and one shorter side 12 cm. Work out the length of the other shorter side.

(Total for Question 8 is 2 marks)

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- 9** Find the area of a right-angled triangle with shorter sides 9 cm and 12 cm.

(Total for Question 9 is 2 marks)

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- 10** A square carpet has diagonal length 5.0 m. Work out the length of one side of the carpet. Give your answer to 2 decimal places.

(Total for Question 10 is 3 marks)

**11** Work out the hypotenuse of a right triangle with legs 14 m and 48 m.

(Total for Question 11 is 2 marks)

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**12** A right triangle has hypotenuse 25 cm and one shorter side 7 cm. Work out the length of the other shorter side.

(Total for Question 12 is 2 marks)

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**13** On a grid a point A is at (2, 3) and a point B is at (8, 11). Work out the straight-line distance AB. Give your answer in whole numbers if appropriate.

(Total for Question 13 is 2 marks)

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**14** Find the area of a right-angled triangle with shorter sides 5 cm and 12 cm.

(Total for Question 14 is 2 marks)

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**15** A right-angled isosceles triangle has equal shorter sides 6.0 m and 6.0 m. Work out the length of the hypotenuse. Give your answer to 1 decimal place.

(Total for Question 15 is 2 marks)

- 16** A ramp rises 1.20 m from the ground to a doorway and the base of the ramp is 4.00 m from the doorway. Find the length of the ramp. Give your answer to 2 decimal places.

(Total for Question 16 is 3 marks)

## Mark scheme · 4.9F Pythagoras: Foundation Tier Practice

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### Question 1

- **B1** 5 cm cao
- **Answer: 5 cm**

### Question 2

- **M1** use method:  $\text{other}^2 = 13^2 - 5^2$  or show  $169 - 25$
- **A1** 12 m cao
- **Answer: 12 m**

### Question 3

- **M1** use method:  $\text{hyp}^2 = 7^2 + 24^2$  or show  $49 + 576$
- **A1** 25 cm cao
- **Answer: 25 cm**

### Question 4

- **M1** use method:  $\text{diagonal}^2 = 6^2 + 8^2$  or show  $36 + 64$
- **A1** 10 m cao
- **Answer: 10 m**

### Question 5

- **M1** use method:  $\text{base}^2 = 5.0^2 - 4.0^2$  or show  $25 - 16$
- **A1** 3.0 m cao
- **Answer: 3.0 m**

### Question 6

- **B1** Yes, because  $8^2 + 15^2 = 64 + 225 = 289$  which equals  $17^2$
- **B1** reason stated that square of longest side equals sum of squares of other two sides
- **Answer: Yes.  $8^2 + 15^2 = 17^2$  ( $64 + 225 = 289$ ), so it is right-angled.**

### Question 7

- **M1** use method:  $\text{diagonal}^2 = 9.0^2 + 9.0^2$  or show  $81 + 81$
- **M1** calculate diagonal =  $\sqrt{162}$  with a calculator
- **A1** 12.7 m awrt
- **Answer: 12.7 m**

### Question 8

- **M1** use method:  $\text{other}^2 = 20^2 - 12^2$  or show  $400 - 144$
- **A1** 16 cm cao
- **Answer: 16 cm**

### Question 9

- **M1** use method:  $\text{area} = \frac{1}{2} * 9 * 12$  or show  $0.5 * 9 * 12$
- **A1**  $54 \text{ cm}^2$  cao
- **Answer:  $54 \text{ cm}^2$**

### Question 10

- **M1** use method:  $\text{side}^2 + \text{side}^2 = 5.0^2$  or  $2 * \text{side}^2 = 25$
- **M1** calculate side =  $\sqrt{25/2}$
- **A1** 3.54 m awrt
- **Answer: 3.54 m**

#### Question 11

- **M1** use method:  $\text{hyp}^2 = 14^2 + 48^2$  or show  $196 + 2304$
- **A1** 50 m cao
- **Answer: 50 m**

#### Question 12

- **M1** use method:  $\text{other}^2 = 25^2 - 7^2$  or show  $625 - 49$
- **A1** 24 cm cao
- **Answer: 24 cm**

#### Question 13

- **M1** use method: difference in x = 6, difference in y = 8, distance =  $\sqrt{6^2 + 8^2}$
- **A1** 10 units cao
- **Answer: 10 units**

#### Question 14

- **M1** use method: area =  $1/2 * 5 * 12$
- **A1** 30 cm<sup>2</sup> cao
- **Answer: 30 cm<sup>2</sup>**

#### Question 15

- **M1** use method:  $\text{hyp}^2 = 6.0^2 + 6.0^2$  or show  $36 + 36$
- **A1** 8.5 m awrt
- **Answer: 8.5 m**

#### Question 16

- **M1** use method:  $\text{length}^2 = 1.20^2 + 4.00^2$  or show  $1.44 + 16.00$
- **M1** calculate length =  $\sqrt{17.44}$  using a calculator
- **A1** 4.18 m awrt
- **Answer: 4.18 m**