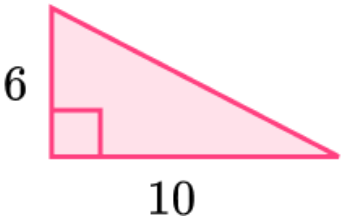
Pythagoras' Theorem - Worksheet

Skill

Group A - Finding the length of the hypotenuse

Find the missing side of each triangle below. Give your answers correct to 2 d.p. where necessary. All lengths are in cm.

1)



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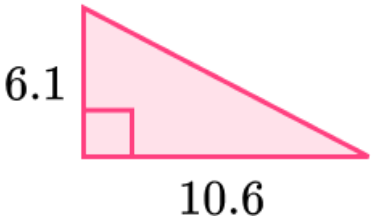

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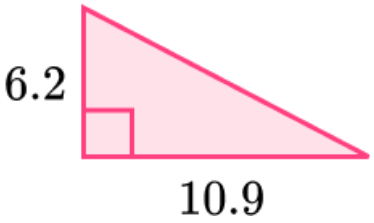

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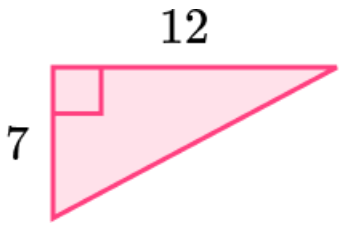

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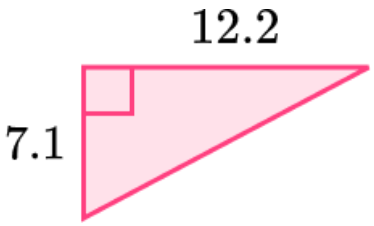

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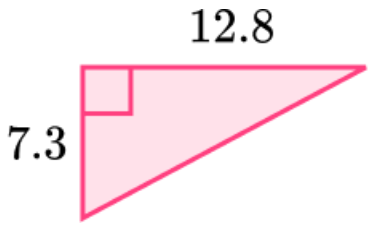

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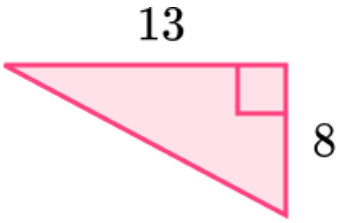

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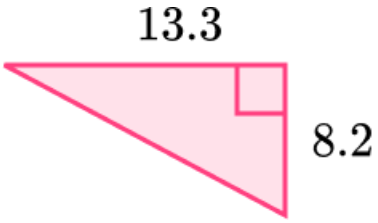

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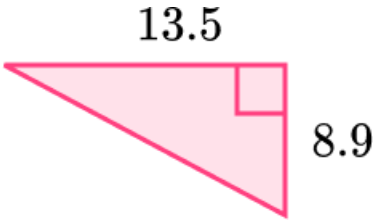

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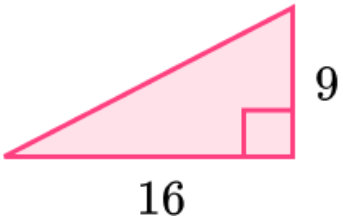

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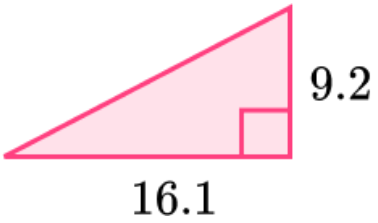

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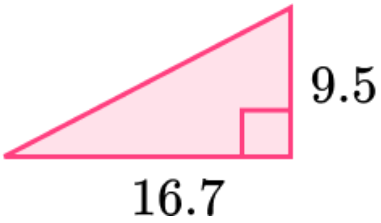
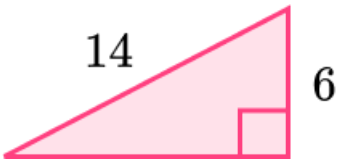


Pythagoras' Theorem - Worksheet

Group B - Finding the length of a shorter side

Find the missing side of each triangle below. Give your answers correct to 2 d.p. where necessary. All lengths are in cm.

1)



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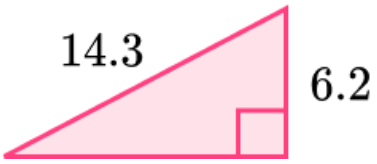

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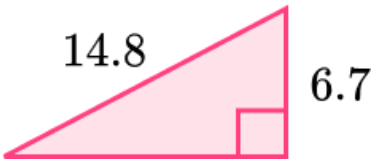

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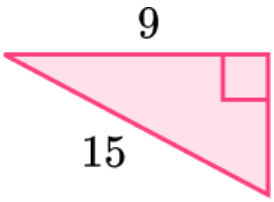

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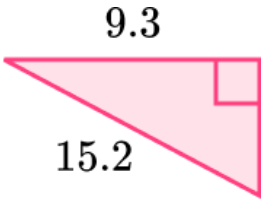

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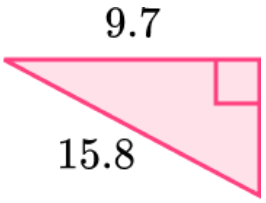

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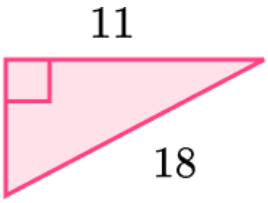

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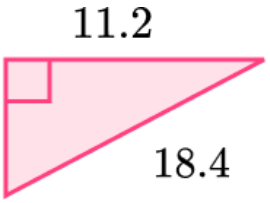

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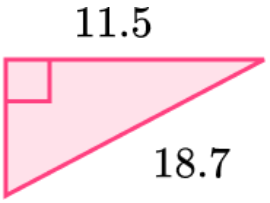

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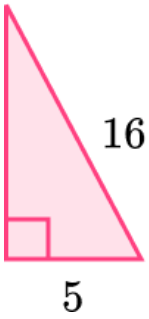

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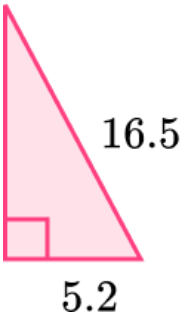
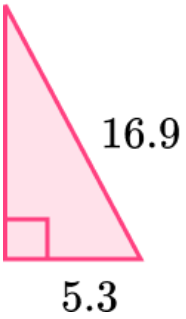


12)

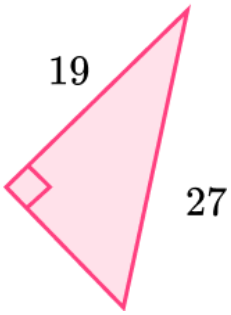


Pythagoras' Theorem - Worksheet

Group C - Mixed questions

Find the missing side of each triangle below. Give your answers correct to 2 d.p. where necessary. All lengths are in cm.

1)



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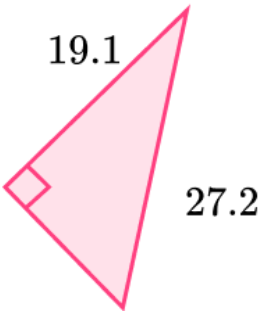

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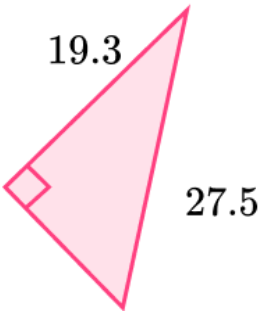

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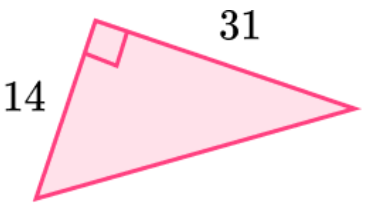

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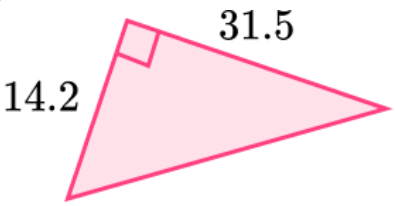

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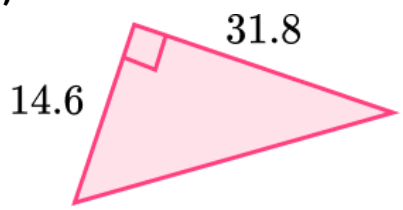

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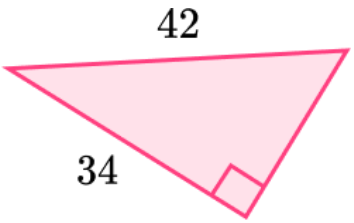
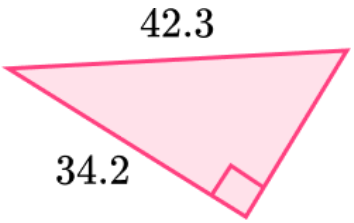
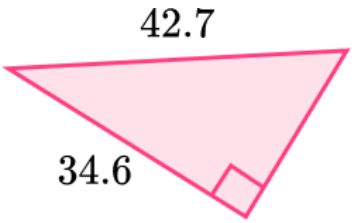


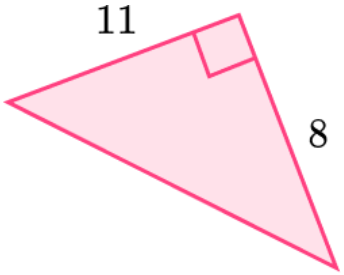
8)



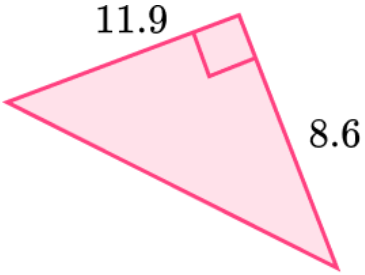
9)



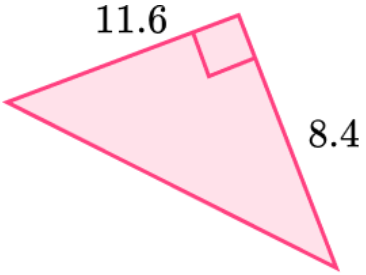
10)



11)



12)



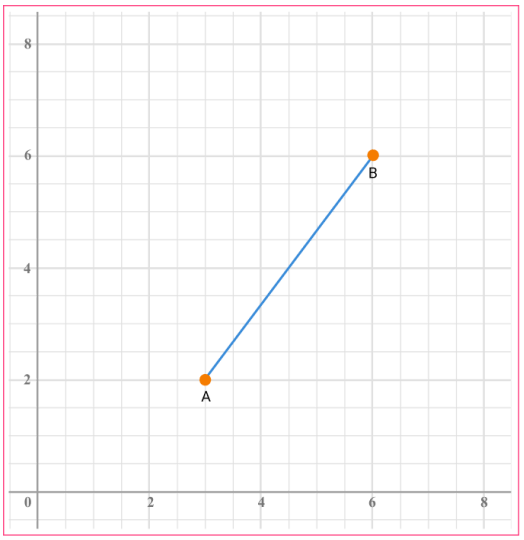
Pythagoras' Theorem - Worksheet

Applied

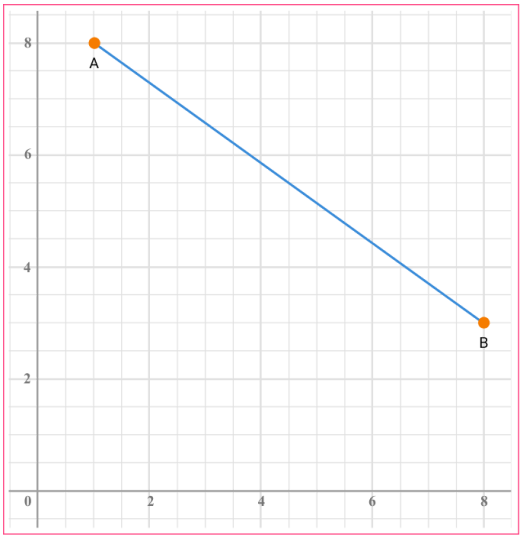
1) **(a)** A triangle has sides $12cm$, $16cm$ and $20cm$.
Is the triangle a right-angled triangle? Give your reason.

(b) A triangle has sides $2.8cm$, $4.5cm$ and $5.3cm$.
Is the triangle a right-angled triangle? Give your reason.

2) **(a)** A is the point $(3, 2)$ and B is the point $(6, 6)$. Find the length AB.



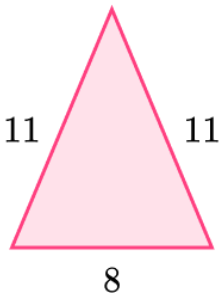
(b) A is the point $(1, 8)$ and B is the point $(8, 3)$. Find the length AB.



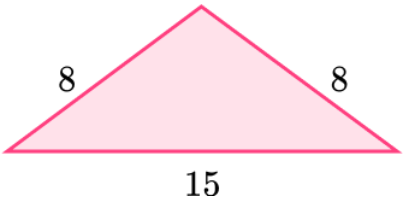
Pythagoras' Theorem - Worksheet

3) Find the height of each triangle. All lengths are in cm. Give your answer correct to 2 d.p.

(a)

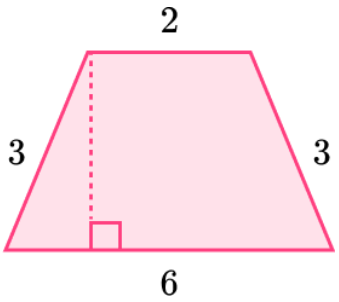


(b)

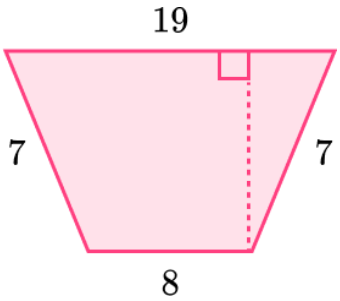


4) Find the height of each trapezium. All lengths are in cm. Give your answer correct to 2 d.p.

(a)

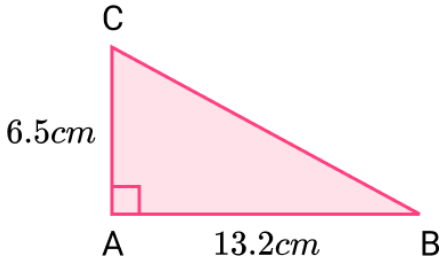


(b)



Pythagoras' Theorem - Exam Questions

1) ABC is a right-angled triangle.



Calculate the length of BC.
Give your answer correct to 3 significant figures.

.....
(3 marks)

---

2) Triangle ABC has a perimeter $17cm$.
$AB = 4cm$ $BC = 6cm$

By calculation, deduce whether triangle ABC is a right-angled triangle.

.....
(4 marks)

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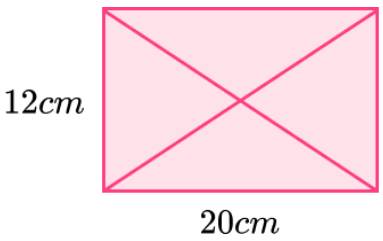
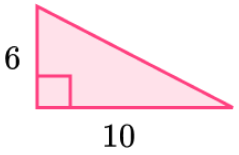
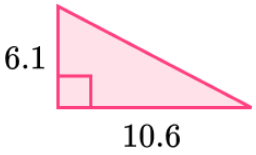
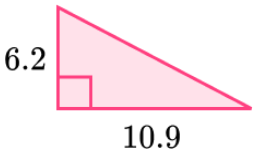
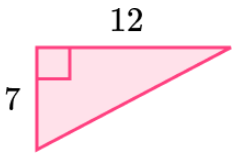
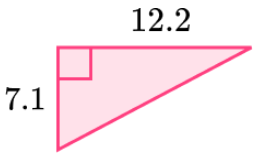
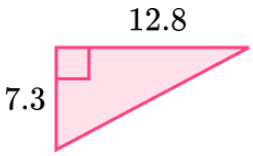
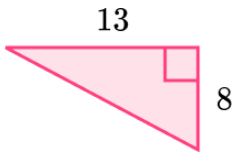
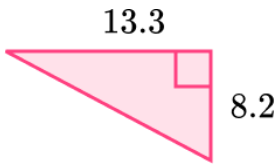
3) A frame is made from wire. The frame is in the shape of a rectangle $12cm$ by $20cm$. The diagonals of the rectangle are also made from wire.



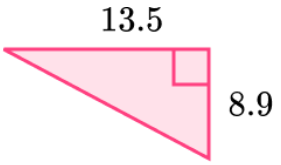
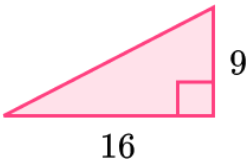
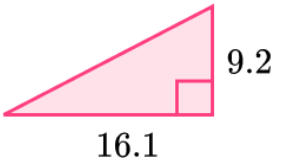
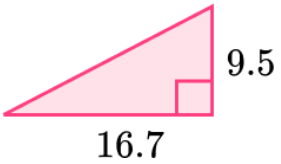
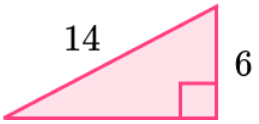
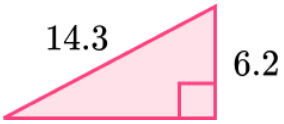
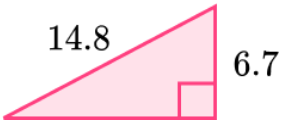
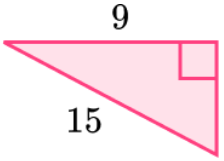
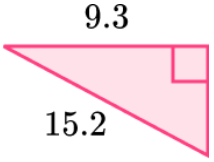
Calculate the total length of wire needed to make the frame and the diagonals. Give your answer correct to 1 decimal place.

.....
(4 marks)

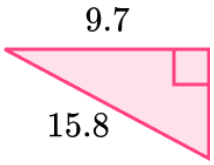
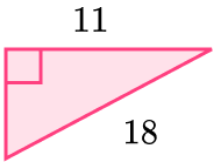
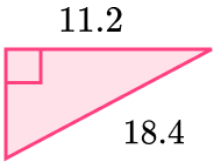
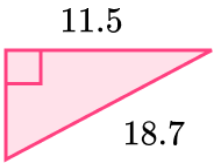
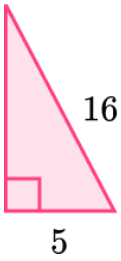
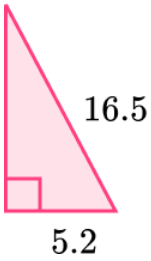
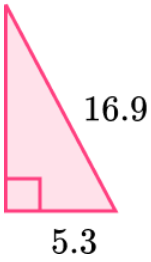
Pythagoras' Theorem - Answers

	Question	Answer
	Skill Questions	
Group A	Find the missing side of each triangle below. Give your answers correct to 2 d.p. where necessary. All lengths are in cm.	
	1) 	**1)** $11.66cm$
	2) 	**2)** $12.23cm$
	3) 	**3)** $12.54cm$
	4) 	**4)** $13.89cm$
	5) 	**5)** $14.12cm$
	6) 	**6)** $14.74cm$
	7) 	**7)** $15.26cm$
	8) 	**8)** $15.62cm$

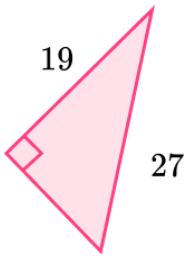
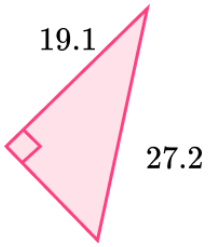
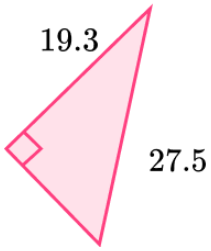
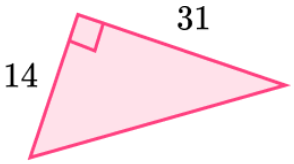
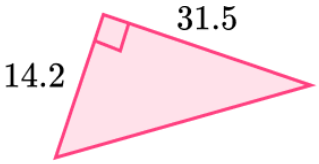
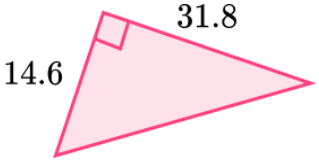
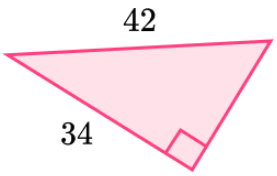
Pythagoras' Theorem - Answers

Group A contd	**9)**  **10)**  **11)**  **12)** 	**9)** $16.17\ cm$ **10)** $18.36cm$ **11)** $18.54cm$ **12)** $19.21cm$
Group B	Find the missing side of each triangle below. Give your answers correct to 2 d.p. where necessary. All lengths are in cm. **1)**  **2)**  **3)**  **4)**  **5)** 	**1)** $12.65cm$ **2)** $12.89cm$ **3)** $13.20cm$ **4)** $12cm$ **5)** $12.02cm$

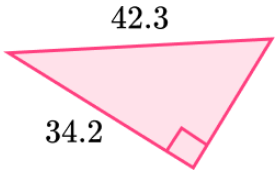
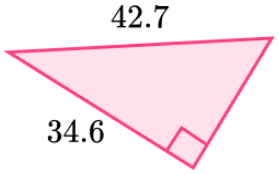
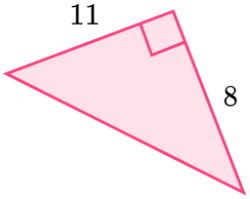
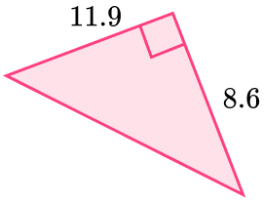
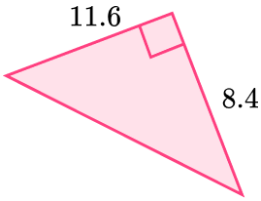
Pythagoras' Theorem - Answers

Group B contd	**6)** 	**6)** $12.47cm$
	7) 	**7)** $14.25cm$
	8) 	**8)** $14.60cm$
	9) 	**9)** $14.75cm$
	10) 	**10)** $15.20cm$
	11) 	**11)** $15.66cm$
	12) 	**12)** $16.05cm$

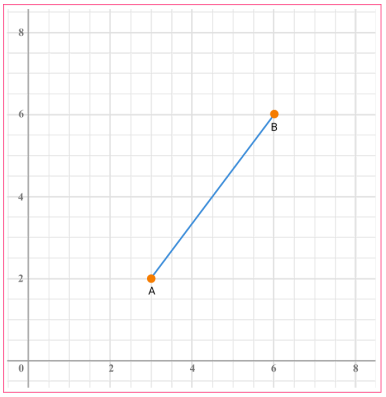
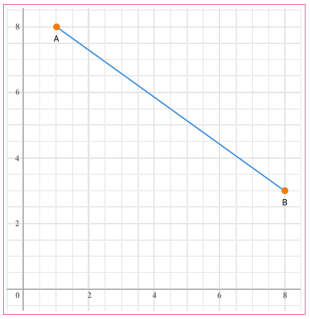
Pythagoras' Theorem - Answers

Group C	Find the missing side of each triangle below. Give your answers correct to 2 d.p. where necessary. All lengths are in cm. **1)**  **2)**  **3)**  **4)**  **5)**  **6)**  **7)** 	**1)** $19.18cm$ **2)** $19.37cm$ **3)** $19.59cm$ **4)** $34.01cm$ **5)** $34.55cm$ **6)** $34.99cm$ **7)** $24.66cm$

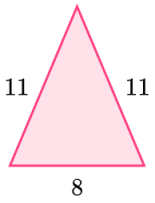
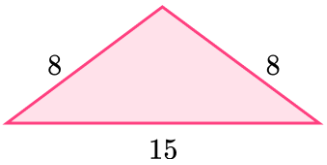
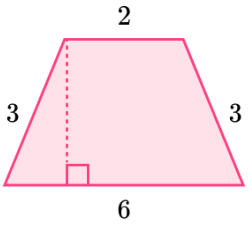
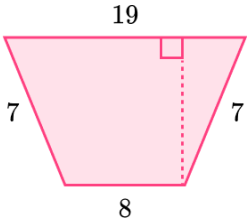
Pythagoras' Theorem - Answers

Group C	**8)** 	**8)** $24.89cm$
	9) 	**9)** $25.02cm$
	10) 	**10)** $13.60cm$
	11) 	**11)** $14.68cm$
	12) 	**12)** $14.32cm$

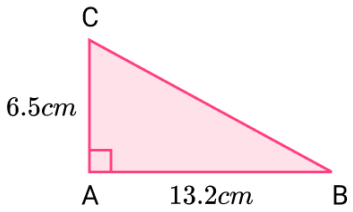
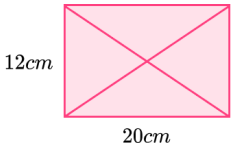
Pythagoras' Theorem - Answers

	Question	Answer
	Applied Questions	
1)	**a)** A triangle has sides $12cm$, $16cm$ and $20cm$. Is the triangle a right-angled triangle? Give your reason.	**a)** Yes. Sides of triangle fit with Pythagoras' Theorem $12^2 + 16^2 = 20^2$ $144 + 256 = 400$
	b) A triangle has sides $2.8cm$, $4.5cm$ and $5.3cm$. Is the triangle a right-angled triangle? Give your reason.	**b)** Yes. Sides of triangle fit with Pythagoras' Theorem $2.8^2 + 4.5^2 = 5.3^2$ $7.84 + 20.25 = 28.09$
2)	**a)** A is the point $(3, 2)$ and B is the point $(6, 6)$. Find the length AB. 	**a)** 5 units
	b) A is the point $(1, 8)$ and B is the point $(8, 3)$. Find the length AB. 	**b)** $\sqrt{74}$ units or 8.60 units (to 2 d.p.)

Pythagoras' Theorem - Answers

3)	**a)** Find the height of this triangle. All lengths are in cm. Give your answer correct to 2 d.p.  **b)** 	**a)** $10.25cm$ **b)** $2.78cm$
4)	**a)** Find the height of this trapezium. All lengths are in cm. Give your answer correct to 2 d.p.  **b)** 	**a)** $2.24cm$ **b)** $4.33cm$

Pythagoras' Theorem - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	ABC is a right-angled triangle.  Calculate the length of BC. Give your answer correct to 3 significant figures.	$6.5^2 + 13.2^2 = 216.49$ $\sqrt{216.49}$ $BC = 14.71359... = 14.7cm$	**(1)** **(1)** **(1)**
2)	Triangle ABC has a perimeter 17 cm. $AB = 4cm$ $BC = 6cm$ By calculation, deduce whether triangle ABC is a right-angled triangle.	$17 - (4 + 6) = 7$ The third side is $7cm$ and is the longest so it is the hypotenuse. $4^2 + 6^2 = 52$ $\sqrt{52} = 7.211...$ or $7^2 = 49$ Triangle ABC is NOT a right-angled triangle as $4^2 + 6^2 \neq 7^2$ **oe**	**(1)** **(1)** **(1)** **(1)**
3)	A frame is made from wire. The frame is in the shape of a rectangle $12cm$ by $20cm$. The diagonal of the rectangle is also made from wire.  Calculate the total length of wire needed to make the frame and the diagonals. Give your answer correct to 1 decimal place.	$12^2 + 20^2 = 544$ $\sqrt{544} = 23.3238...$ $2 \times (23.3238... + 12 + 20)$ $110.647... = 110.6cm$	**(1)** **(1)** **(1)** **(1)**