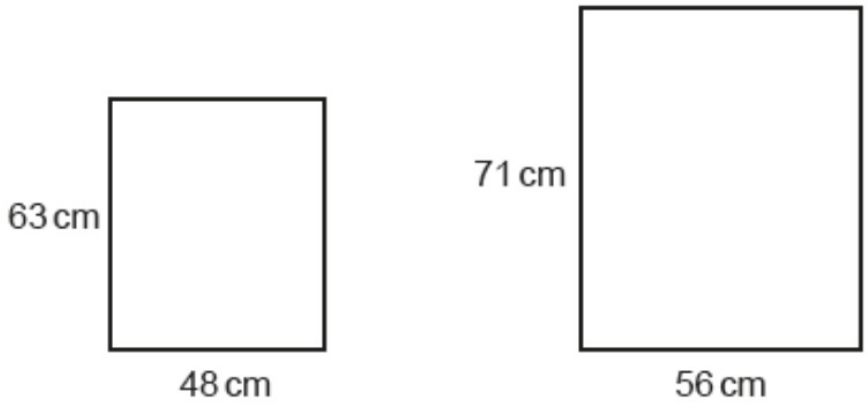
G50 - Similarity Shapes - Triangles

OCR

Created by W Neill

10 Here are two rectangles.



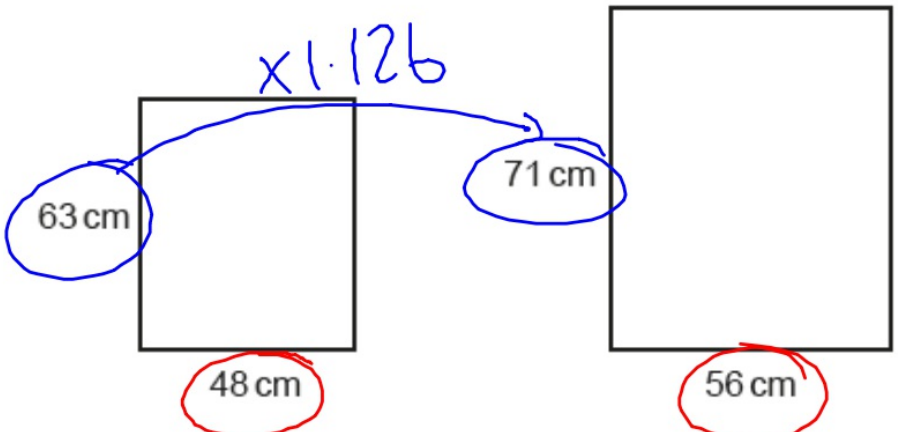
Not to scale

Are the rectangles mathematically similar?
Show your reasoning.

[3]

Created by W Neill

10 Here are two rectangles.



Not to scale

Are the rectangles mathematically similar?
Show your reasoning.

[3]

×1·126

×1.16

different scale factors so they are not similar

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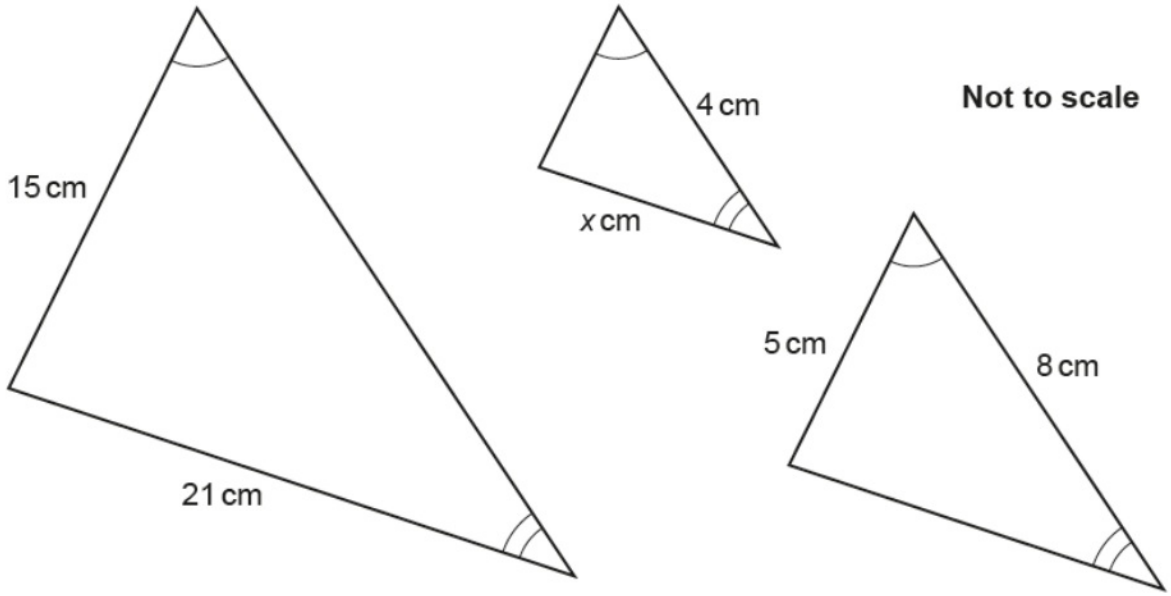
G50

20 (a) Here are three similar triangles.

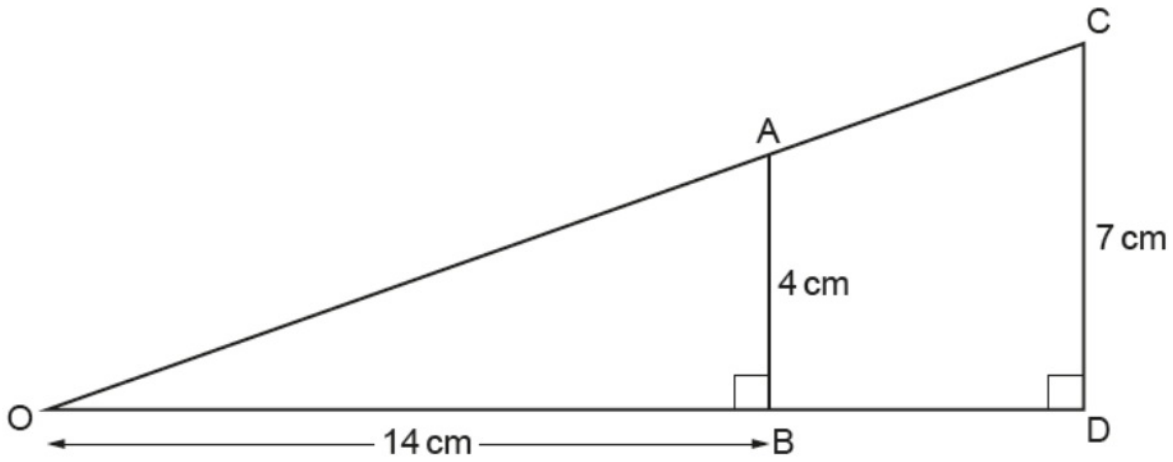


Not to scale

Work out the value of x.

(a) x = ... **[3]**

(b) The diagram shows two right-angled triangles, OAB and OCD.



Work out the length of BD.

(b) ..... cm **[3]**

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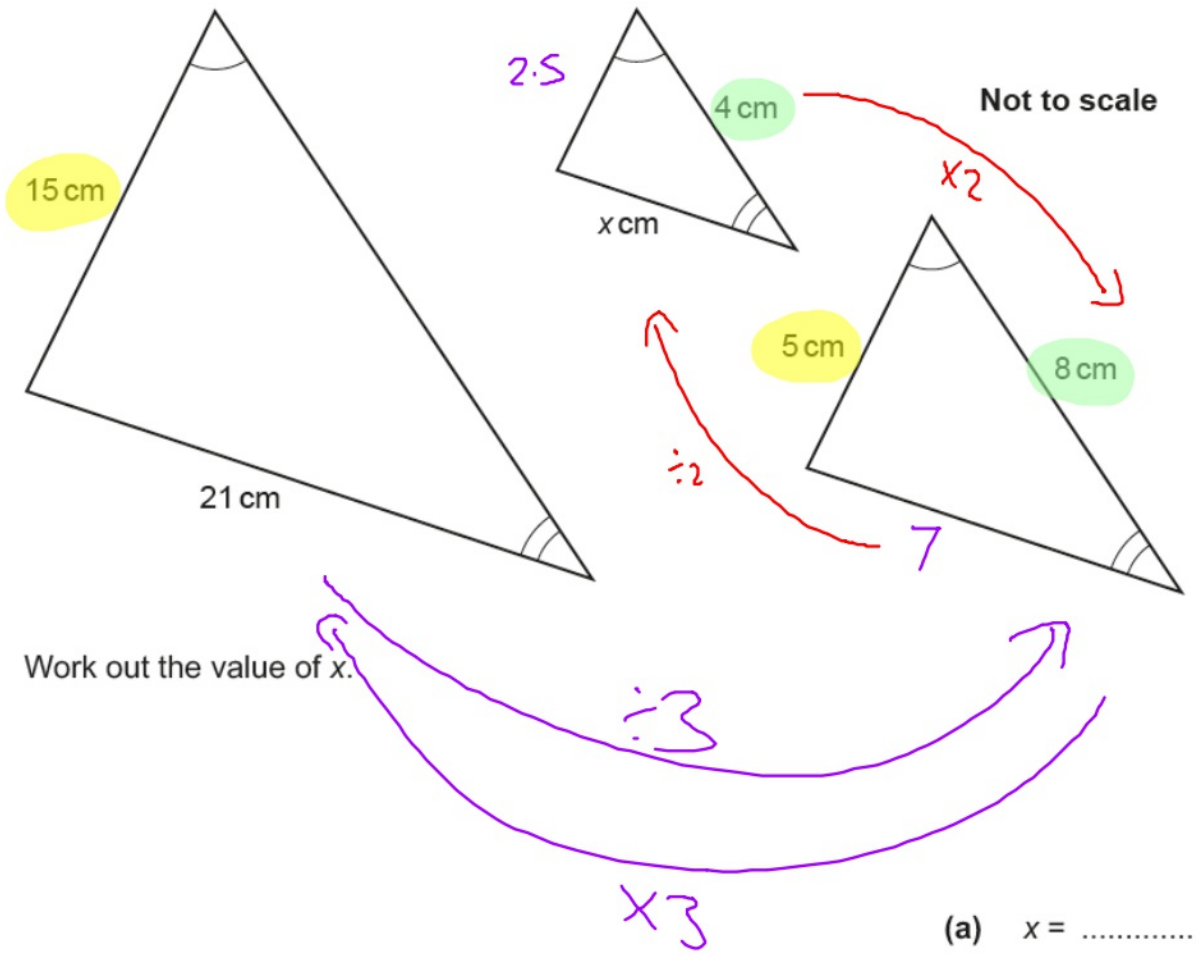
G50

20 (a) Here are three similar triangles.



Work out the value of x.

(a) x = 3·5cm **[3]**

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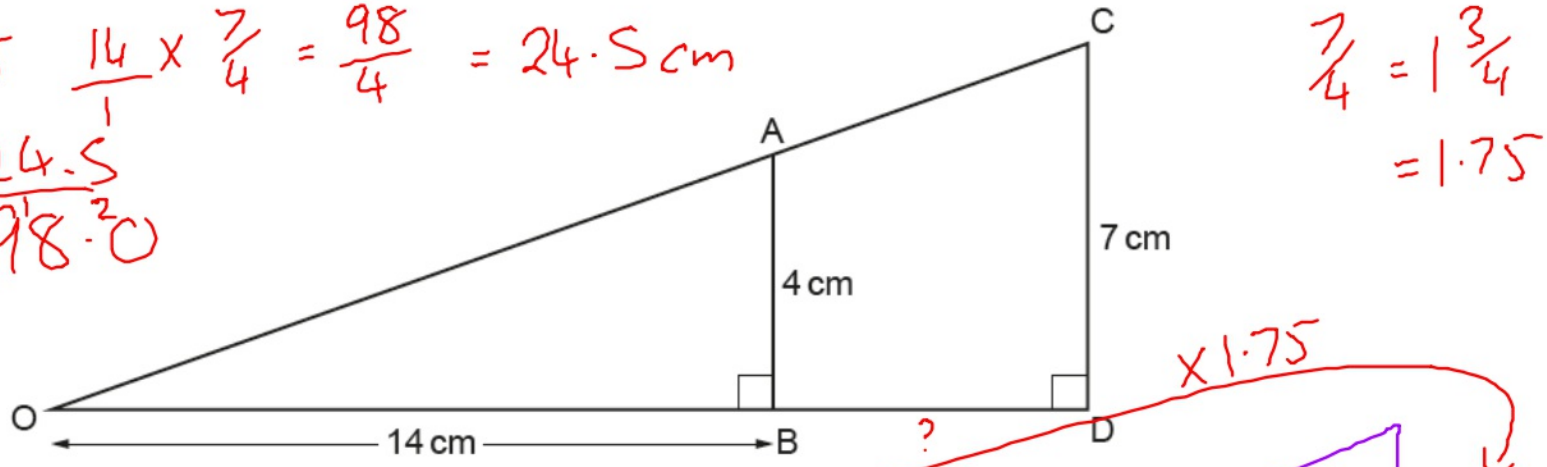
(b) The diagram shows two right-angled triangles, OAB and OCD.



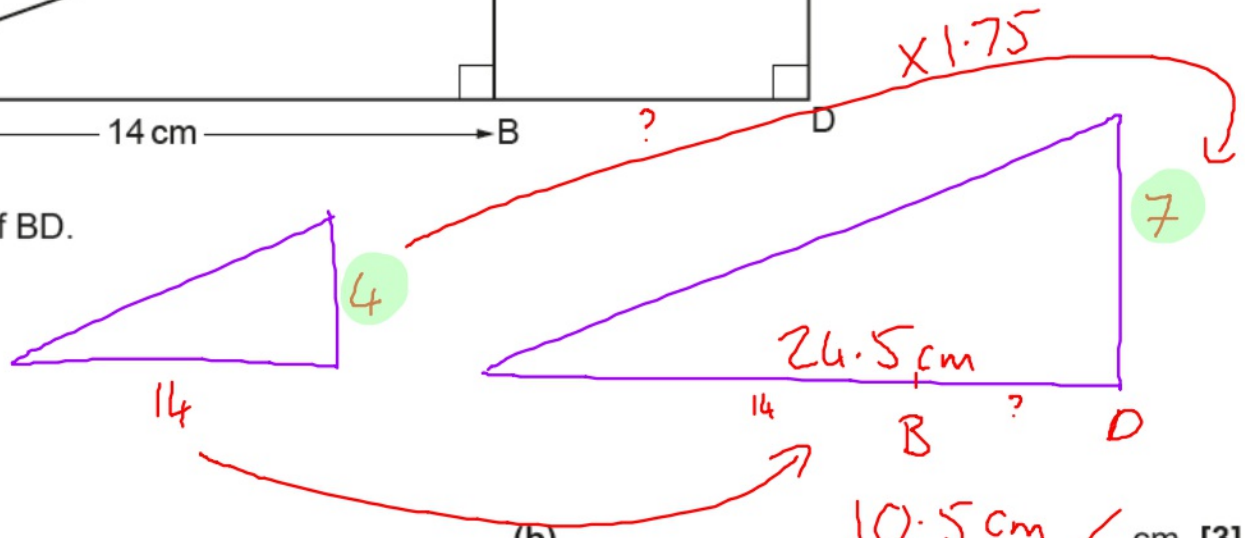
Work out the length of BD.

14×1.75 $\quad \frac{14}{1} \times \frac{7}{4} = \frac{98}{4} = 24.5\text{ cm}$

$\frac{7}{4} = 1\frac{3}{4}$

$= 1.75$

$4 \overline{)98.20}$ $\quad 24.5$

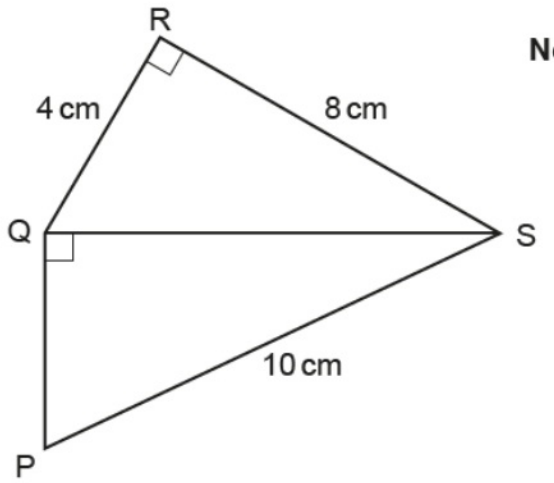


(b) 10·5 cm ✓ cm **[3]**

Turn over

Created by W Neill

12 The diagram below shows two right-angled triangles.



Not to scale

Prove that triangles PQS and QRS are similar.

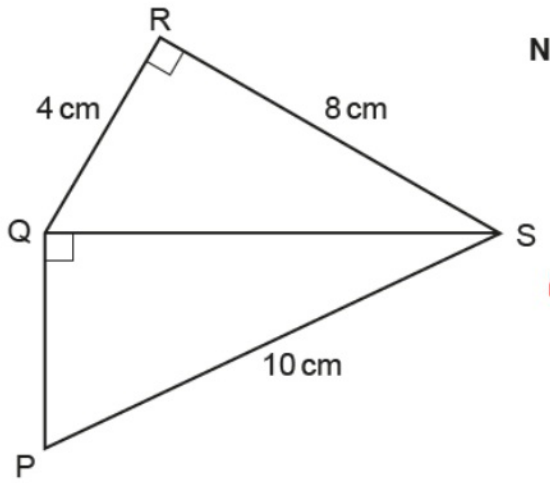
.....

.....

..... **[5]**

12 The diagram below shows two right-angled triangles.

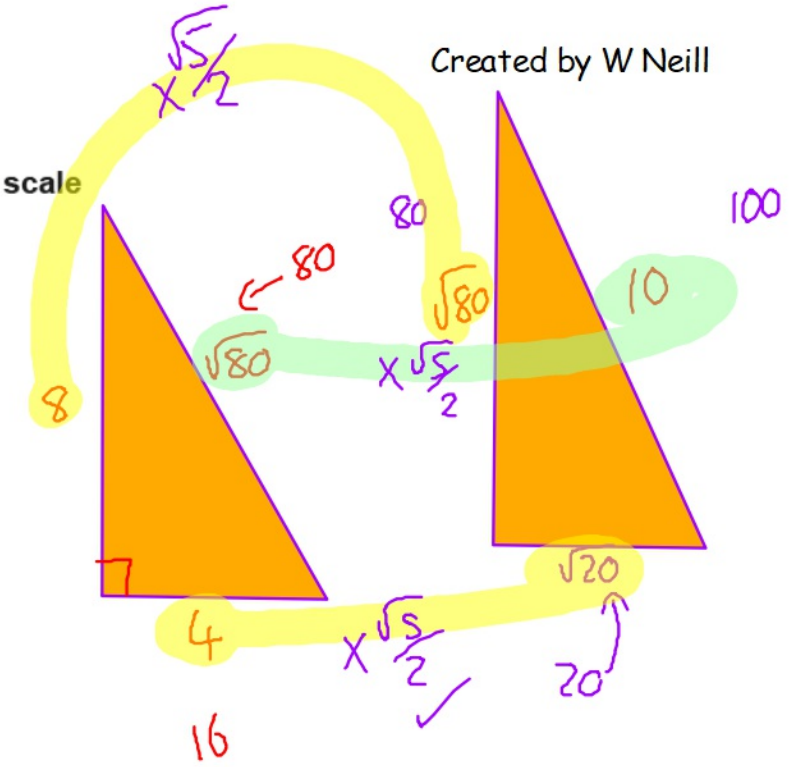
G43
G50



Not to scale

64

Created by W Neill



Prove that triangles PQS and QRS are similar.

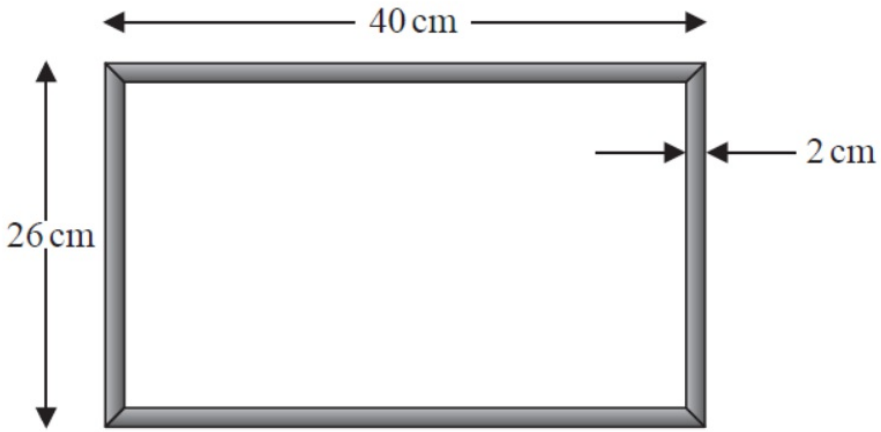
As the all have the same multipler, the triangles are similar

..... [5]

Edexcel

19 Peter has 4 photos.
Each photo is in the shape of a rectangle with dimensions 12 cm by 8 cm.

Peter is going to enlarge each photo by a scale factor of 1.5
He wants to put all 4 enlarged photos in the picture frame shown below.



The dimensions of the outside of the picture frame are 40 cm by 26 cm.
The width of each side of the frame is 2 cm.

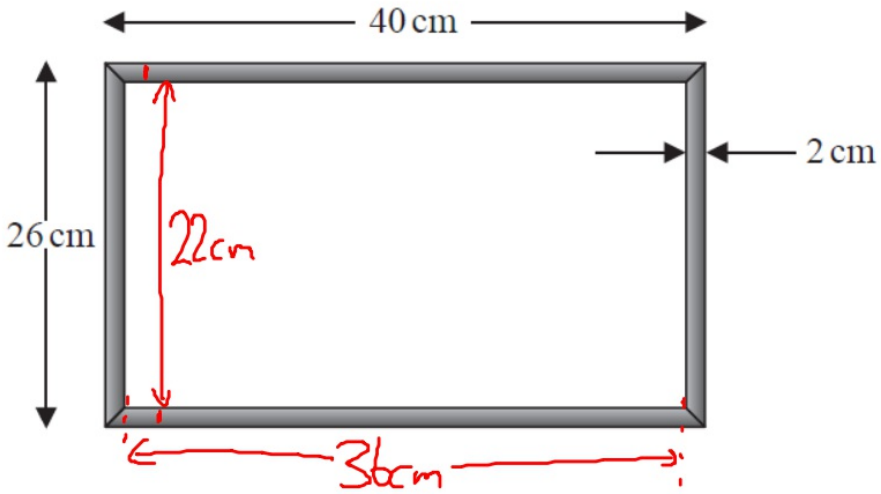
Can the 4 enlarged photos be put in the picture frame so they do **not** overlap?
You must show how you get your answer.

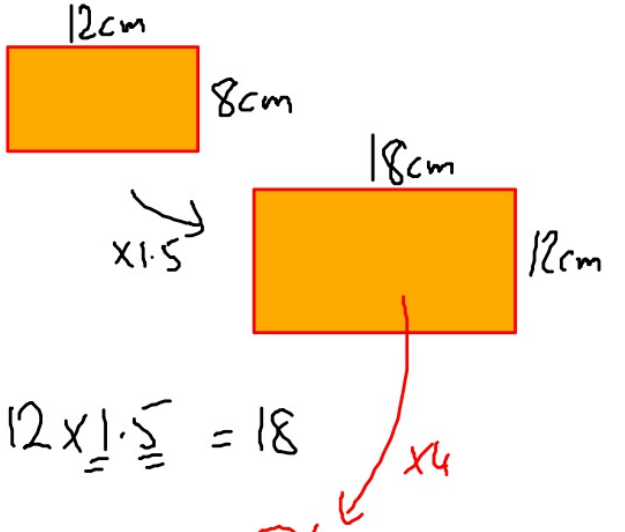
(Total for Question 19 is 4 marks)

Created by W Neill

19 Peter has 4 photos.
Each photo is in the shape of a rectangle with dimensions 12 cm by 8 cm.

Peter is going to enlarge each photo by a scale factor of 1.5
He wants to put all 4 enlarged photos in the picture frame shown below.





The dimensions of the outside of the picture frame are 40 cm by 26 cm.
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Can the 4 enlarged photos be put in the picture frame so they do **not** overlap?
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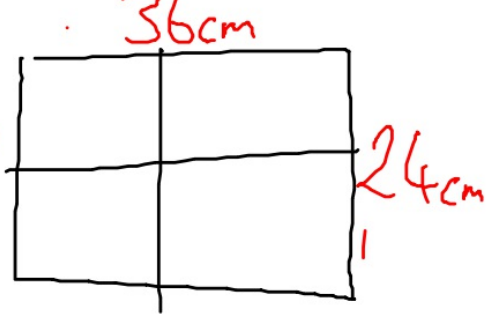
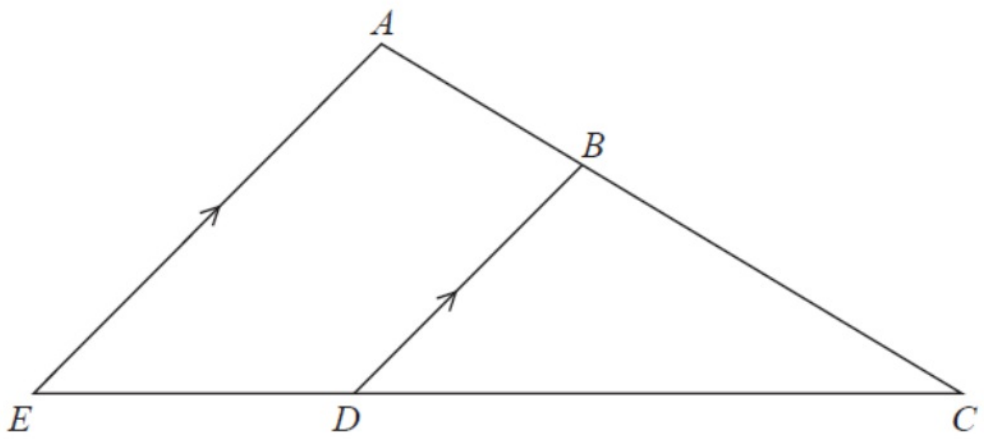


24cm > 22cm so there will be an overlap.

(Total for Question 19 is 4 marks)

Video created by W Neill

21



ABC and *EDC* are straight lines.
EA is parallel to *DB*.

EC = 8.1 cm.
DC = 5.4 cm.
DB = 2.6 cm.

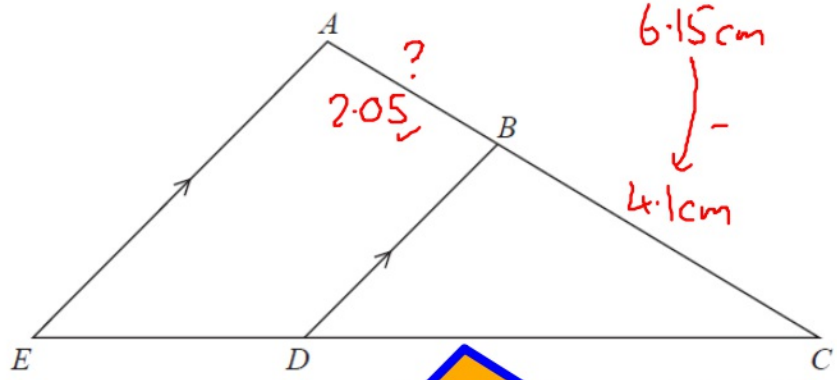
(a) Work out the length of *AE*.

AC = 6.15 cm.

(b) Work out the length of *AB*.

Video created by W Neill

21



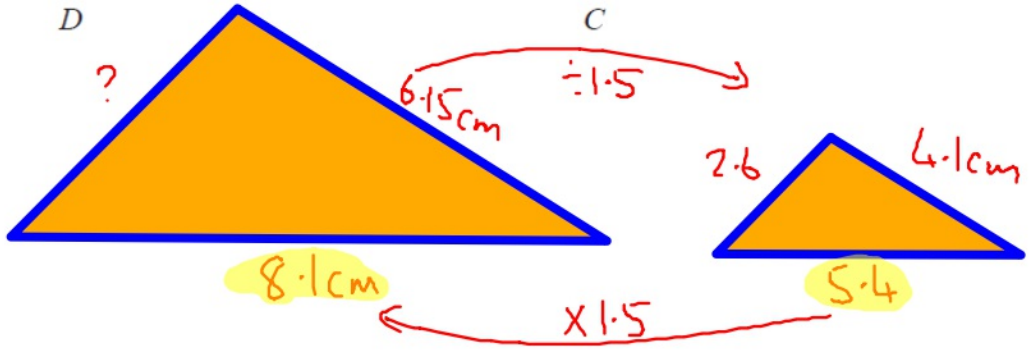
ABC and *EDC* are straight lines.
EA is parallel to *DB*.

EC = 8.1 cm.
DC = 5.4 cm.
DB = 2.6 cm.

(a) Work out the length of *AE*.

2.6cm X 1.5cm

3.9cm ✓



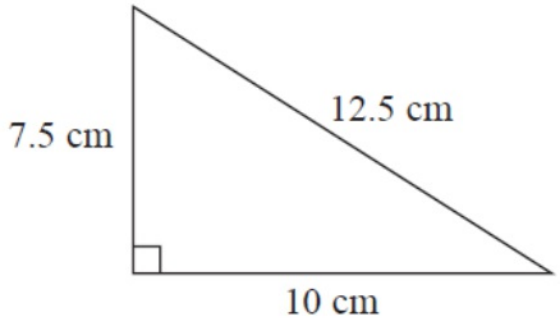
AC = 6.15 cm.

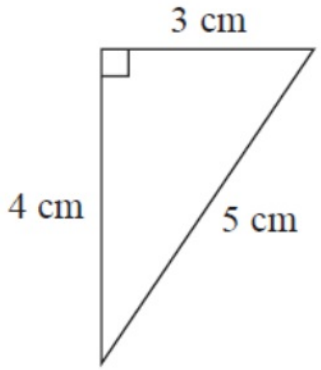
(b) Work out the length of *AB*.

2.05 cm

Video created by W Neill

21



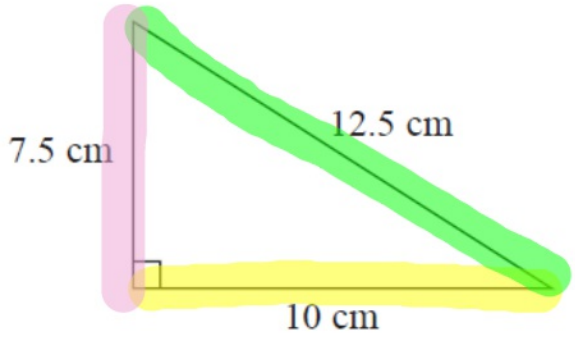


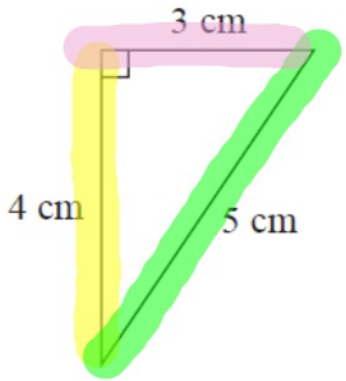
Show that these two triangles are mathematically similar.

(Total for Question 21 is 2 marks)

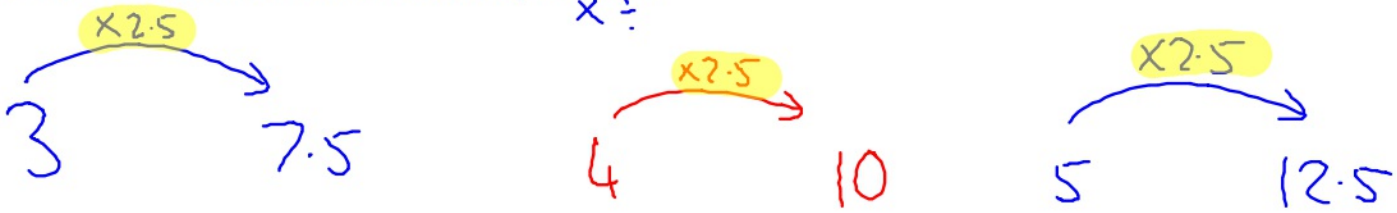
Video created by W Neill

21





Show that these two triangles are mathematically similar.



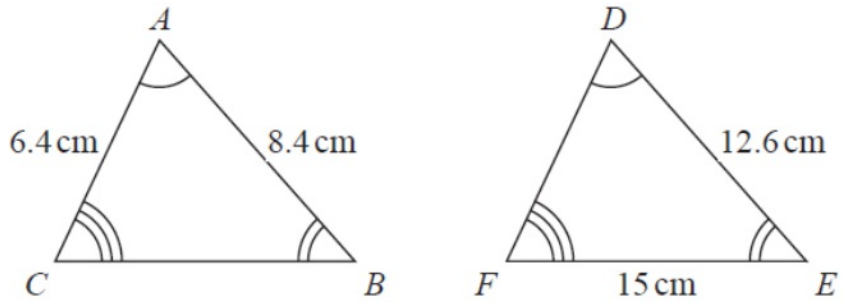
∴ both triangles are mathematically similar.

(Total for Question 21 is 2 marks)

Video created by W Neill

27 Triangle ABC and triangle DEF are similar.

G-SO



(a) Work out the length of DF.

(2)

(b) Work out the length of CB.

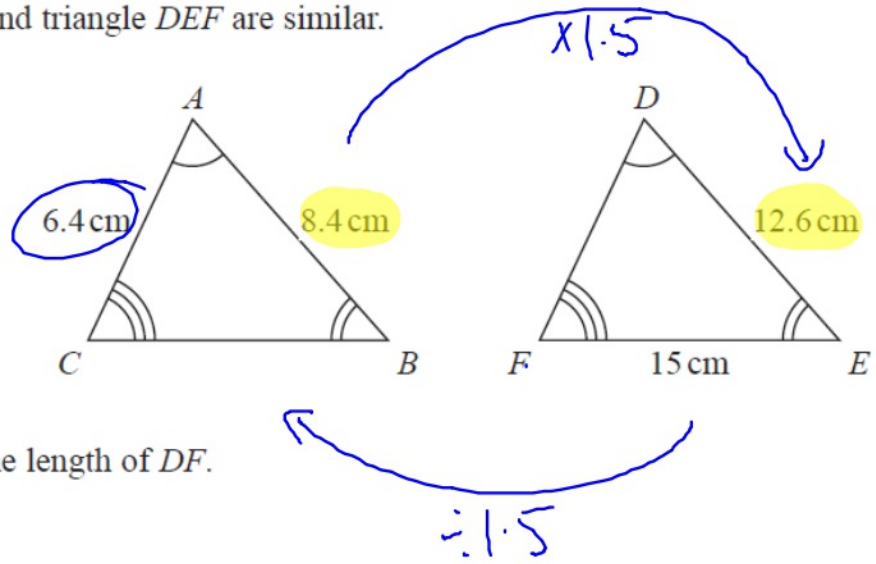
..... cm

(2)

Video created by W Neill

27 Triangle ABC and triangle DEF are similar.

GSO



(a) Work out the length of DF.

$6.4 \times 1.5 = 9.6$ ✓

(2)

(b) Work out the length of CB.

$15 \div 1.5 =$

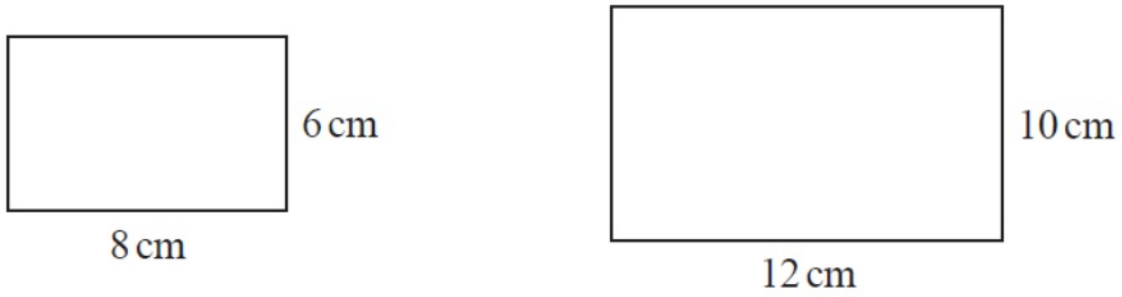
10 ✓ cm

(2)

Video Created by W Neill

16 Here are two rectangles.

G50



Jim says,

"The two rectangles are similar because $8 + 4 = 12$ and $6 + 4 = 10$"

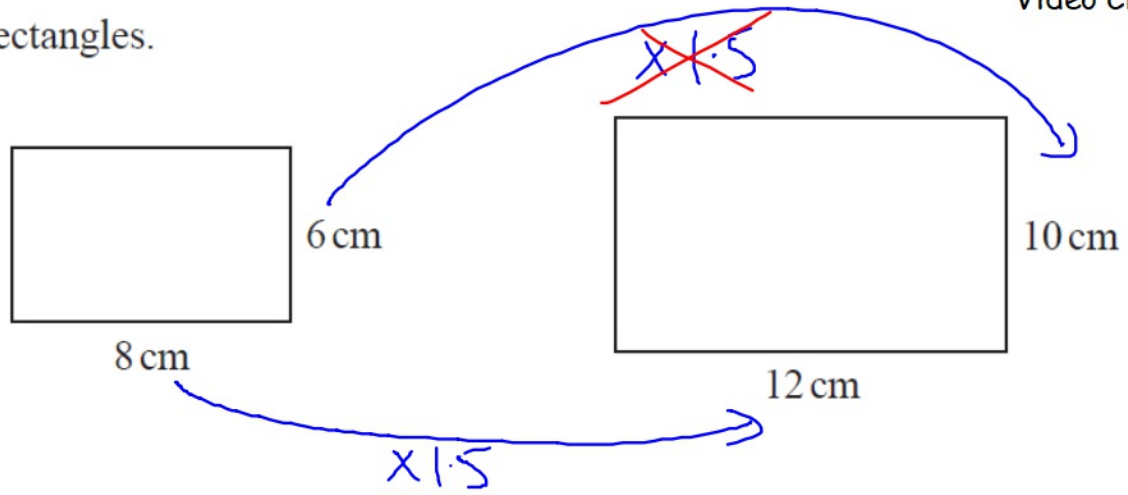
Is Jim correct?
Explain your answer.

(Total for Question 16 is 1 mark)

Video Created by W Neill

16 Here are two rectangles.

G50



Jim says,

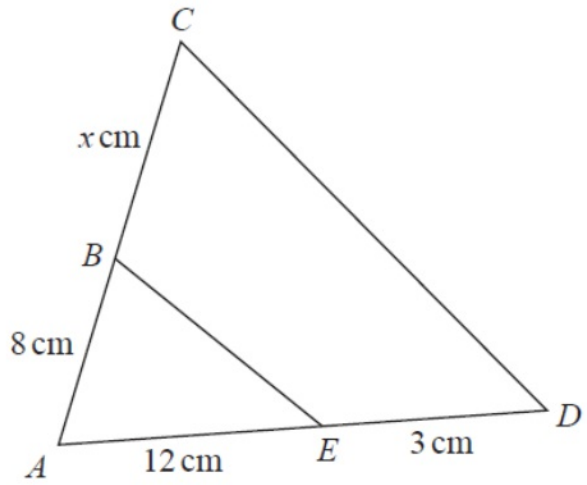
"The two rectangles are similar because $8 + 4 = 12$ and $6 + 4 = 10$"

Is Jim correct?
Explain your answer. No, we use X / ÷ for checking similar shapes

(Total for Question 16 is 1 mark)

Created by W Neill

22 The two triangles in the diagram are similar.

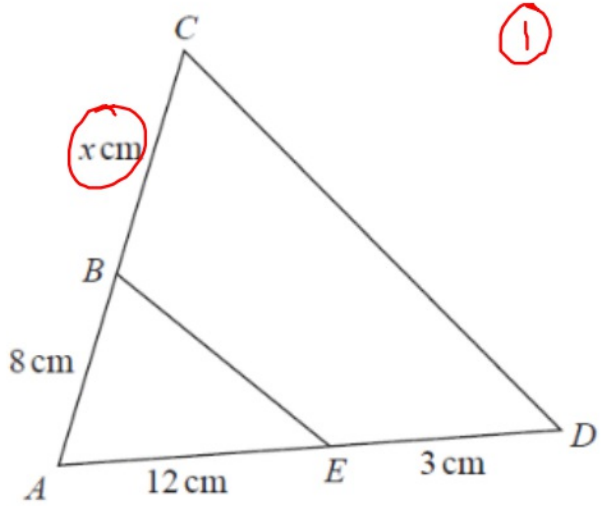


There are two possible values of x.

Work out each of these values.
State any assumptions you make in your working.

(Total for Question 22 is 5 marks)

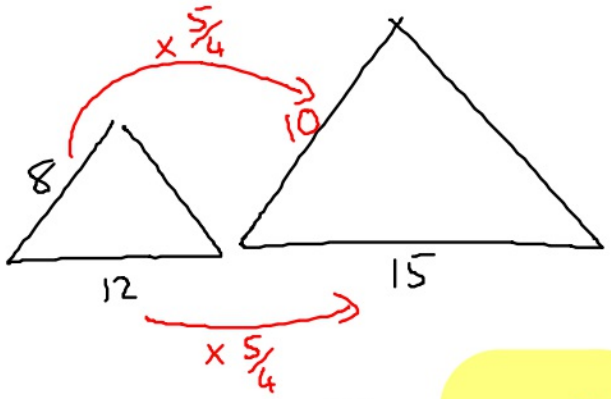
22 The two triangles in the diagram are similar.



There are two possible values of x.

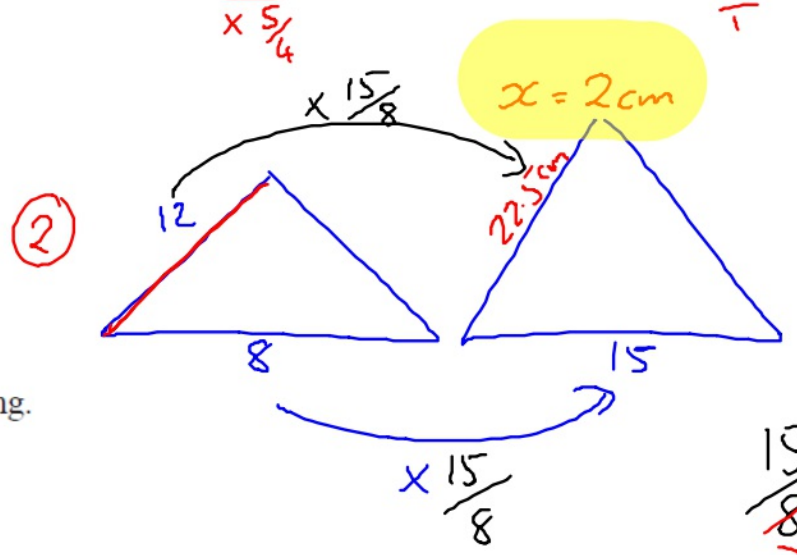
Work out each of these values.
State any assumptions you make in your working.

Created by W Neill



$\frac{15}{12} = \frac{5}{4} = 1.2$

$\frac{8}{1} \times \frac{5}{4} = \frac{40}{4} = 10$



$\frac{15}{8}$

$\frac{15}{\cancel{8}_{2}} \times \frac{\cancel{12}^{3}}{1} = \frac{45}{2}$

$= 22.5$

$x = 10.5\text{cm}$

(Total for Question 22 is 5 marks)

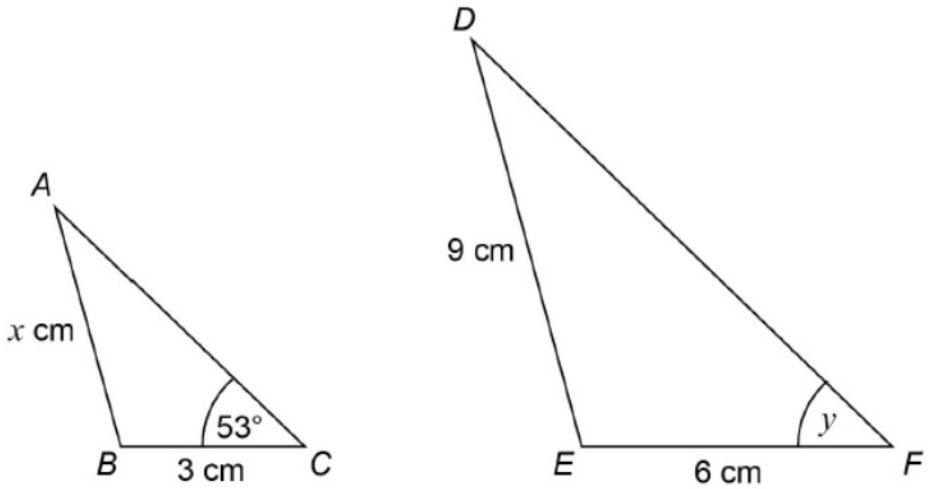
AQA

Video created by W Neill

16 Triangles *ABC* and *DEF* are similar.

GSO

Not drawn accurately



16 (a) Work out the value of x.

[2 marks]

Answer _____

16 (b) Write down the size of angle y.

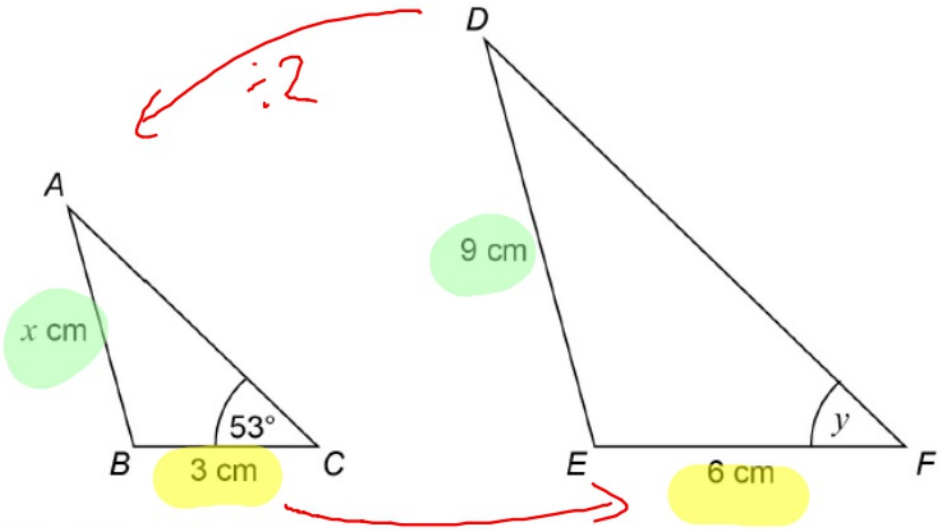
Answer _____ degrees

Video created by W Neill

16 Triangles *ABC* and *DEF* are similar.

GSO

Not drawn accurately



16 (a) Work out the value of x.

[2 marks]

9 ÷ 2

Answer 4.5 cm

16 (b) Write down the size of angle y.

Answer 53° degrees

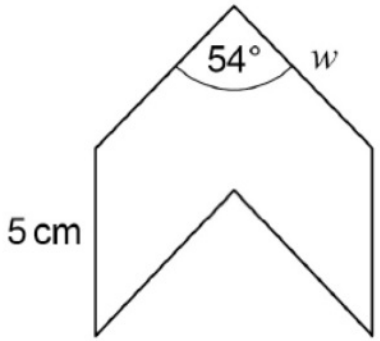
25 A and B are similar shapes.

B is an enlargement of A with scale factor 1.5

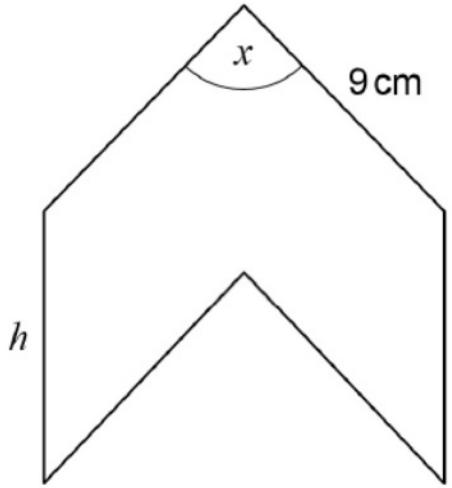
G50

Not drawn accurately

A



B



Work out the values of x, h and w. **[3 marks]**

x = _____ degrees

h = _____ cm

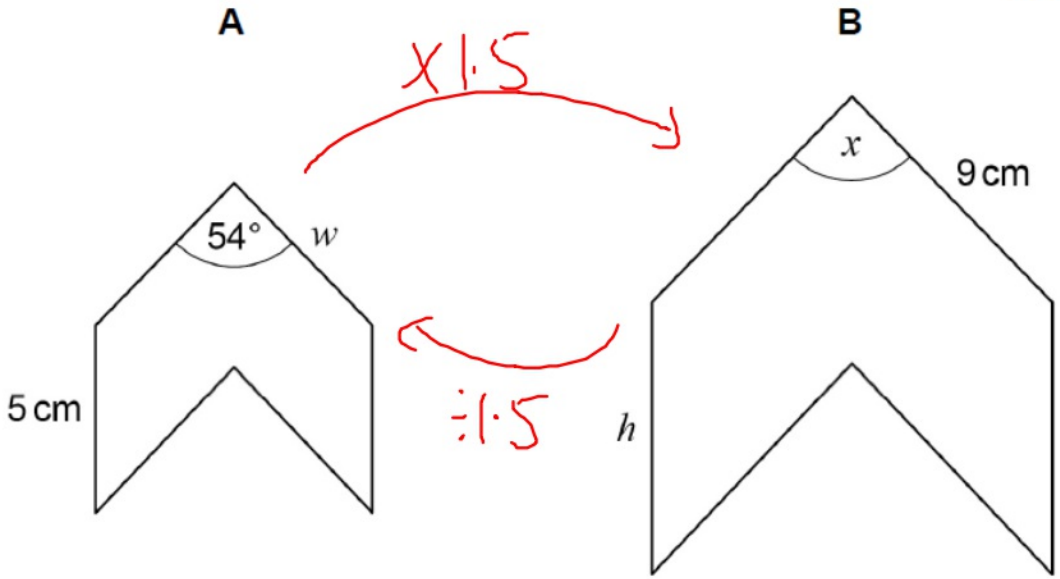
w = _____ cm

G50

A and B are similar shapes.

B is an enlargement of A with scale factor 1.5

Not drawn accurately



Work out the values of x, h and w. **[3 marks]**

$h = 5 \times 1.5 = 7.5$

$w = 9 \div 1.5 = 6$

$x =$ 54° degrees ✓

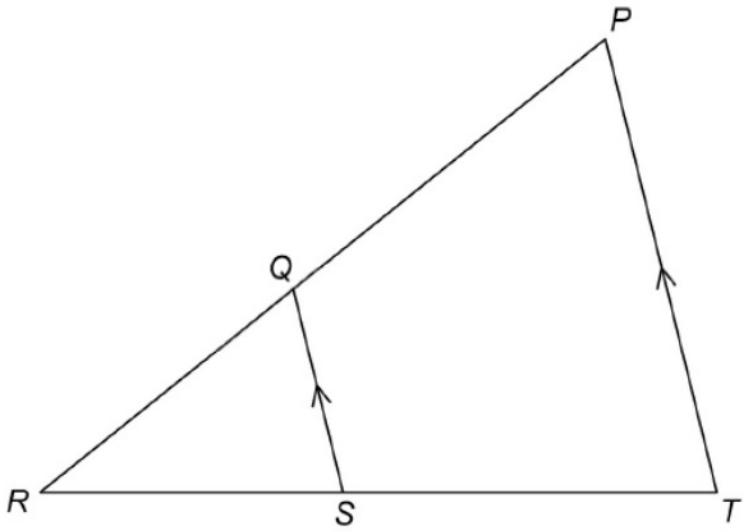
$h =$ 7.5 cm ✓

$w =$ 6 cm ✓

Video created by W Neill

22 *PRT* and *QRS* are similar triangles.

GSO



Which of these is equivalent to $\frac{QR}{PR}$?

Circle your answer.

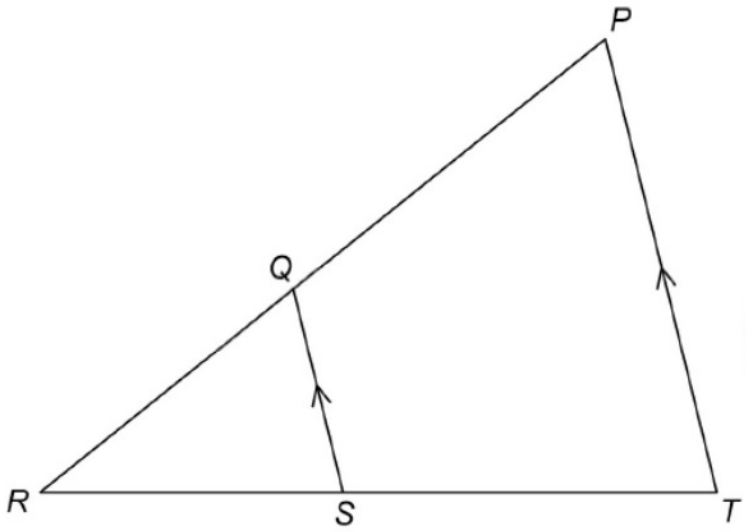
[1 mark]

$\frac{RS}{ST}$ $\frac{QS}{PT}$

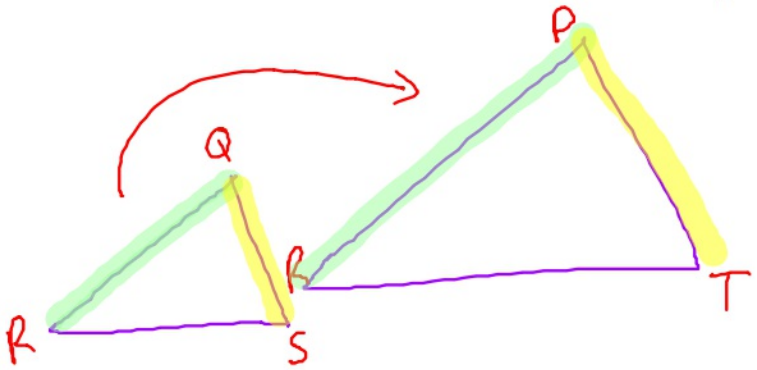
$\frac{PT}{QS}$ $\frac{RT}{RS}$

22 *PRT* and *QRS* are similar triangles.

GSO



Video created by W Neill



Which of these is equivalent to $\frac{QR}{PR}$?

Circle your answer.

[1 mark]

$\frac{RS}{ST}$ ✗

$\frac{QS}{PT}$ ✓

$\frac{PT}{QS}$ ✗

$\frac{RT}{RS}$ ✗

Video created by W Neill

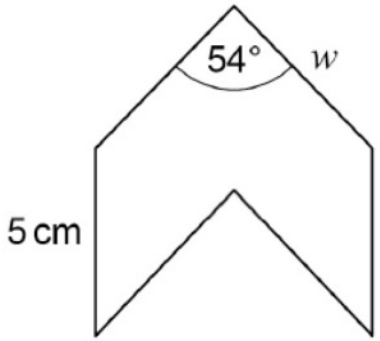
6 A and B are similar shapes.

B is an enlargement of A with scale factor 1.5

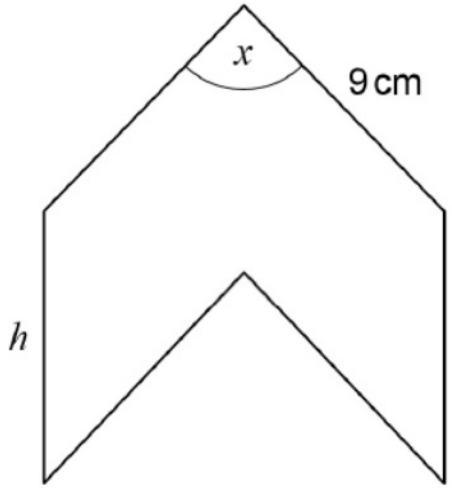
G50

Not drawn accurately

A



B



Work out the values of x, h and w. **[3 marks]**

x = _____ degrees

h = _____ cm

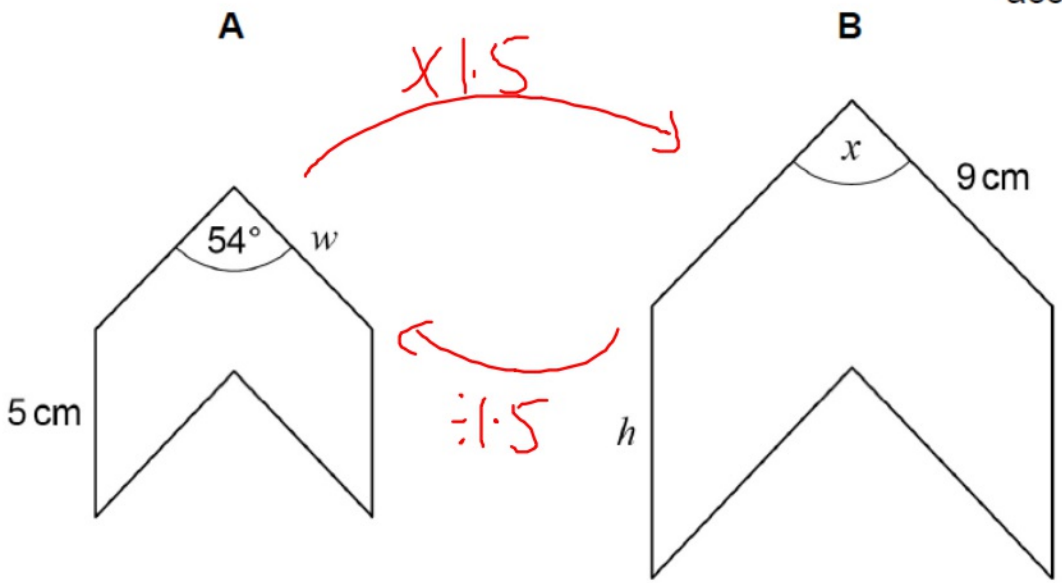
w = _____ cm

6 A and B are similar shapes.

B is an enlargement of A with scale factor 1.5

G50

Not drawn accurately



$h = 5 \times 1.5 = 7.5$

$w = 9 \div 1.5 = 6$

$x =$ 54° degrees ✓

$h =$ 7.5 cm ✓

$w =$ 6 cm ✓

Work out the values of x, h and w. **[3 marks]**