JP Maths Revision

Attempt the paper before watching the solutions!

https://www.youtube.com/@JPMathsRevision

FOUNDATION / HIGHER TIER

Similar Triangles

INSTRUCTIONS

- Use **black ink** or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

INFORMATION

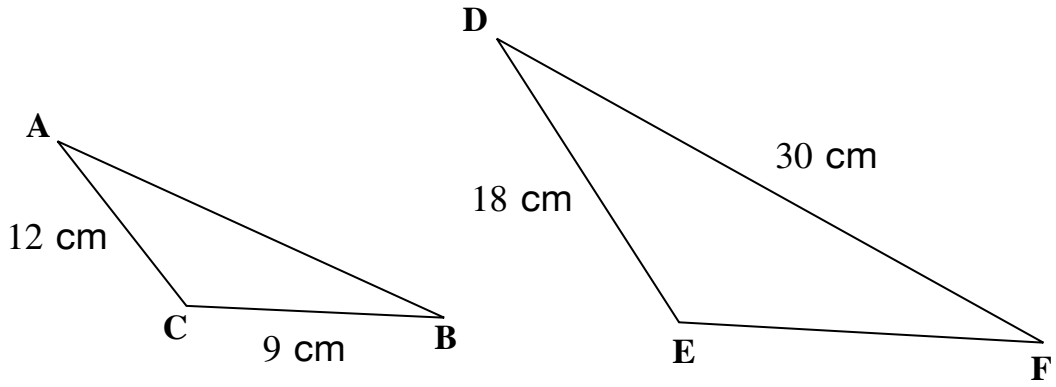
- The marks for **each** question are shown in brackets– *use this as a guide as to how much time to spend on each question.*

ADVICE

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

You've got this!

1. Triangles ABC and DEF are mathematically similar.



(a) Find the length of EF

SF = 18 ÷ 12 = 1.5

EF = 9 × 1.5 = 13.5

13.5 cm

(2)

(b) Find the length of AB

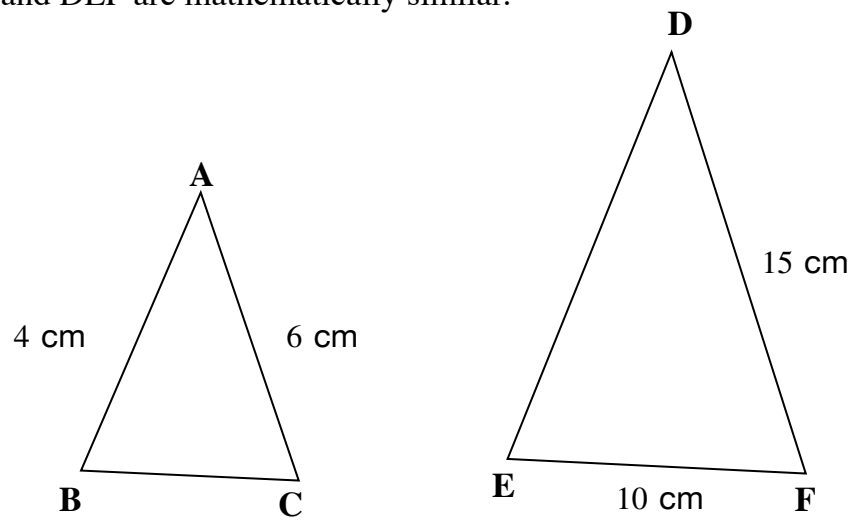
30 ÷ 1.5 = 20

20 cm

(2)

(Total for Question 1 is 4 marks)

2. Triangles ABC and DEF are mathematically similar.



(a) Find the length of BC

SF = 15 ÷ 6 = 2.5

BC = 10 ÷ 2.5 = 4

4 cm

(2)

(b) Find the length of DE

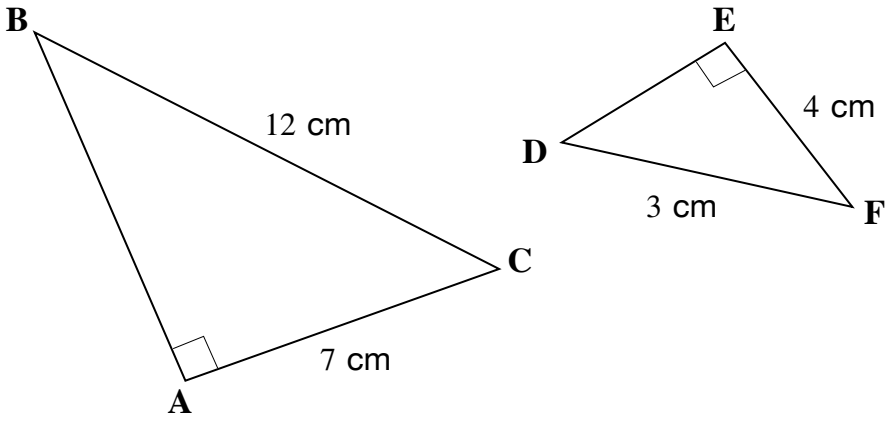
DE = 4 × 2.5 = 10 cm

10 cm

(2)

(Total for Question 2 is 4 marks)

3. Triangles ABC and DEF are mathematically similar.



(a) Find the length of AB

$SF = 12 \div 3 = 4\text{cm}$

$AB = 4 \times 4 = 16\text{cm}$

16 cm

(2)

(b) Find the length of DE

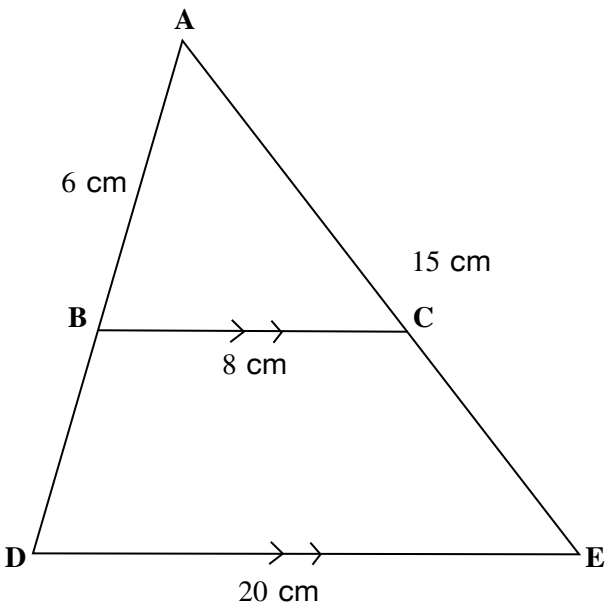
$DE = 7 \div 4 = 1.75\text{cm}$

1.75 cm

(2)

(Total for Question 3 is 4 marks)

4. Triangles ABC and ADE are mathematically similar.

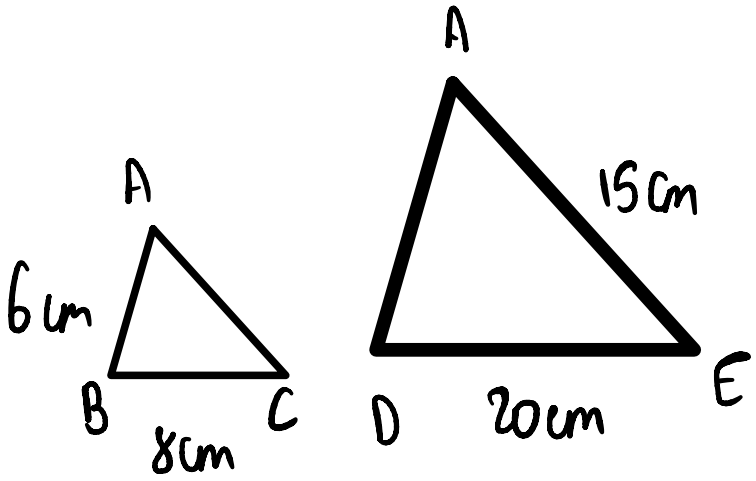


AB = 6 cm

AE = 15 cm

BC = 8 cm

DE = 20 cm



(a) Find the length of BD

SF = 20 ÷ 8 = 2.5

AD = 6 × 2.5 = 15cm

BD = 15 - 6 = 9cm

9 cm

(3)

(b) Find the length of CE

AC = 15 ÷ 2.5 = 6

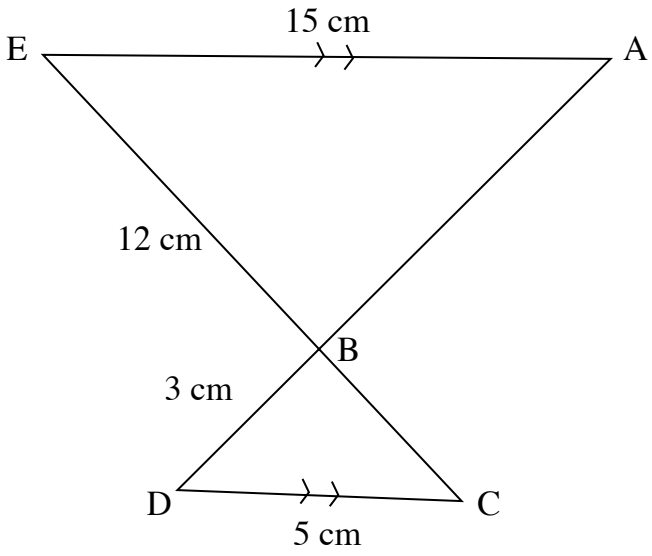
CE = 15 - 6 = 9cm

9 cm

(2)

(Total for Question 4 is 5 marks)

5. Triangles ABE and BCD are mathematically similar.



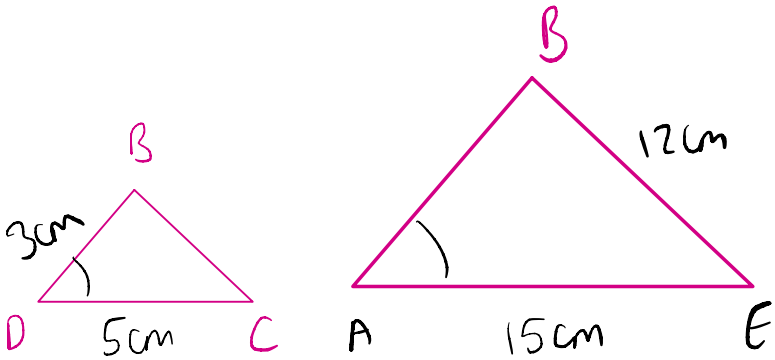
AE is parallel to CD.

AE = 15 cm

BE = 12 cm

BD = 3 cm

CD = 5 cm



(a) Find the length of AB

SF = 15 ÷ 5 = 3

AB = 3 × 3 = 9

9 cm

(2)

(b) Find the length of BC

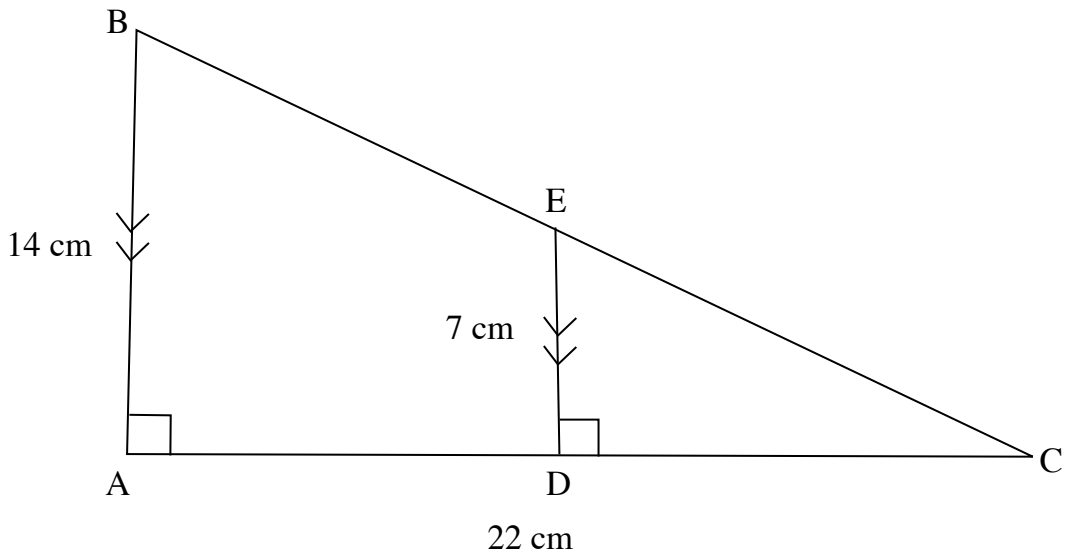
BC = 12 ÷ 3 = 4cm

4 cm

(2)

(Total for Question 5 is 4 marks)

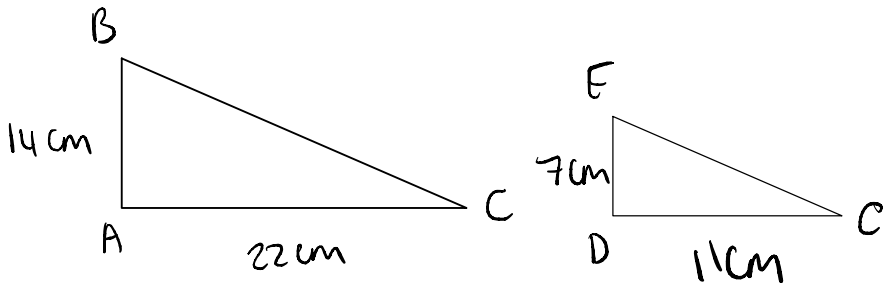
6. Triangles ABC and CDE are mathematically similar.



AB = 14 cm

ED = 7 cm

AC = 22 cm



(a) Find the length of AD

SF = 14 ÷ 7 = 2 cm

CD = 22 ÷ 2 = 11 cm

AD = 22 − 11 = 11 cm

11 cm

(3)

(b) Find the length of CE

$CE^2 = 7^2 + 11^2 = 170$

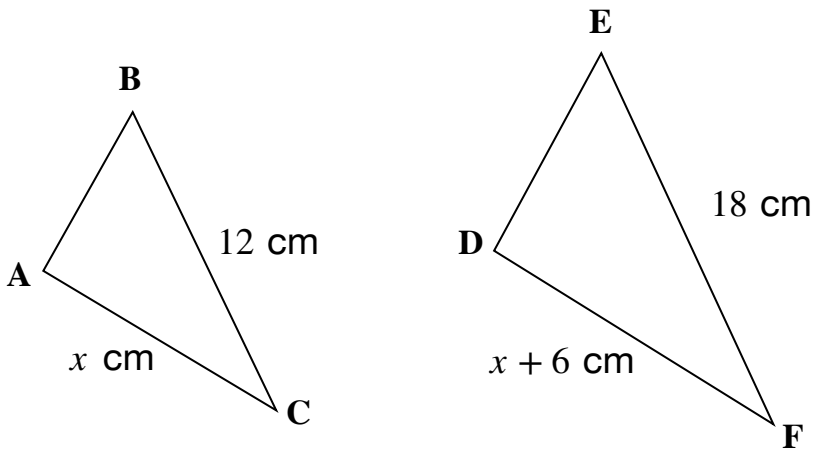
$CE = \sqrt{170} = 13.0$ cm

13 cm

(2)

(Total for Question 6 is 5 marks)

7. Triangles ABC and DEF are mathematically similar.



AC = x cm

BC = 12 cm

DF = $x + 6$ cm

EF = 18 cm

Find the value of x.

SF = 18 ÷ 12 = 1.5

$x \times 1.5 = x + 6$

$1.5x = x + 6$

$0.5x = 6$

$x = 12$

12

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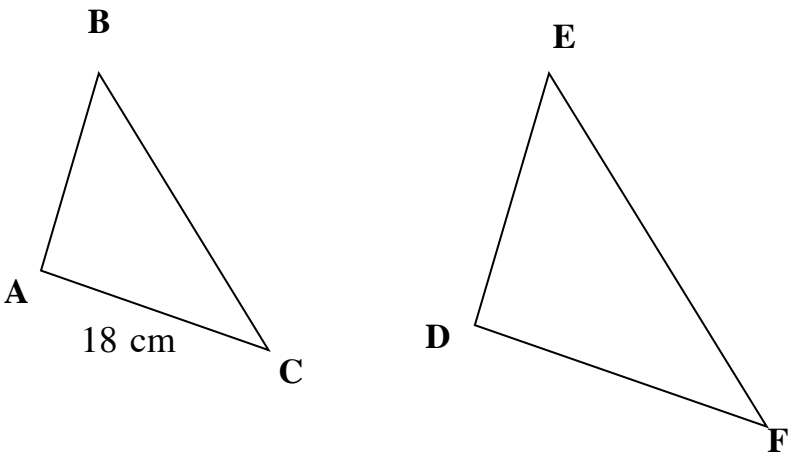
(Total for Question 7 is 4 marks)

8. Triangles ABC and DEF are mathematically similar.



Their perimeters are in the ratio 3 : 5.

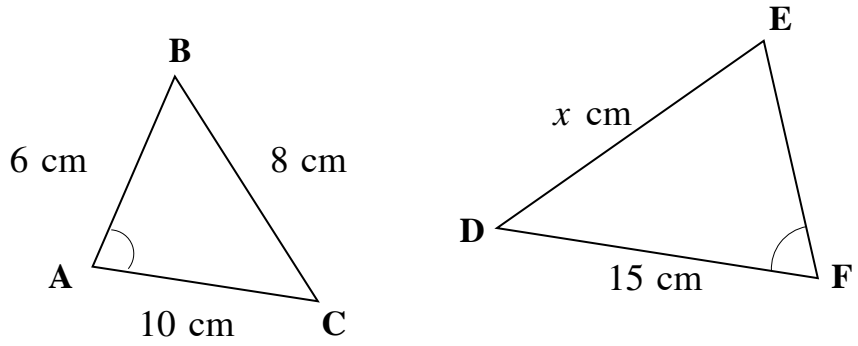
Find the length of DF.

×6 [3 : 5 / 18 : 30] ×6

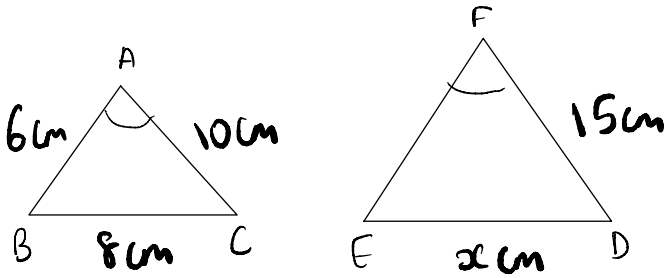
30 cm

(Total for Question 8 is 2 marks)

9. Triangles ABC and DEF are mathematically similar.

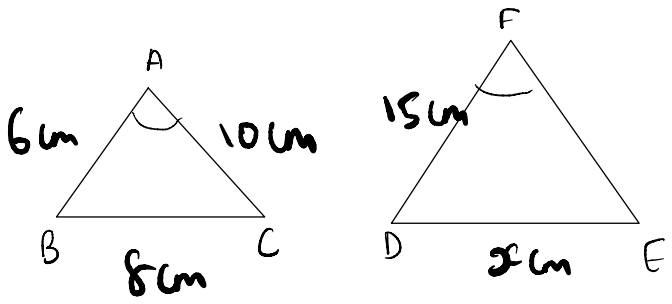


Work out two possible values of x.



SF = 15 ÷ 10 = 1.5

x = 8 × 1.5 = 12



SF = 15 ÷ 6 = 2.5

x = 8 × 2.5

= 20

12, 20

.....

(Total for Question 9 is 4 marks)