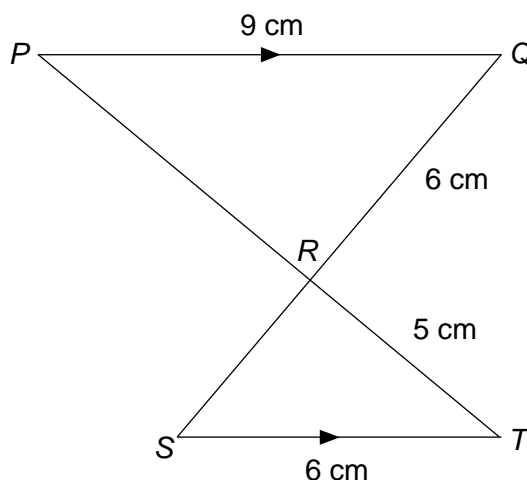




Similar Triangles

REVISE THIS TOPIC

- 1 *PQR* and *RST* are similar triangles.
PQ is parallel to *ST*.



Not drawn accurately

- 1 (a) Work out the length of *PR*.

[2 marks]

$$\frac{PR}{5} = \frac{9}{6}$$

$$PR = \frac{9 \times 5}{6}$$

Answer 7.5 cm

- 1 (b) Work out the length of *RS*.

[2 marks]

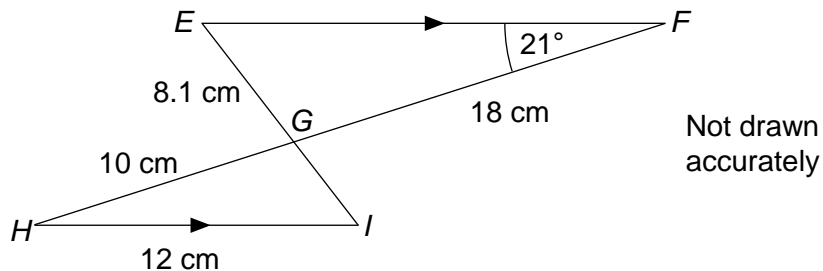
$$\frac{RS}{6} = \frac{6}{9}$$

$$RS = \frac{6 \times 6}{9}$$

Answer 4 cm



- 2 *EFG* and *GHI* are similar triangles.
EF is parallel to *HI*.



- 2 (a) Write down the size of angle *GHI*. [1 mark]

Angle *GHI* = Angle *EFG*

Answer 21 °

- 2 (b) Work out the length of *EF*. [2 marks]

$$\frac{EF}{12} = \frac{18}{10} \quad EF = \frac{18 \times 12}{10}$$

Answer 21.6 cm

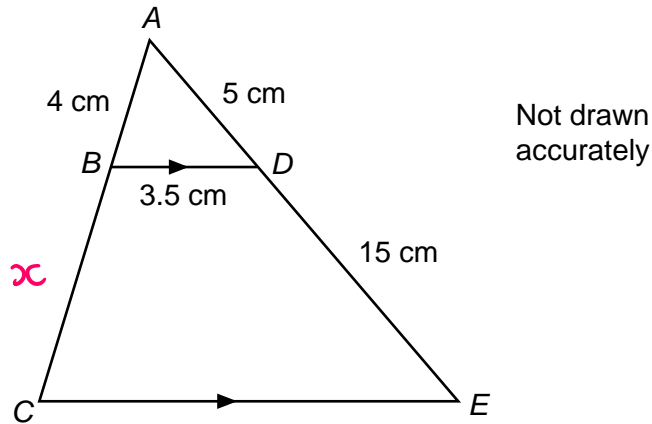
- 2 (c) Work out the length of *GI*. [2 marks]

$$\frac{GI}{8.1} = \frac{10}{18} \quad GI = \frac{10 \times 8.1}{18}$$

Answer 4.5 cm



- 3 *ABC and ADE are straight lines.
BD is parallel to CE.*



- 3 (a) Work out the length of *CE*. [2 marks]

$$\frac{CE}{3.5} = \frac{20}{5}$$

$$CE = \frac{20 \times 3.5}{5}$$

Answer 14 cm

- 3 (b) Work out the length of *BC*. $\leftarrow x$ [2 marks]

$$\frac{x+4}{4} = \frac{20}{5}$$

$$x+4 = 16$$

$$x = 12$$

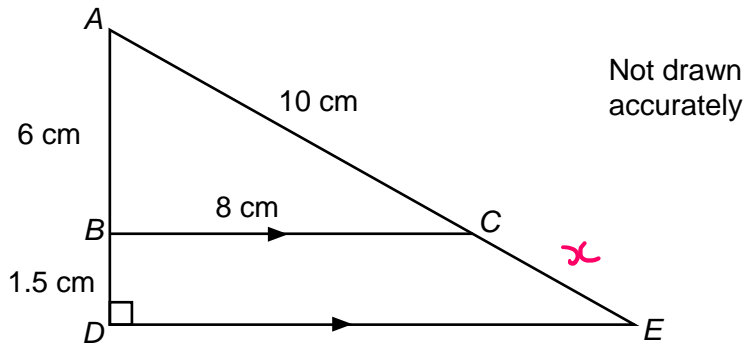
$$x+4 = \frac{20 \times 4}{5}$$

Answer 12 cm



Turn over ►

- 4 ADE is a right-angled triangle.
 BC is parallel to DE .



- 4 (a) Work out the length of DE .

[2 marks]

$$\frac{DE}{8} = \frac{7.5}{6}$$

$$DE = \frac{7.5 \times 8}{6}$$

Answer 10 cm

- 4 (b) Work out the length of CE . $\leftarrow x$

[2 marks]

$$\frac{x+10}{10} = \frac{7.5}{6}$$

$$\begin{aligned} x+10 &= 12.5 \\ x &= 2.5 \end{aligned}$$

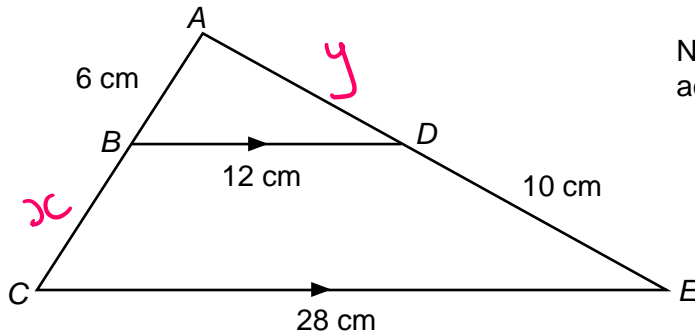
$$x+10 = \frac{7.5 \times 10}{6}$$

Answer 2.5 cm





- 5 ABC and ADE are straight lines.
 BD is parallel to CE .



- 5 (a) Work out the length of BC .

[3 marks]

$$\frac{x+6}{6} = \frac{28}{12}$$

$$\begin{aligned} x+6 &= 14 \\ x &= 8 \end{aligned}$$

$$x+6 = \frac{28 \times 6}{12}$$

Answer 8 cm

- 5 (b) Work out the length of AD .

[3 marks]

$$\frac{y+10}{y} = \frac{28}{12}$$

$$\begin{aligned} 120 &= 16y \\ y &= 7.5 \end{aligned}$$

$$12(y+10) = 28y$$

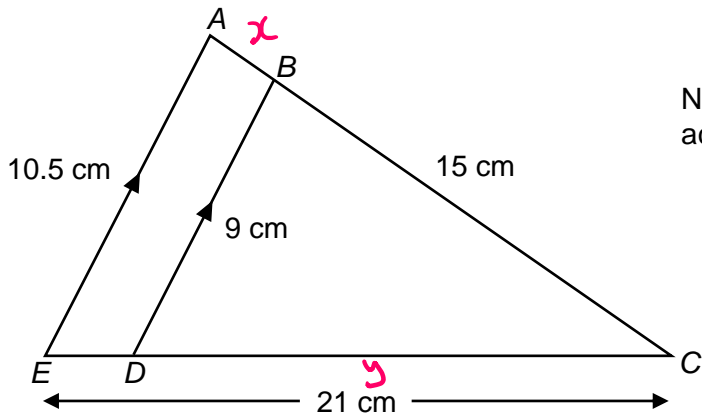
$$12y + 120 = 28y$$

Answer 7.5 cm



Turn over ►

- 6 *ABC* and *EDC* are straight lines.
AE is parallel to *BD*.



- 6 (a) Work out the length of *AB*. [2 marks]

$$\frac{x+15}{15} = \frac{10.5}{9}$$

$$x+15 = 17.5$$

$$x = 2.5$$

$$x+15 = \frac{10.5 \times 15}{9}$$

Answer 2.5 cm

- 6 (b) Work out the length of *ED*. [3 marks]

Find DC first

$$\frac{y}{21} = \frac{9}{10.5}$$

$$y = 18$$

$$y = \frac{9 \times 21}{10.5}$$

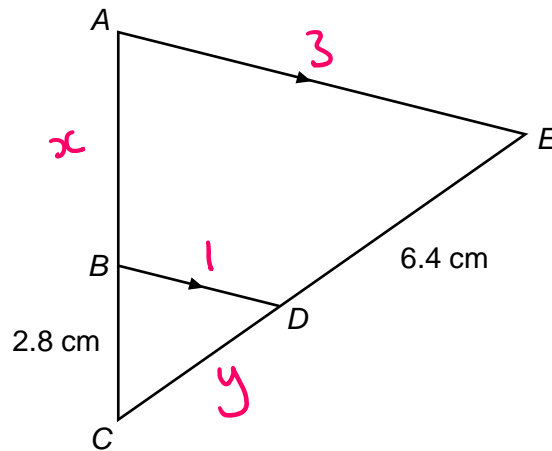
$$ED = 21 - 18$$

Answer 3 cm



7

ABC and CDE are straight lines.
 AE is parallel to BD .



Not drawn
accurately

$$BD : AE = 1 : 3$$

7 (a) Work out the length of AB .

[2 marks]

$$\frac{x + 2.8}{2.8} = \frac{3}{1}$$

$$x + 2.8 = 8.4$$

$$x = 5.6$$

$$x + 2.8 = \frac{3 \times 2.8}{1}$$

Answer

5.6

cm

7 (b) Work out the length of CD .

[3 marks]

$$\frac{y}{y + 6.4} = \frac{1}{3}$$

$$3y = y + 6.4$$

$$2y = 6.4$$

Answer

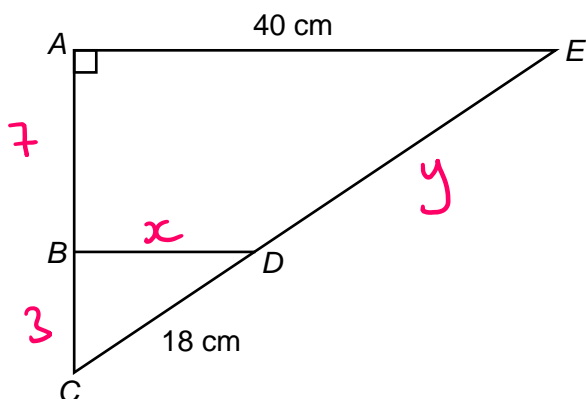
3.2

cm



Turn over ►

- 8 ACE is a right-angled triangle.
AE is parallel to BD.



Not drawn
accurately

$$AB : BC = 7 : 3$$

- 8 (a) Work out the length of BD. $\leftarrow x$

[3 marks]

$$\frac{x}{40} = \frac{3}{10}$$

$$x = \frac{3 \times 40}{10}$$

Answer

12

cm

- 8 (b) Work out the length of DE. $\leftarrow y$

[3 marks]

$$\frac{y + 18}{18} = \frac{10}{3}$$

$$3(y + 18) = 180$$

$$3y + 54 = 180$$

$$3y = 126$$

$$y = 42$$

Answer

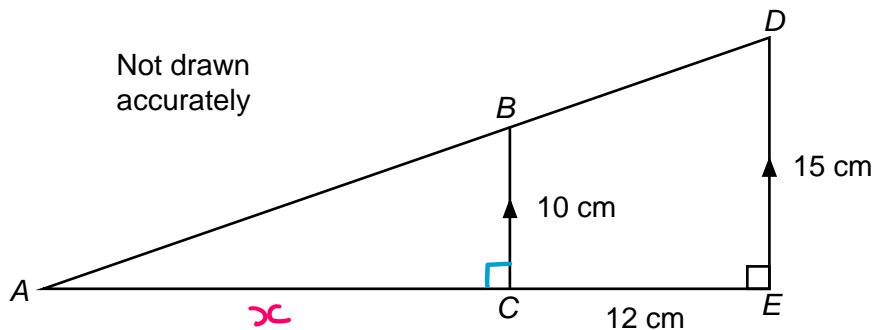
42

cm



9

ADE is a right-angled triangle.
 BC is parallel to DE .



Work out the length of AB .

[5 marks]

Find AC first

$$AB^2 = AC^2 + CB^2$$

$$AB^2 = 24^2 + 10^2$$

$$\frac{x+12}{x} = \frac{15}{10}$$

$$AB^2 = 676$$

$$AB = \sqrt{676}$$

$$10(x+12) = 15x$$

$$AB = 26$$

$$10x + 120 = 15x$$

$$120 = 5x$$

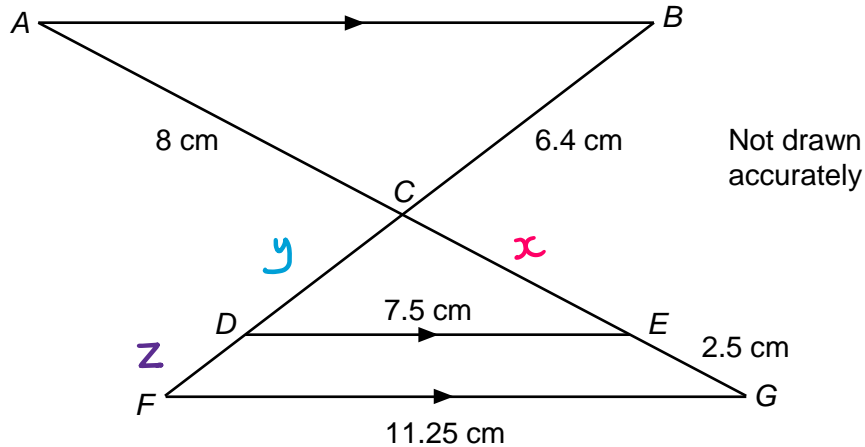
$$x = 24$$

Answer 26 cm



10

ACEG and BCDF are straight lines.
AB, DE and FG are parallel lines.



Work out the length of DF.

[5 marks]

$$\frac{x + 2.5}{x} = \frac{11.25}{7.5}$$

$$\frac{y}{6.4} = \frac{5}{8}$$

$$7.5(x + 2.5) = 11.25x$$

$$y = \frac{5 \times 6.4}{8}$$

$$7.5x + 18.75 = 11.25x$$

$$18.75 = 3.75x$$

$$y = 4$$

$$x = 5$$

$$\frac{z + 4}{4} = \frac{11.25}{7.5}$$

$$z + 4 = 6$$

$$z = 2$$

$$z + 4 = \frac{11.25 \times 4}{7.5}$$

2

Answer _____ cm

5

