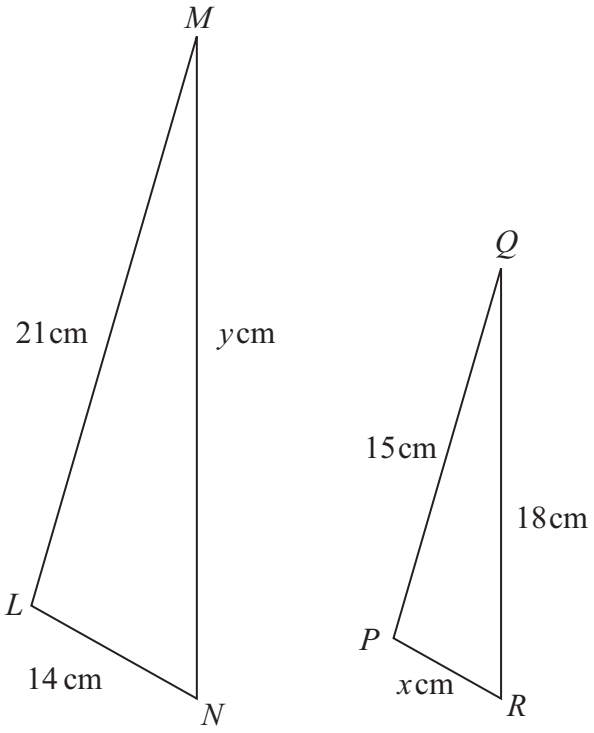
1. **[4 marks]**

Here are two similar triangles.



Diagrams **NOT** accurately drawn

LM corresponds to *PQ*.
MN corresponds to *QR*.

(a) Find the value of x.

x = ...

(2)

(b) Find the value of y.

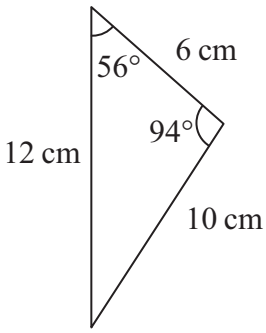
y = ...

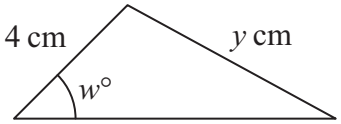
(2)

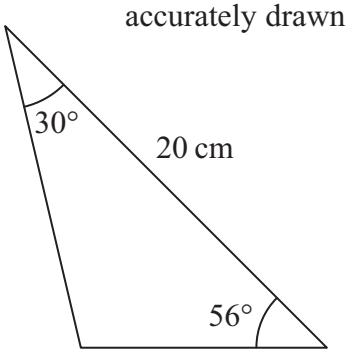
2. **[5 marks]**

Here are three similar triangles.

Diagrams **NOT** accurately drawn







Find the value of

(a) w,

w = ...

(1)

(b) x,

x = ...

(2)

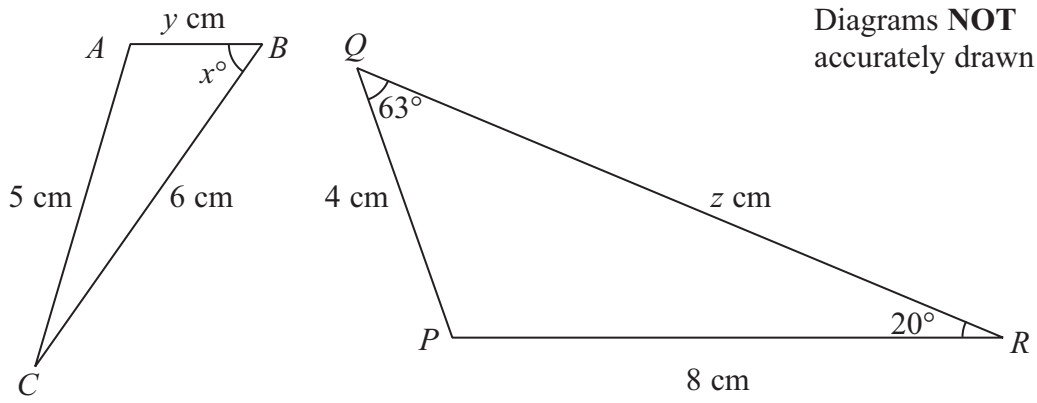
(c) y.

y = ...

(2)

3. **[5 marks]**

Here are two similar triangles.
AB corresponds to *PQ*.
BC corresponds to *QR*.



Diagrams **NOT** accurately drawn

Find the value of

(a) *x*

x = ...
(1)

(b) *y*

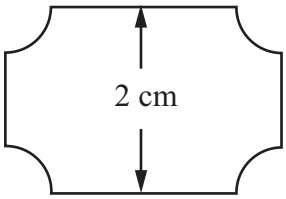
y = ...
(2)

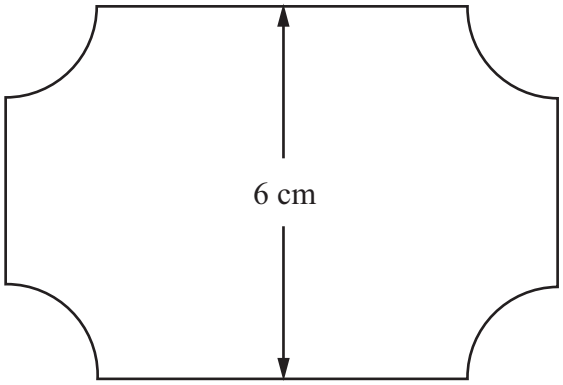
(c) *z*

z = ...
(2)

4. **[2 marks]**

Here are two supermarket price tickets.





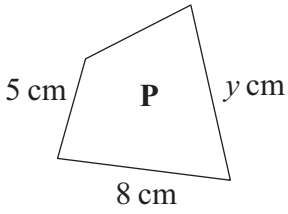
Diagrams **NOT** accurately drawn

The two supermarket price tickets are mathematically similar.

The area of the smaller ticket is 7 cm^2.
Calculate the area of the larger ticket.

..... cm^2

5. **[6 marks]**



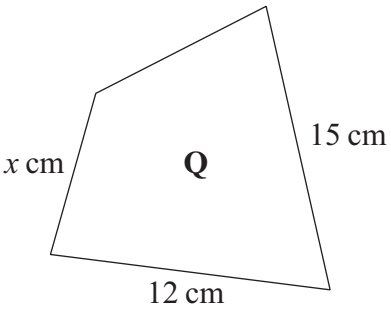


Diagram **NOT** accurately drawn

Quadrilateral **P** is mathematically similar to quadrilateral **Q**.

(a) Calculate the value of x.

$x =$ .....

(2)

(b) Calculate the value of y.

$y =$ .....

(2)

The area of quadrilateral **P** is 60 cm^2.

(c) Calculate the area of quadrilateral **Q**.

..... cm^2

(2)

6. **[2 marks]**

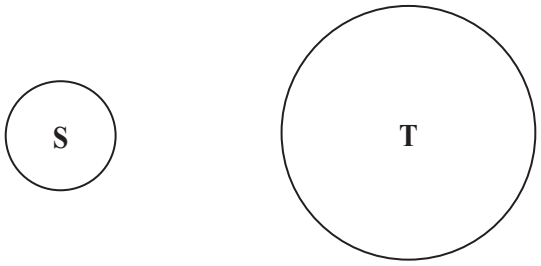


Diagram **NOT** accurately drawn

The area of circle **S** is 4 cm^2.
The radius of circle **T** is 3 times the radius of circle **S**.

Work out the area of circle **T**.

..... cm^2

7. **[3 marks]**

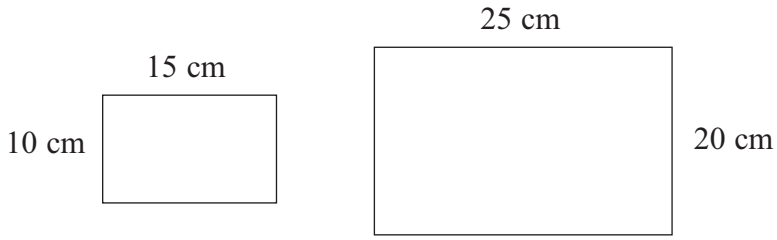


Diagram **NOT** accurately drawn

Are the two rectangles mathematically similar?
Tick (✓) the appropriate box.
You must show working to justify your answer.

Yes ☐ No ☐

8. **[4 marks]**

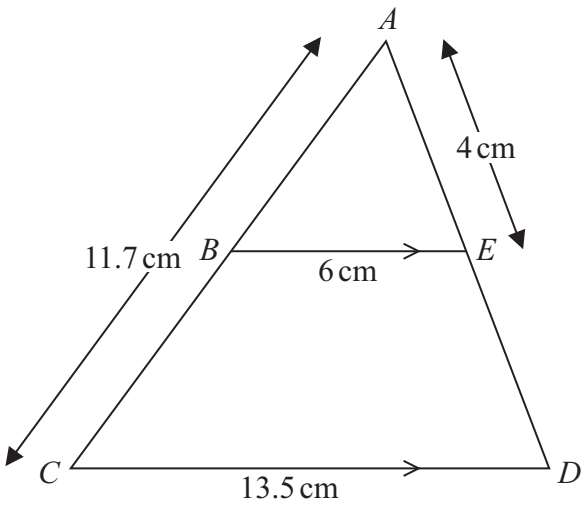


Diagram **NOT** accurately drawn

The diagram shows triangle ACD.
B is a point on AC and E is a point on AD so that BE is parallel to CD.

$AE = 4$ cm
$AC = 11.7$ cm
$BE = 6$ cm
$CD = 13.5$ cm

(a) Calculate the length of AB.

..... cm

(2)

(b) Calculate the length of ED.

..... cm

(2)

9. **[4 marks]**

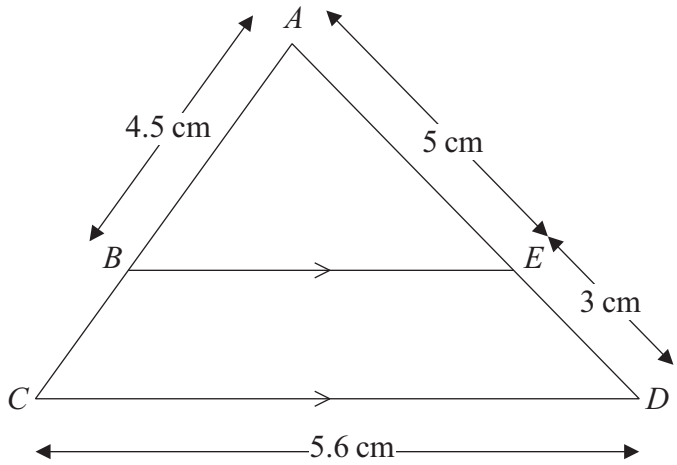


Diagram **NOT** accurately drawn

BE is parallel to *CD*.
AB = 4.5 cm, *AE* = 5 cm, *ED* = 3 cm, *CD* = 5.6 cm.

(a) Calculate the length of *BE*.

..... cm
(2)

(b) Calculate the length of *BC*.

..... cm
(2)

10. **[4 marks]**

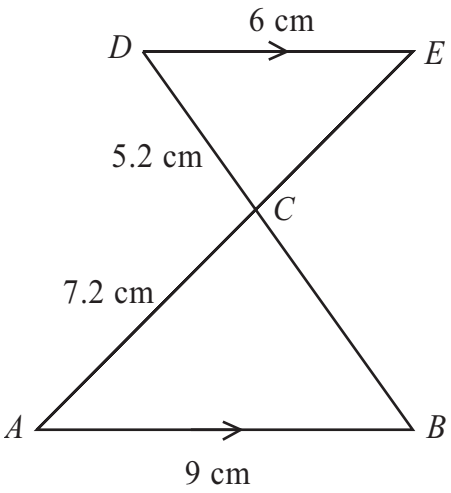


Diagram **NOT** accurately drawn

AB is parallel to *DE*.
ACE and *BCD* are straight lines.
AB = 9 cm.
AC = 7.2 cm.
CD = 5.2 cm.
DE = 6 cm.

(a) Calculate the length of *BC*.

..... cm

(2)

(b) Calculate the length of *CE*.

..... cm

(2)

11. **[7 marks]**

ABCD and *APQR* are two similar quadrilaterals.

PQ = 9 cm.
BC = 6 cm.
AD = 5 cm.
QR = 12 cm.

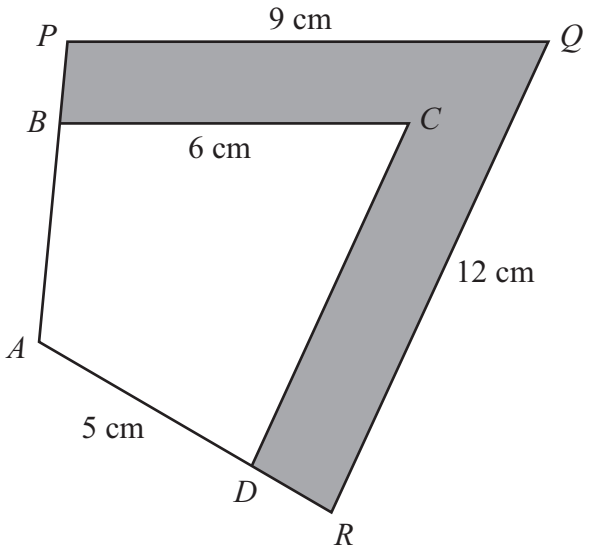


Diagram **NOT** accurately drawn

(a) Find the length of *DC*.

..... cm

(2)

(b) Find the length of *AR*.

..... cm

(2)

The area of the quadrilateral *ABCD* is 32 cm^2.

(c) Calculate the area of the shaded region.

..... cm^2

(3)

12. **[7 marks]**

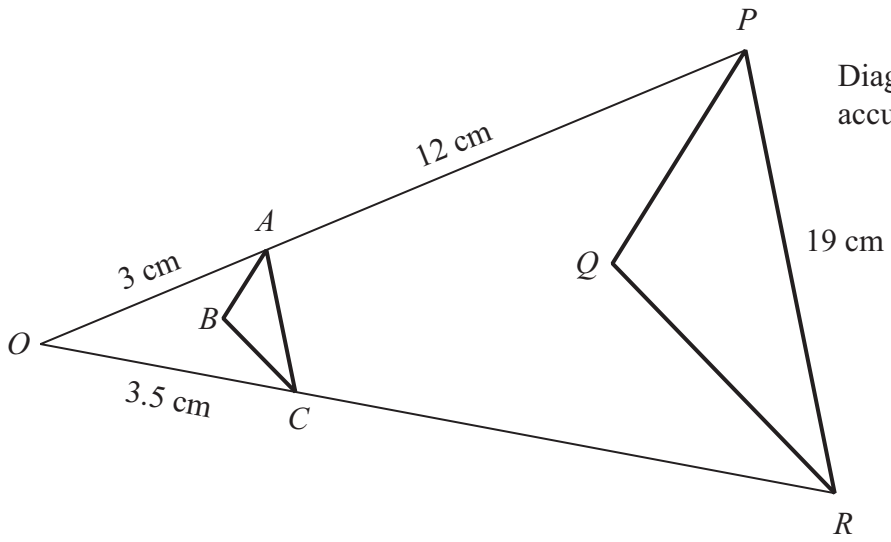


Diagram **NOT** accurately drawn

Triangle PQR is an enlargement, centre O, of triangle ABC.
OAP and OCR are straight lines.
$OA = 3$ cm.
$AP = 12$ cm.
$OC = 3.5$ cm.
$PR = 19$ cm.

(a) Work out the length of CR.

..... cm

(2)

(b) Work out the length of AC.

..... cm

(3)

The area of triangle ABC is 2 cm^2

(c) Work out the area of triangle PQR.

..... cm^2

(2)

13. **[7 marks]**

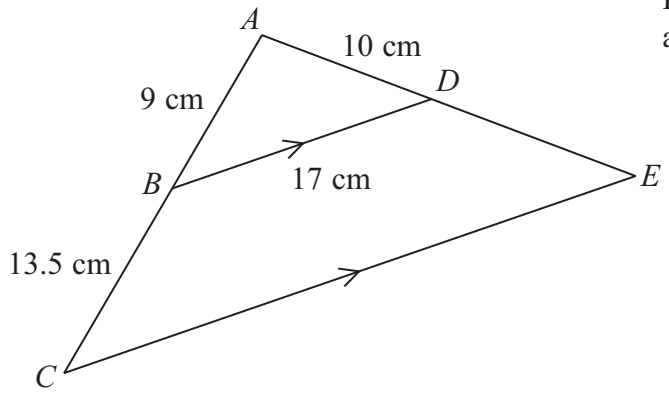


Diagram **NOT** accurately drawn

In the diagram *ABC* and *ADE* are straight lines.
BD is parallel to *CE*.

AB = 9 cm, *BC* = 13.5 cm, *AD* = 10 cm, *BD* = 17 cm

(a) Calculate the length of *CE*.

..... cm

(2)

(b) Calculate the length of *DE*.

..... cm

(2)

The area of triangle *ABD* is 36 cm^2

(c) Calculate the area of quadrilateral *BDEC*.

..... cm^2

(3)

14. **[7 marks]**

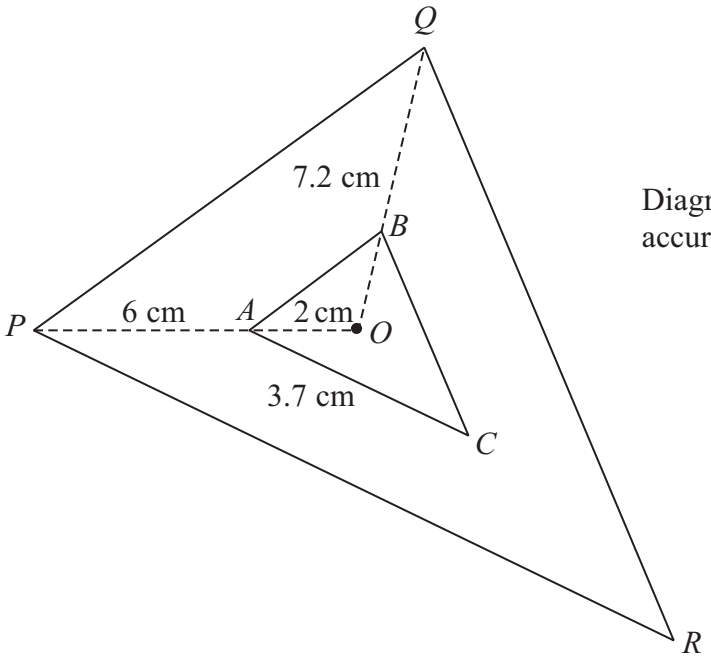


Diagram **NOT** accurately drawn

Triangle PQR is an enlargement, centre O, of triangle ABC.
OAP and OBQ are straight lines.
$OA = 2$ cm.
$AP = 6$ cm.
$BQ = 7.2$ cm.
$AC = 3.7$ cm.

(a) Work out the length of OB.

..... cm

(2)

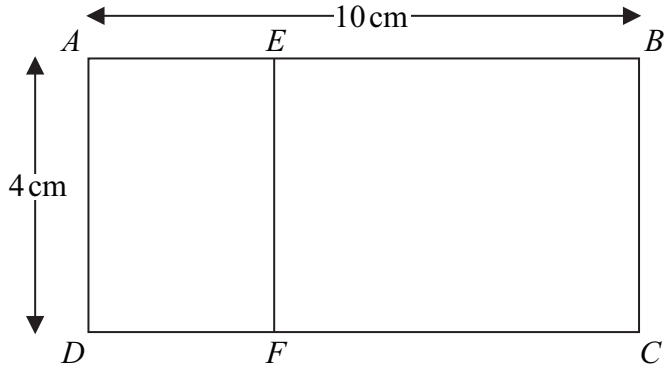
(b) Work out the length of PR.

..... cm

(3)

15. **[3 marks]**

Rectangle *ABCD* is mathematically similar to rectangle *DAEF*.



AB = 10 cm.
AD = 4 cm.

Work out the area of rectangle *DAEF*.

..... cm^2

16. **[3 marks]**

The diagram shows two regular hexagons, *OABCDE* and *OFGHIJ*.

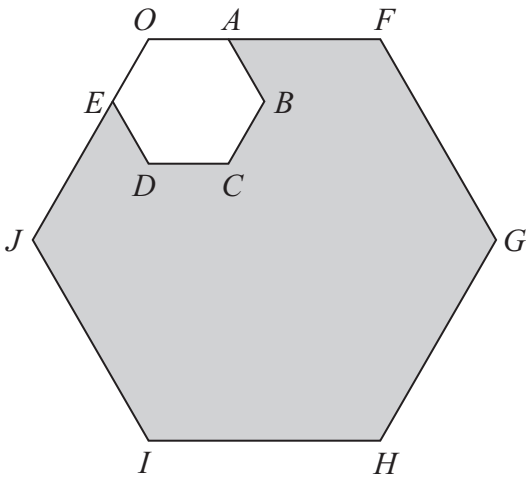


Diagram **NOT** accurately drawn

OAF and *OEJ* are straight lines.
OF = 3 *OA*.
The area of *OABCDE* is 4 cm^2.

Calculate the area of the shaded region.

..... cm^2

17. **[7 marks]**

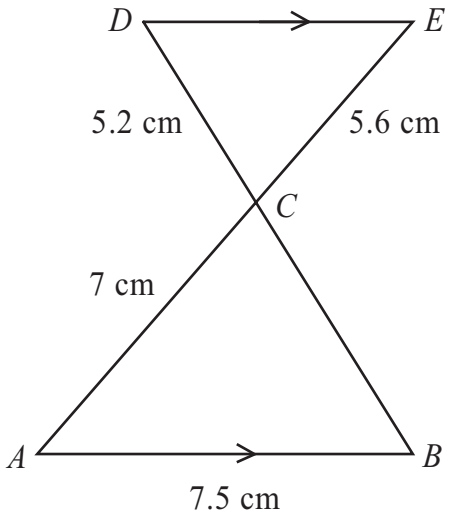


Diagram **NOT** accurately drawn

AB is parallel to *DE*.
The lines *AE* and *BD* intersect at *C*.
AB = 7.5 cm, *AC* = 7 cm, *CD* = 5.2 cm, *CE* = 5.6 cm.

(a) Calculate the length of *BC*.

..... cm
(2)

(b) Calculate the length of *DE*.

..... cm
(2)

(c) The area of triangle *ABC* is 21 cm^2
Calculate the area of triangle *EDC*.

..... cm^2
(3)