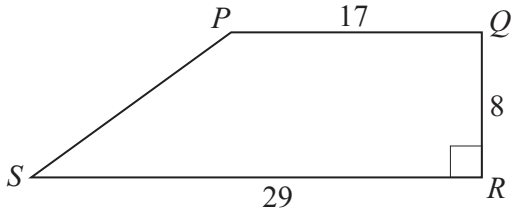
7 **(a)**



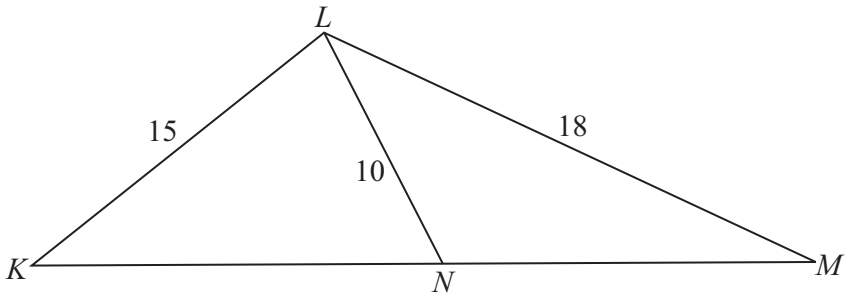
$PQRS$ is a trapezium.
$PQ = 17$ cm, $QR = 8$ cm, $SR = 29$ cm and $S\hat{R}Q = 90°$.

Calculate

(i) the area of $PQRS$, [1]

(ii) $P\hat{S}R$. [2]

(b)



In the diagram, triangle KLM is similar to triangle LNM.
$KL = 15$ cm, $LM = 18$ cm and $LN = 10$ cm.

(i) Find KM. [2]

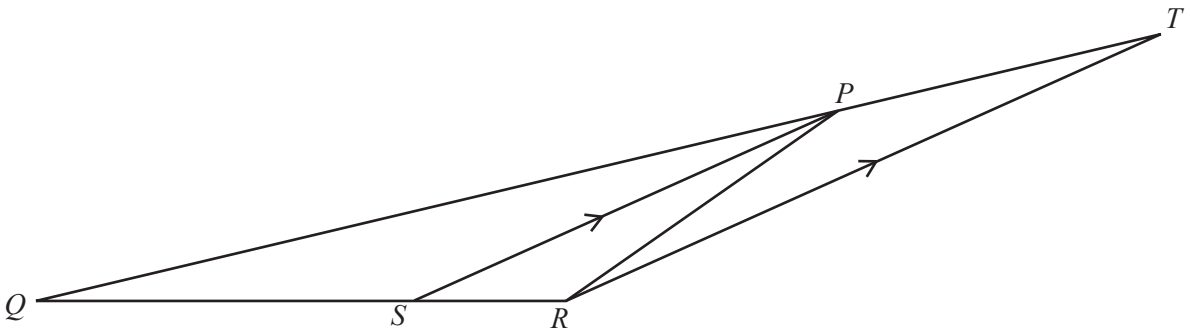
(ii) Find KN. [2]

(iii) P is the point on LM such that PN is parallel to LK.

Find $\dfrac{\text{the area of triangle } NPM}{\text{the area of trapezium } KLPN}$.

Give your answer as a fraction in its simplest form. [2]

(b)

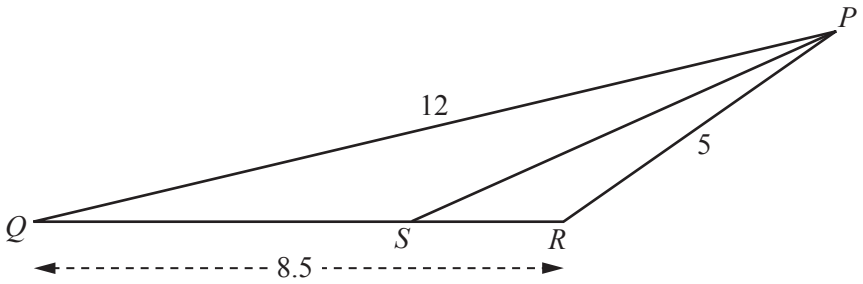


In the diagram, PS is the bisector of $Q\hat{P}R$.
QPT and QSR are straight lines.
RT is parallel to SP.

(i) Explain why $PT = PR$.

[2]

(ii) This diagram shows part of the above diagram.
$PQ = 12$ cm, $PR = 5$ cm and $QR = 8.5$ cm.

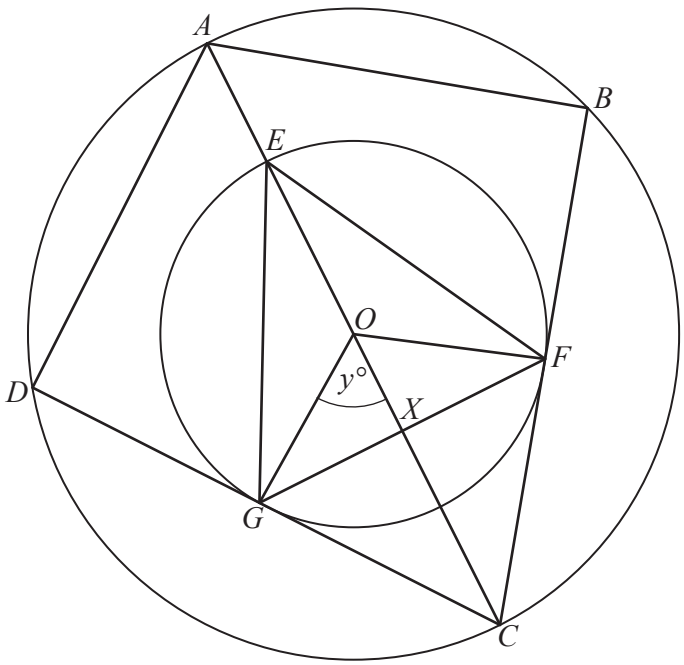


It is given that $\frac{PQ}{PR} = \frac{QS}{SR}$.

Find SR.

Answer ..... cm [3]

8



The diagram shows two circles each with centre O.
A, B, C and D are points on the circumference of the large circle.
E, F and G are points on the circumference of the small circle.
CGD and CFB are tangents to the small circle.
Lines $AEOC$ and FG intersect at 90° at X.
$G\hat{O}X = y°$.

(a) Find each of these angles, as simply as possible, in terms of y.
Give reasons for your answers.

(i) $G\hat{E}O$

Answer $G\hat{E}O =$ ..... because .....

..... [2]

(ii) $G\hat{C}X$

Answer $G\hat{C}X =$ ..... because .....

..... [2]

(iii) $D\hat{A}B$

Answer $D\hat{A}B =$ ..... because .....

..... [2]

(b) Complete the sentence.

Triangle *EGC* is congruent to triangle ..... . [1]

(c) Prove that triangle *ADC* is similar to triangle *OGC*.
Give a reason for each statement you make.

.....

.....

.....

..... [2]

(d) What special type of quadrilateral is *AOGD*?

Answer ..... [1]

(e) Find the ratio

(i) area of triangle *OGC* : area of triangle *ADC*,

Answer ..... : ..... [1]

(ii) area of triangle *OGC* : area of quadrilateral *ABCD*.

Answer ..... : ..... [1]