Higher Level Question

(Suggested maximum time: 5 minutes)

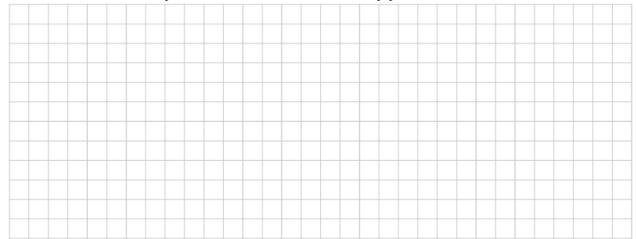
Maisy writes down the following theorem:

"If a triangle has sides of length 3 cm, 4 cm, and 5 cm, then it is a right-angled triangle."

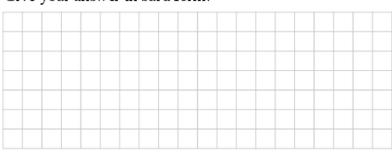
(a) State the converse of Maisy's theorem.

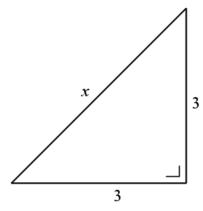


(b) Is the converse of Maisy's theorem true or false? Justify your answer.



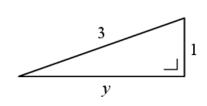
(i) Use the diagram on the right to calculate the value of x. Give your answer in surd form.





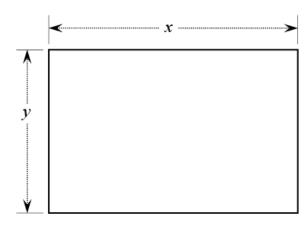
(ii) Use the diagram below to calculate the value of y. Give your answer in surd form.

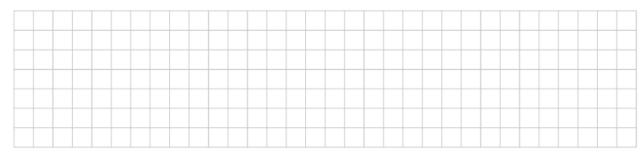




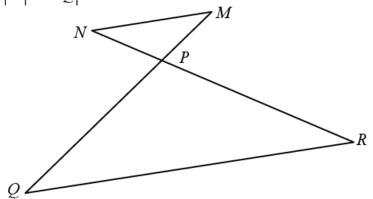
(iii) A rectangle with sides of length x and y is drawn using the values of x and y from parts (i) and (ii), as shown below.

Write the **perimeter** of this rectangle in the form $a\sqrt{2}$, where $a \in \mathbb{N}$.





In the diagram below, $|\angle MNP| = |\angle PRQ|$.



(i) Prove that $\triangle MNP$ and $\triangle QRP$ are similar.



(ii) Is NM parallel to QR? Give a reason for your answer.

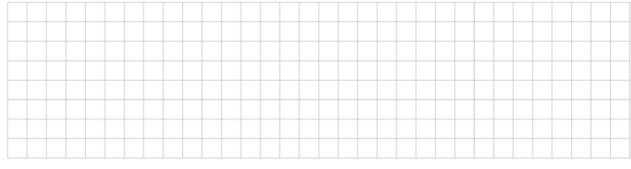


Given |MN| = 6, |NP| = 4, |QP| = 9, and |PR| = 10, find:

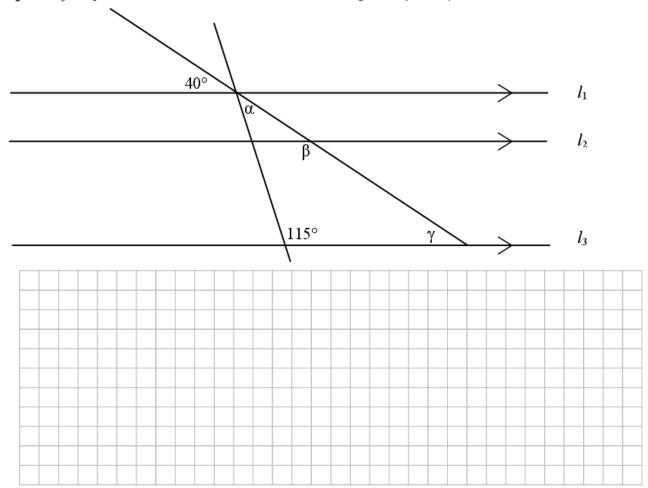
(iii) |QR|



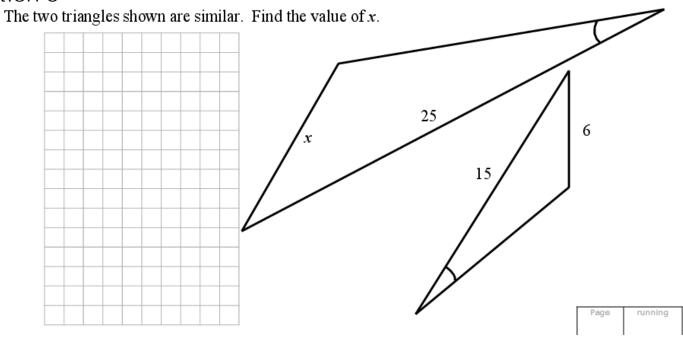
(iv) |QM|.



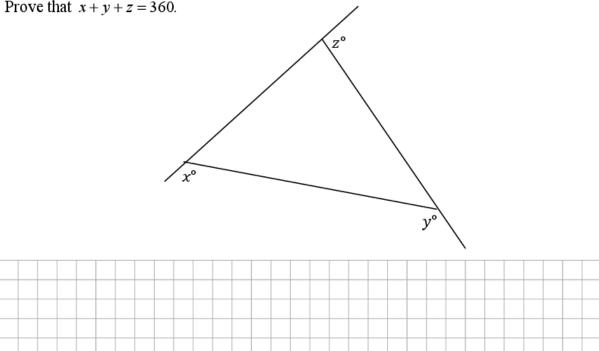
If l_1 , l_2 and l_3 are parallel lines, find the measure of the angles α , β and γ .



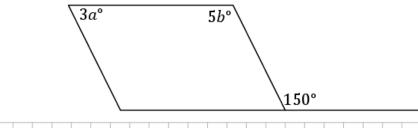
Question 5

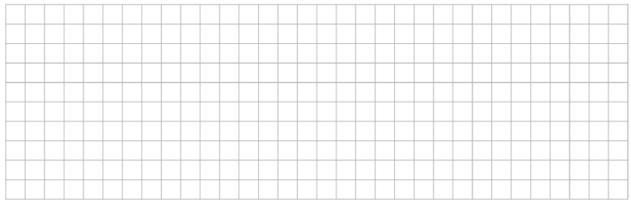


Prove that x + y + z = 360. (a)



The diagram below shows a parallelogram and one exterior angle. Find the value of a and the value of b. (b)





A triangle has a base length of 2x cm and a perpendicular height of (x + 3) cm. The area of the triangle is 10 cm^2 . Find the distance x.

