Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Angles with Parallel Lines 2

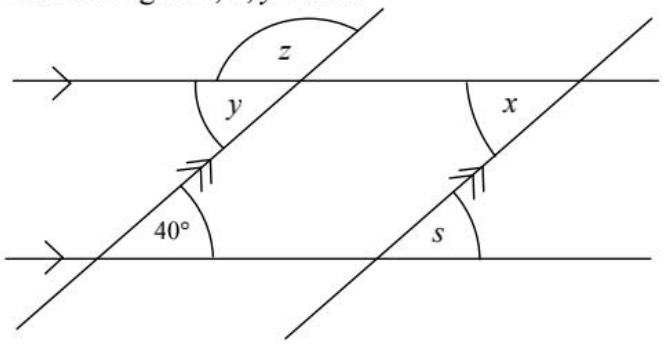
Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks :

1) Calculate the value of angles s, x, y and z.

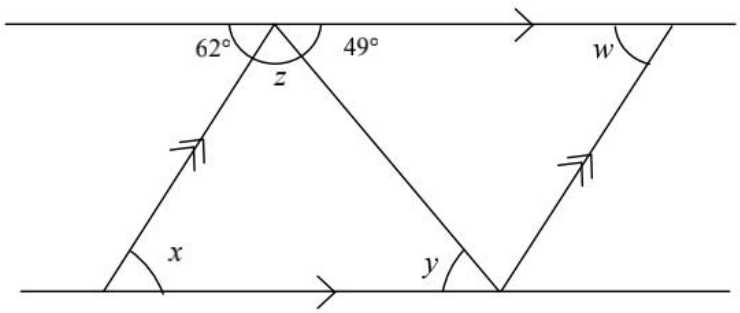


$s =$ _____ ° $x =$ _____ °

$y =$ _____ ° $z =$ _____ °

(5 marks)

2) Calculate the value of angles w, x, y and z.



$w =$ _____ ° $x =$ _____ °

$y =$ _____ ° $z =$ _____ °

(5 marks)

3) Part of a playground climbing frame is shown below.

AH and GJ are parallel.

AG and HJ are horizontal.

Angle JGD = 51°

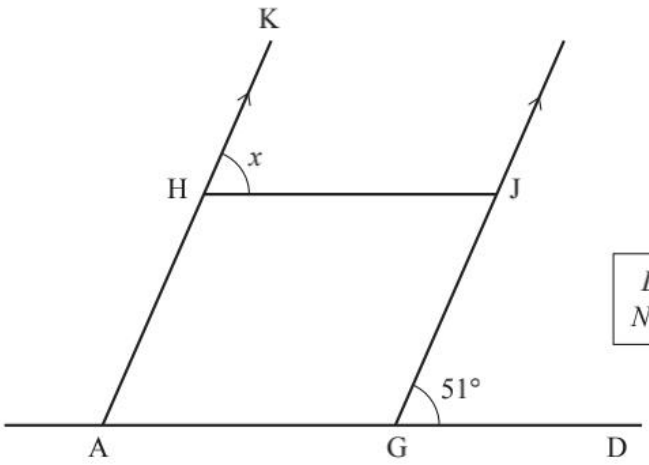


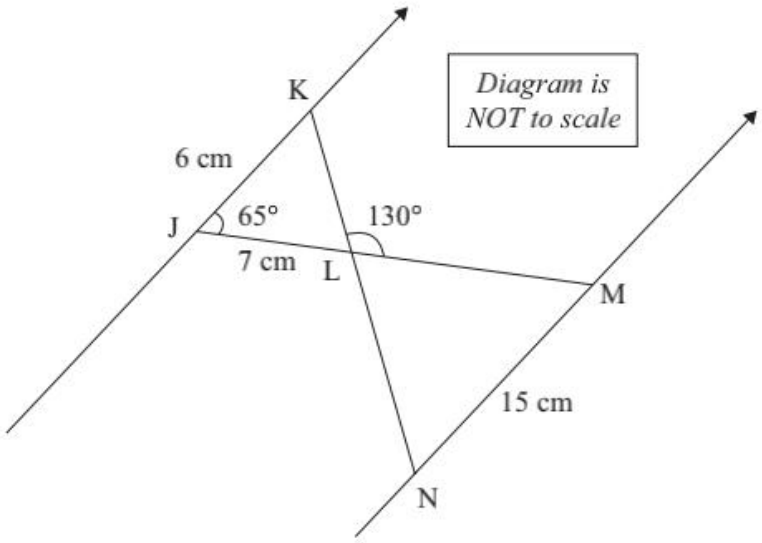
Diagram is NOT to scale

(i) Calculate the size, x, of angle JHK.

Justify your answer with clear geometric reasoning.

(4 marks)

4)



Find the size of angle LNM.

Give geometric reasons.

(4 marks)

5) A clothes dryer has two horizontal levels on which the clothes can be hung as shown by the lines AE and HI on the diagram below.

AE is parallel to HI and parallel to the ground JN. The rack is symmetrical around the line CL. The line CL is perpendicular to the ground.

BC=CF

Angle KCL is 24°

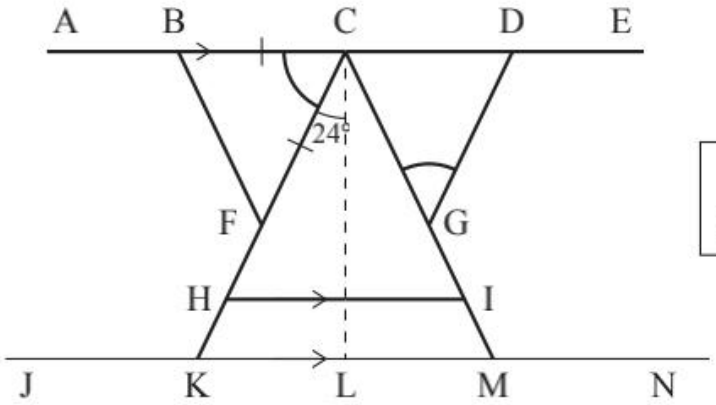


Diagram is NOT to scale

(i) Find the size of angle BCF.

Justify your answer with clear geometric reasoning.

[2]

(ii) Find the size of angle DGC.

Justify your answer with clear geometric reasoning.

[3]

6) Straight lines ABC and EFG are parallel to each other.

Angle CBD = 28° Angle BDF = 136°

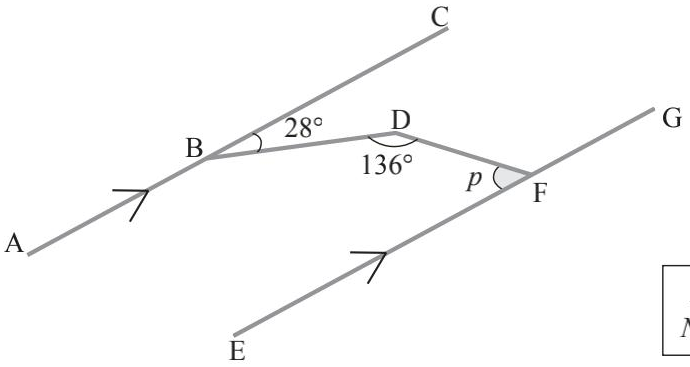


Diagram is NOT to scale

Calculate the size, p, of angle DFE.

Justify your answer with clear geometrical reasoning.

[5]

7) In the diagram below triangle QPS is right-angled. PQ is parallel to UR and UP is parallel to SQ. $R\hat{Q}P = 34°$.

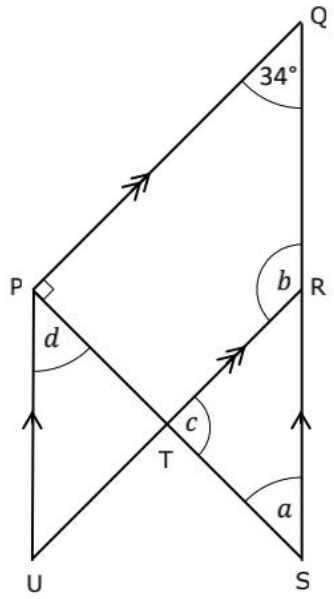


Diagram not drawn to scale

Work out the value of the angles marked a, b, c and d, giving reasons.

Ans: a = _____ Reason: _____

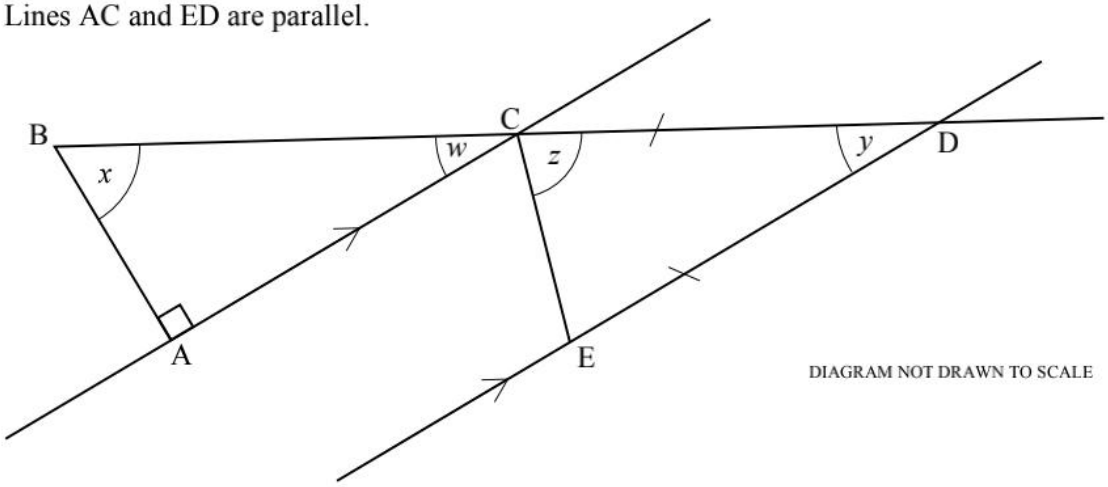
b = _____ Reason: _____

c = _____ Reason: _____

d = _____ Reason: _____

(8 marks)

8) Lines AC and ED are parallel.



ΔABC is a right-angled triangle in which angles w and x are in the **ratio 1 : 2**.

a) Explain why angle $w = 30°$. Show all your working.

b) Work out the value of angle x.

Ans: $x =$ _____ °

ΔECD is an isosceles triangle in which CD = DE.

c) Calculate the values of angles y and z, giving reasons for your answers.

Ans: $y =$ _____ ° *reason:* _____

$z =$ _____ ° *reason:* _____

(8 marks)

9)

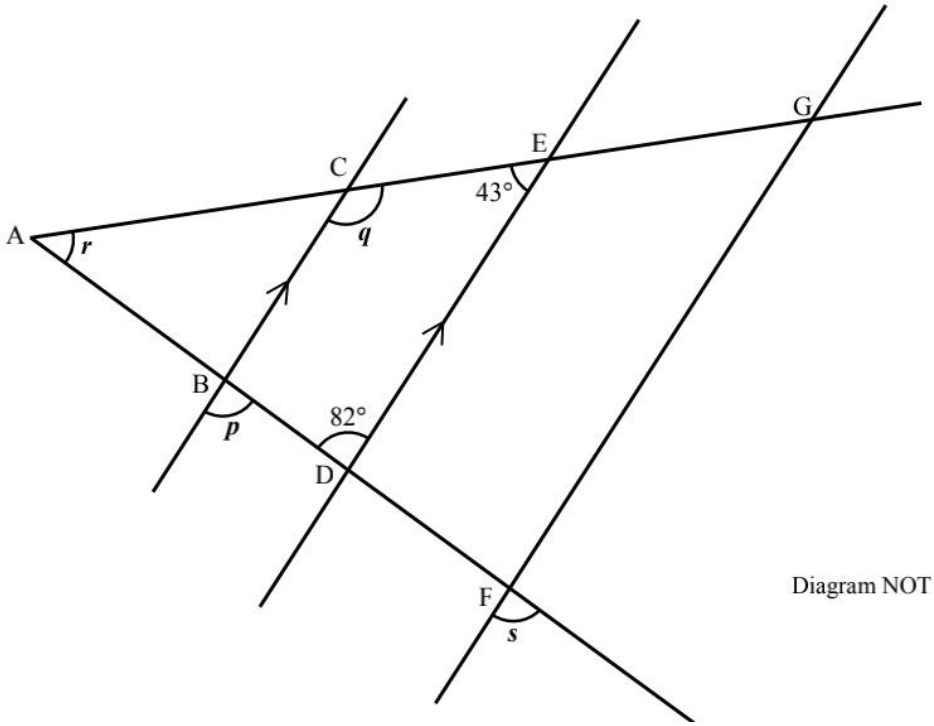


Diagram NOT to scale

a) Underline 2 lines which are parallel to each other:

AB AC BC DE DF FG EG

b) $\angle p =$ _____ ° ; Reason _____

$\angle q =$ _____ ° ; Reason _____

$\angle r =$ _____ ° ; Reason _____

c) $\angle CED = 43°$. On the diagram, mark with an X any other angle which is equal to 43°.

d) Angle s is equal to 82°. Explain why the lines FG and DE are parallel.

(10 marks)

10) Consider the following diagram.

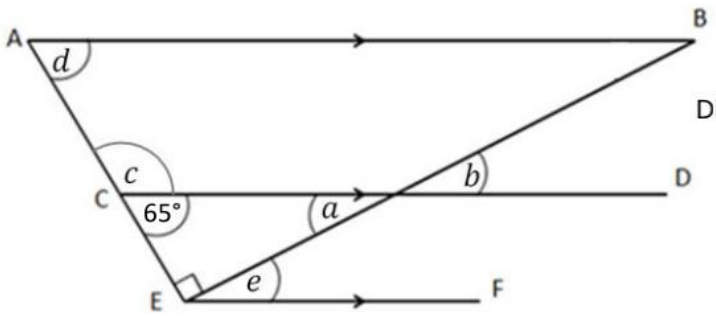


Diagram not drawn to scale

a) Line AB is parallel to lines _____ and _____.

b) Calculate the values of angles a, b, c, d and e.
Give reasons for your answers.

a = _____ °

Reason: _____

b = _____ °

Reason: _____

c = _____ °

Reason: _____

d = _____ °

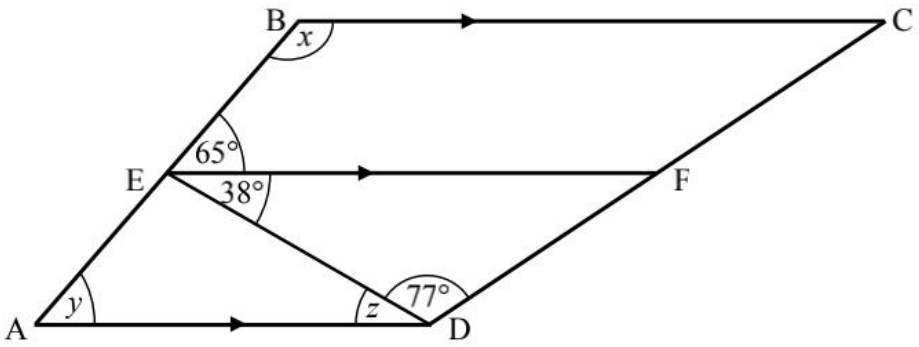
Reason: _____

e = _____ °

Reason: _____

(11 marks)

11) ABCD is a quadrilateral. E and F are two points on AB and DC respectively such that AD, EF and BC are parallel to each other. Angle BEF = 65°, angle DEF = 38° and angle EDF = 77°.



a) Find the value of angles ***x***, ***y*** and **z**.

Angle *x* = _____

Reason: _____

Angle *y* = _____

Reason: _____

Angle z = _____

Reason: _____

b) Explain why AB is parallel to DC.

_____

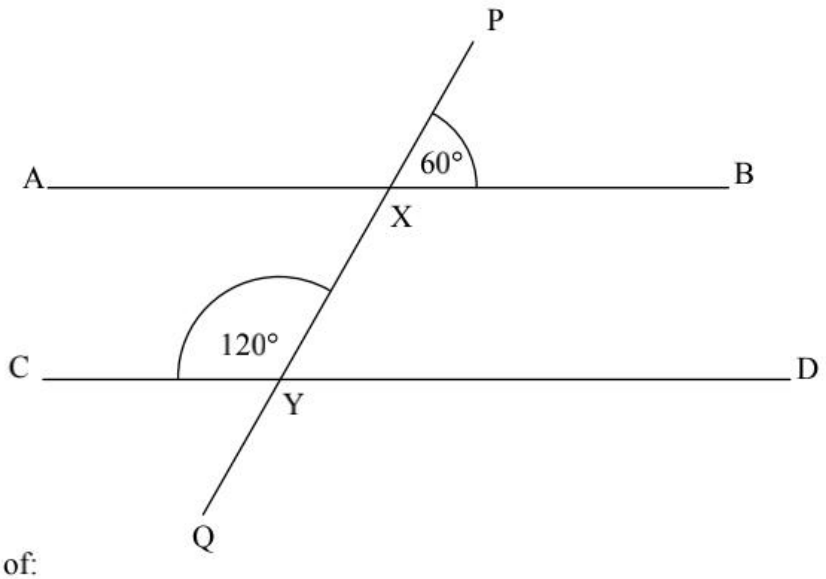
_____

c) What type of quadrilateral is EBCD?

_____

(8 marks)

12) The pair of lines **AB** and **CD** are cut by the line **PQ** at **X** and **Y**. The angle **CYX** =120° and angle **BXP** =60°.



Find the size of:

(i) angle **AXP**

Ans: _____

(ii) angle **BXY**

Ans: _____

(iii) angle **DYX**

Ans: _____

(iv) What can I say about the lines **AB** and **CD**?

AB and **CD** are _____

(8 marks)

13) (i) In the diagram below, find the size of angle p.

Justify your answer with clear geometric reasoning.

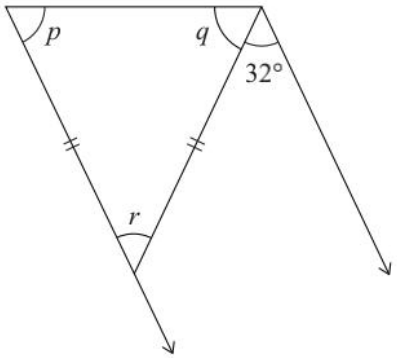


Diagram is NOT to scale

[3]

(ii) In the diagram below, find an expression for angle p in terms of w only.

Justify your answer with clear geometric reasoning.

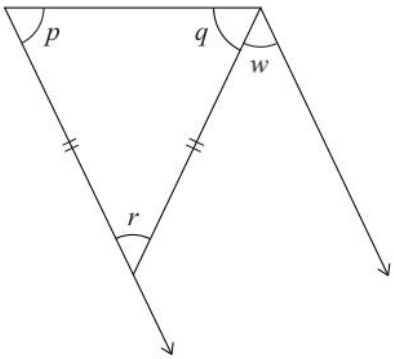


Diagram is NOT to scale

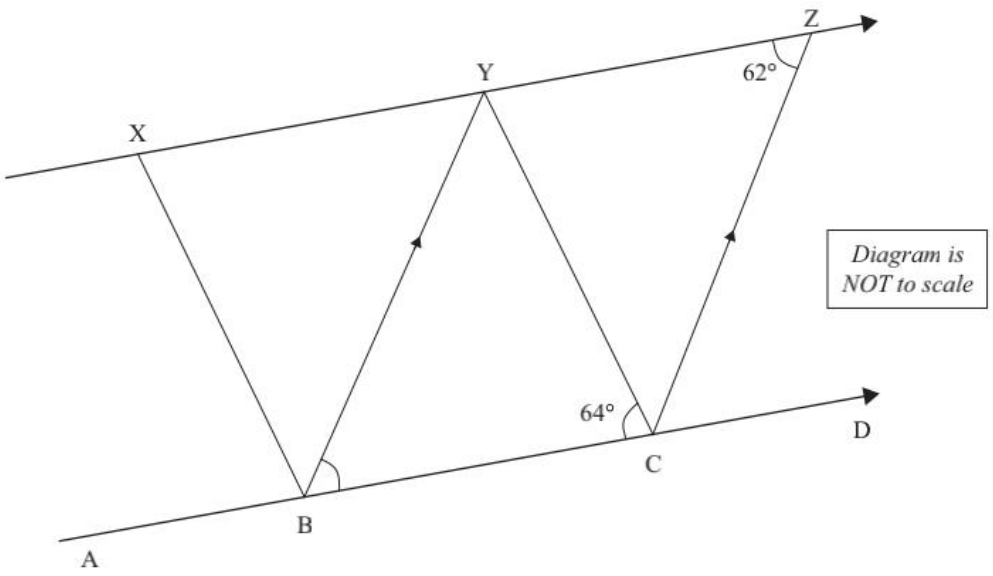
[4]

14) Metal railings are fitted to the edge of a deck.

XZ is parallel to AD.

BY is parallel to CZ.

One section of railing is shown in the diagram below:



(i) Find the size of angle YBC.

Give geometric reasons for each step in your solution.

(ii) XYB is an isosceles triangle.

Use geometric reasoning for each step to show that XB and YC cannot be parallel.

(8 marks)