



4.10F Angles in Parallel Lines: Foundation Tier Practice

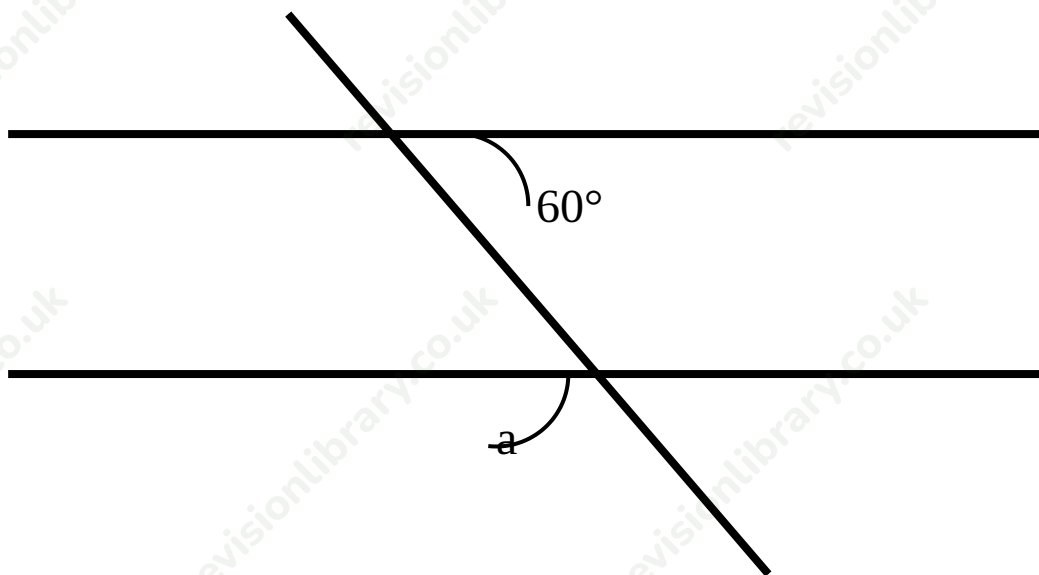
EDEXCEL Edexcel 1MA1 · Calculator allowed · about 50 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Two parallel lines are cut by a transversal. Angle a is vertically opposite to a given angle of 60 degrees. Work out the size of angle a.

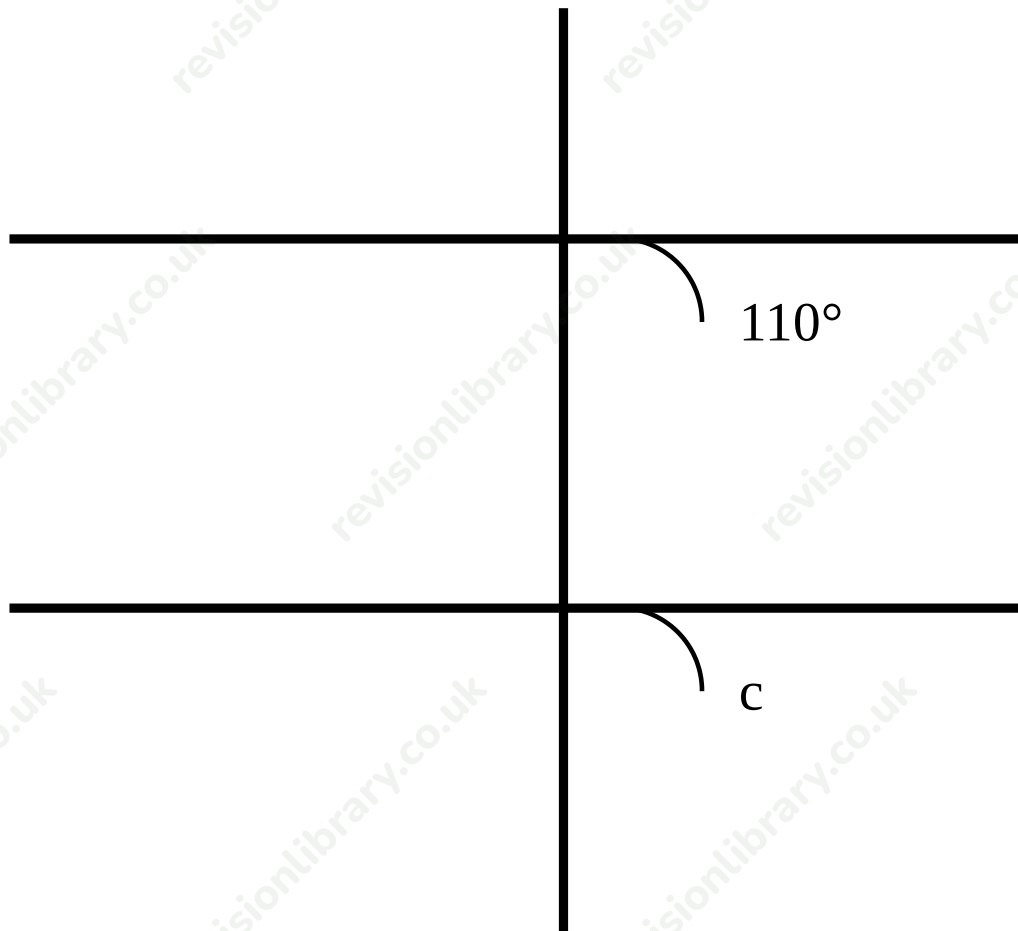


(a) Work out the size of angle a.

(2)

.....
(Total for Question 1 is 2 marks)

- 2 Lines l and m are parallel. A transversal cuts them. An angle labelled b on line l is 110° and is interior on the same side of the transversal as angle c on line m . Work out angle c .

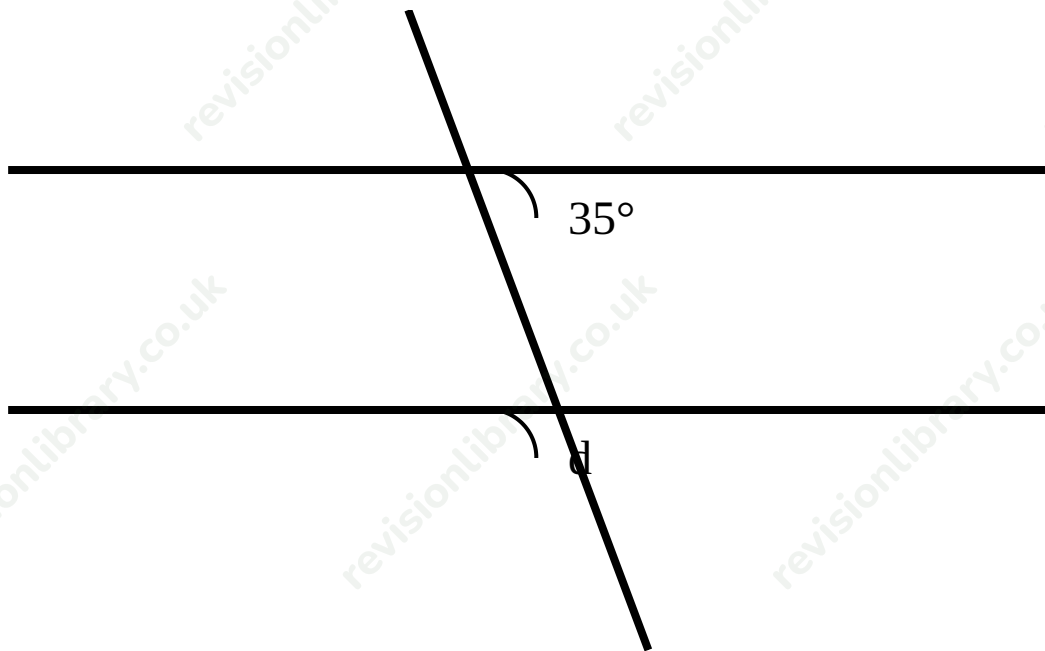


- (a) Work out the size of angle c . Give a brief reason.

(3)

(Total for Question 2 is 3 marks)

- 3** A pair of parallel lines is cut by a transversal. Angle d is corresponding to a given angle of 35° . Work out angle d.

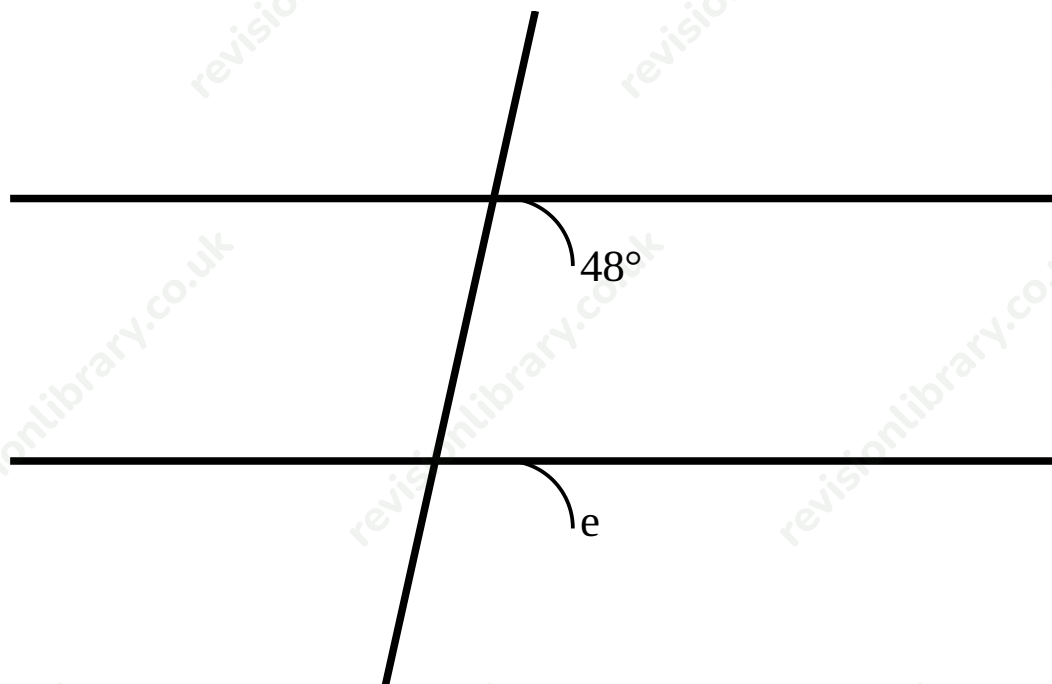


- (a)** Work out the size of angle d.

(2)

.....
(Total for Question 3 is 2 marks)

- 4 Two parallel lines are cut by a transversal. At the upper intersection one acute angle is 48° . Find the obtuse angle e at the lower intersection which is co-interior with the 48° angle.

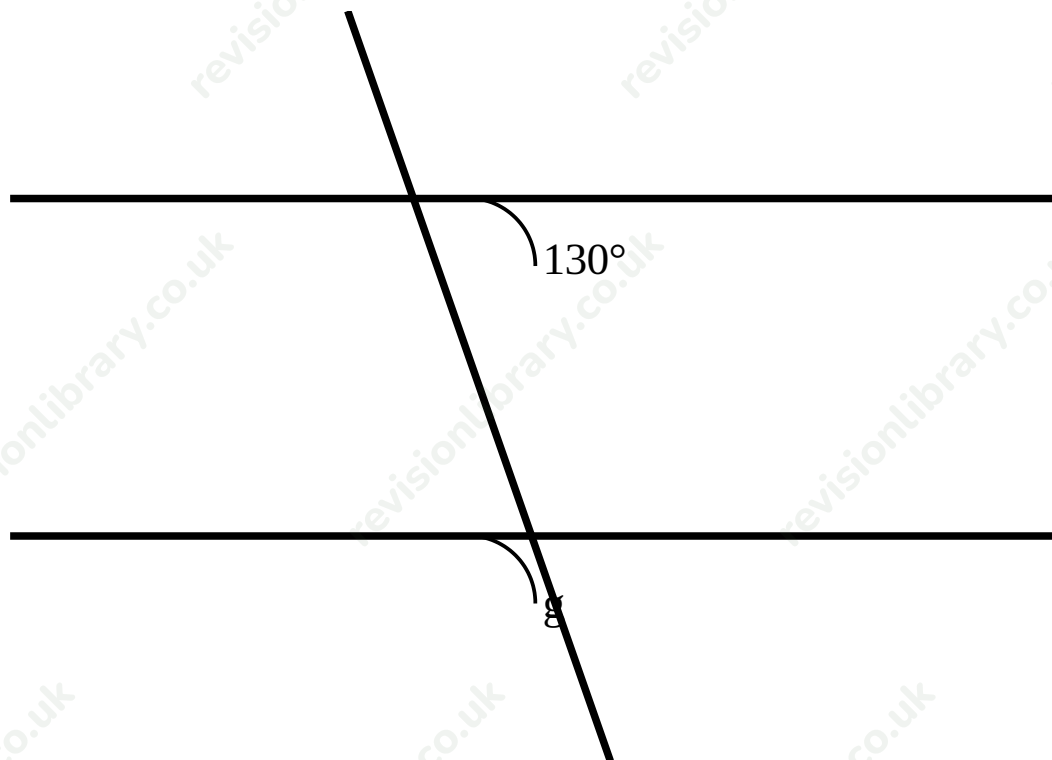


- (a) Work out the size of angle e . Give a short reason.

(4)

(Total for Question 4 is 4 marks)

- 5 A transversal crosses two parallel lines. At the top intersection an exterior angle f is 130° degrees. At the lower intersection the interior adjacent angle g is next to f on the same side of the transversal. Work out the size of angle g , then explain briefly why your answer is correct.

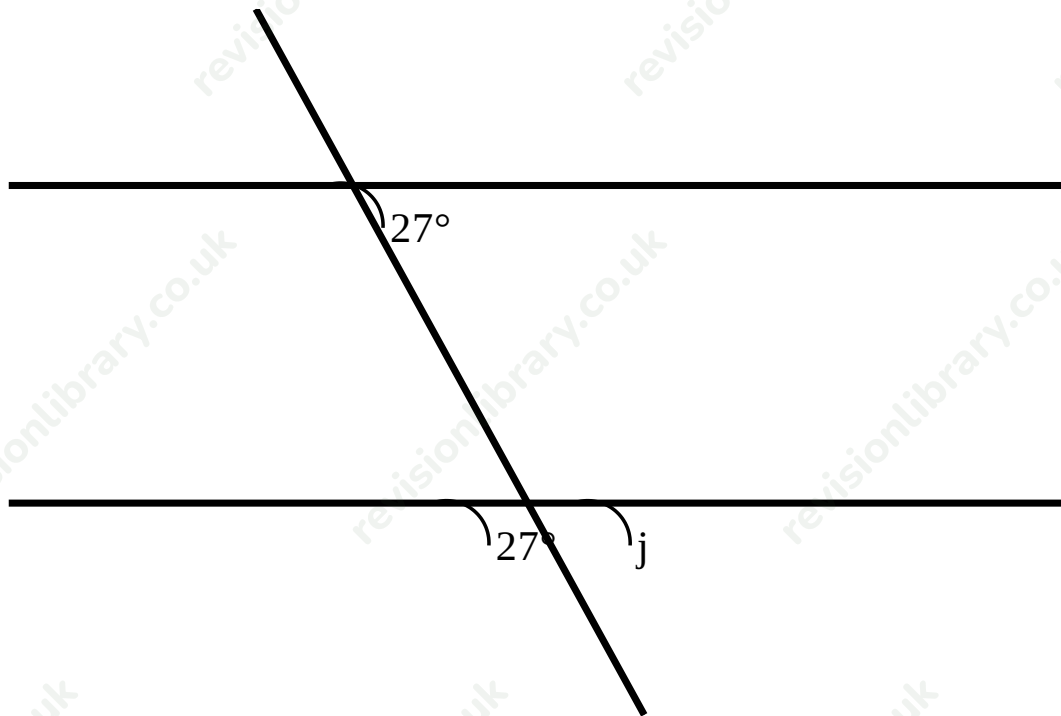


- (a) Work out the size of angle g . (3)

- (b) Give a brief reason for your answer to part (a). (2)

(Total for Question 5 is 5 marks)

- 6** A transversal meets two parallel lines. Angle h at the top left intersection is 27° . Angle j at the bottom right intersection is vertically opposite to an angle corresponding to h . Work out angle j .

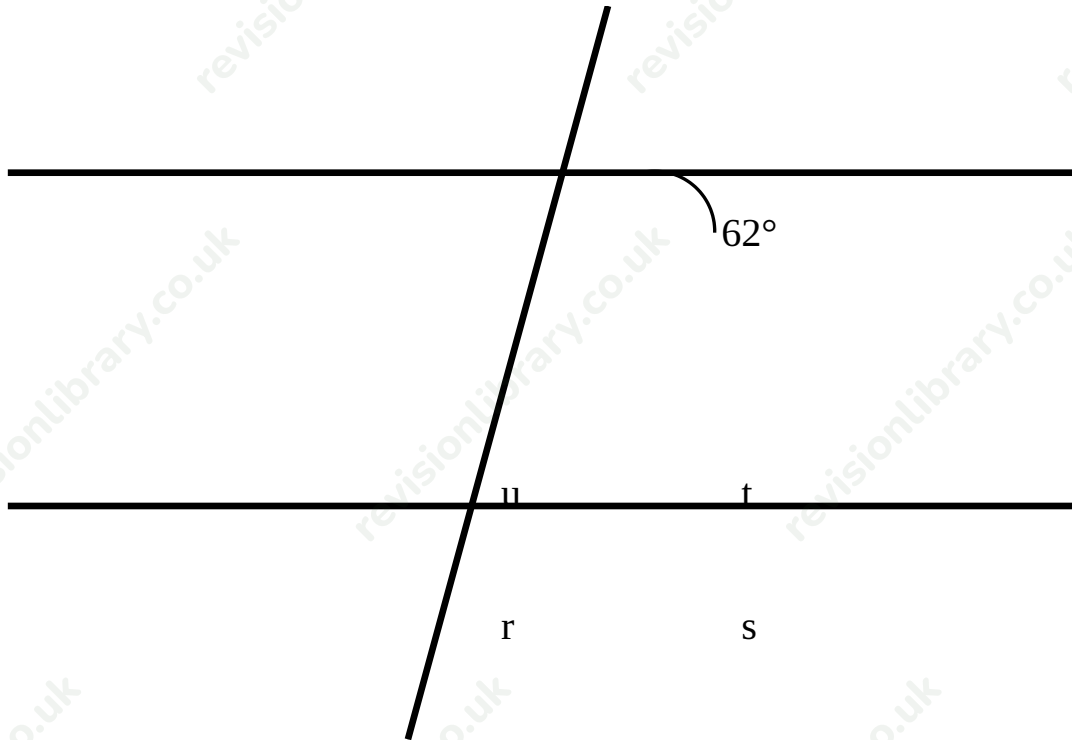


- (a)** Work out the size of angle j . Show your reasoning in two short steps.

(5)

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(Total for Question 6 is 5 marks)

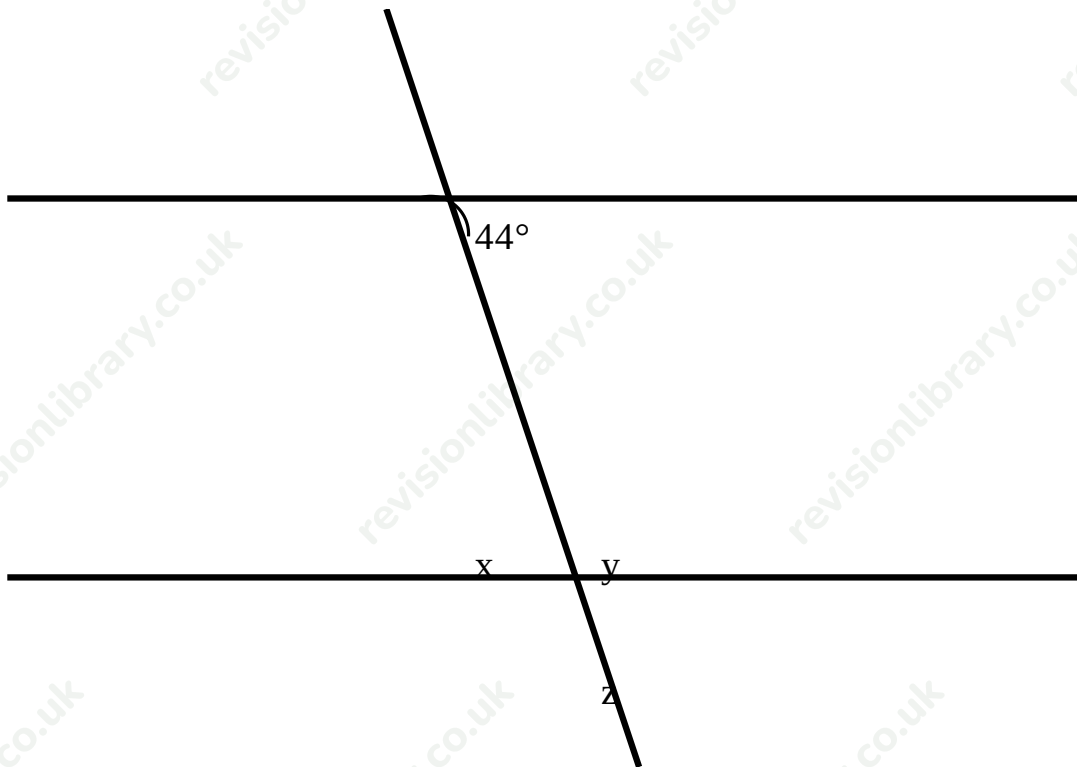
- 7 In the diagram two parallel lines are cut by a transversal. Angle p at the top right is 62 degrees. At the lower intersection there are four labelled angles: r (lower left), s (lower right), t (upper right) and u (upper left).



- (a) Work out the size of angle t. (2 marks) (2)
- (b) Work out the sizes of r and s. Show the steps. (4 marks) (4)

(Total for Question 7 is 6 marks)

- 8** A student is given the diagram of two parallel lines cut by a transversal. At the top intersection angle m is 44 degrees. At the lower intersection three angles are labelled: x (upper left), y (upper right) and z (lower right).



- (a)** Work out the size of x . Give a short reason. (6 marks) **(6)**

- (b)** Work out the sizes of y and z . Show each step clearly. (7 marks) **(7)**

(Total for Question 8 is 13 marks)

Mark scheme · 4.10F Angles in Parallel Lines: Foundation Tier Practice

Question 1

- (a) **B1** identify vertically opposite angles are equal or state $a = 60$ degrees
- (a) **B1** final answer 60 degrees cao
- (a) **Answer: 60 degrees**

Question 2

- (a) **M1** identify that co-interior angles sum to 180 degrees (supplementary) or state relation
- (a) **A1** 70 degrees cao
- (a) **B1** reason: co-interior angles sum to 180 degrees oe
- (a) **Answer: 70 degrees**

Question 3

- (a) **B1** identify corresponding angles are equal or state $d = 35$ degrees
- (a) **B1** final answer 35 degrees cao
- (a) **Answer: 35 degrees**

Question 4

- (a) **M1** identify co-interior angles sum to 180 degrees or state relation
- (a) **M1** compute $180 - 48 = 132$
- (a) **A1** 132 degrees cao
- (a) **B1** reason: co-interior angles on the same side of the transversal sum to 180 degrees oe
- (a) **Answer: 132 degrees**

Question 5

- (a) **M1** recognise that exterior angle 130 corresponds to an obtuse interior or use supplementary relation depending on position
- (a) **M1** compute $180 - 130 = 50$ or identify equal alternate/corresponding relation as appropriate
- (a) **A1** 50 degrees cao
- (a) **Answer: 50 degrees**
- (b) **B1** state that interior and exterior angles on a straight line sum to 180 degrees or that corresponding angles are equal, making $g = 50$ degrees
- (b) **B1** final statement linking the two intersections via parallel lines (e.g. corresponding angles equal or co-interior supplementary)
- (b) **Answer: Because the interior and exterior angles on a straight line sum to 180 degrees, and corresponding positions on parallel lines are equal, so $g = 180 - 130 = 50$ degrees.**

Question 6

- (a) **M1** identify that corresponding angle to h is equal to 27 degrees
- (a) **M1** identify that j is vertically opposite to that corresponding angle
- (a) **A1** state $j = 27$ degrees cao
- (a) **B1** give short reasoning e.g. corresponding angles equal and vertically opposite angles equal
- (a) **B1** final answer justified (explicit link: $j = \text{corresponding angle} = h = 27$ degrees)
- (a) **Answer: 27 degrees**

Question 7

- (a) **M1** identify t corresponds to p or is equal to 62 degrees by corresponding/alternate reasoning
- (a) **A1** 62 degrees cao
- (a) **Answer: 62 degrees**
- (b) **M1** identify r is vertically opposite t (equal) or use relation $r + u = 180$ depending on chosen route
- (b) **M1** calculate $u = 180 - t = 180 - 62 = 118$ or state $u = 118$
- (b) **A1** $r = 62$ degrees cao
- (b) **A1** $s = u = 118$ degrees cao (s is vertically opposite u)
- (b) **Answer: $r = 62$ degrees, $s = 118$ degrees**

Question 8

- (a) **M1** identify that x is corresponding to m (or alternate depending on orientation) so equal to 44 degrees
- (a) **M1** state equality: $x = 44$
- (a) **A1** 44 degrees cao
- (a) **B1** give reason: corresponding angles are equal when lines are parallel
- (a) **B1** clarify link to the diagram (e.g. ' x is in the corresponding position to m ')
- (a) **B1** final clear statement $x = 44$ degrees
- (a) **Answer: 44 degrees**
- (b) **M1** identify that y is adjacent to x along the parallel line, so x and y are supplementary
- (b) **M1** compute $y = 180 - 44 = 136$ degrees
- (b) **M1** identify that z is vertically opposite to x on the straight line at the lower intersection
- (b) **M1** compute $z = 44$ degrees (equal to x , vertically opposite)
- (b) **A1** $y = 136$ degrees cao
- (b) **A1** $z = 44$ degrees cao
- (b) **B1** final statement linking steps clearly (e.g. ' $x + y = 180$ so $y = 136$, z is vertically opposite x so $z = 44$ ')
- (b) **Answer: $y = 136$ degrees, $z = 44$ degrees**