High School Mathematics Test 2013

Year 9

Basic Geometry

Non Calculator

Skills and Knowledge Assessed:

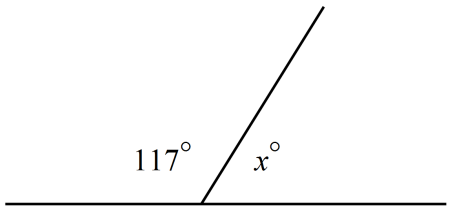
- Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163)
- Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164)
- Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166)
- Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165)
- Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning (ACMMG202)

Name_____

Section 1 Short Answer Section

In all questions, give reason(s) for your answer.
Write all working and answers in the spaces provided on this test paper.
DIAGRAMS ARE NOT TO SCALE.

1. Find the value of x.



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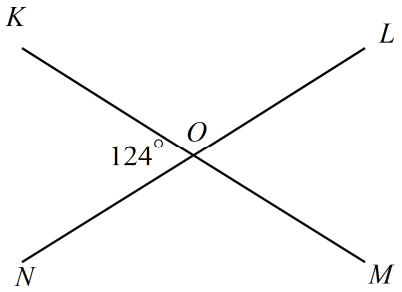
2. Find the size of $\angle LOM$.



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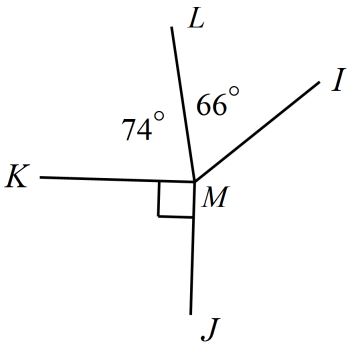
3. Find the size of $\angle IMJ$.



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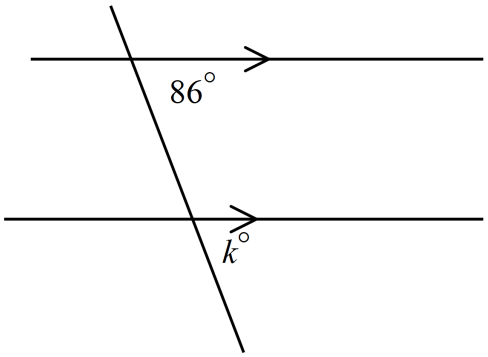
4. Find the value of k.



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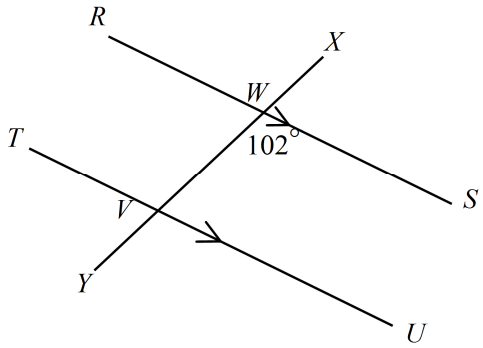
5. What is the size of $\angle UVW$?



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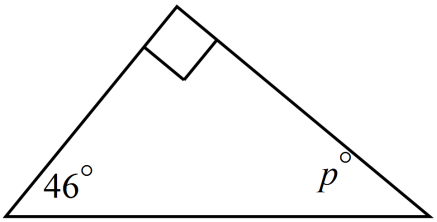
6. What is the value of p ?



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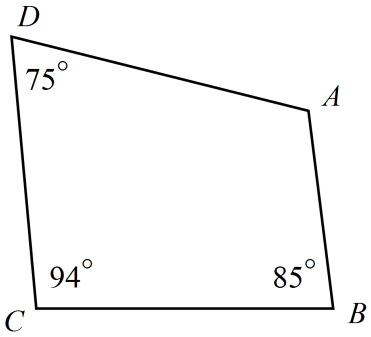
7. What is the size of $\angle DAB$?



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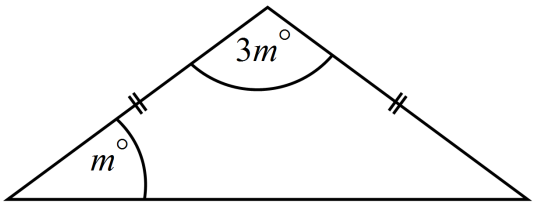
8. What is the value of m ?



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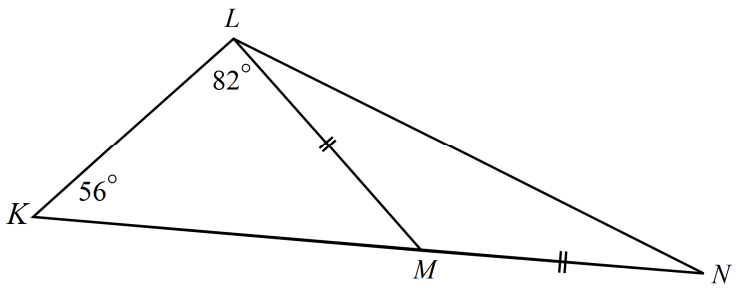
9. What is the size of $\angle LNM$?



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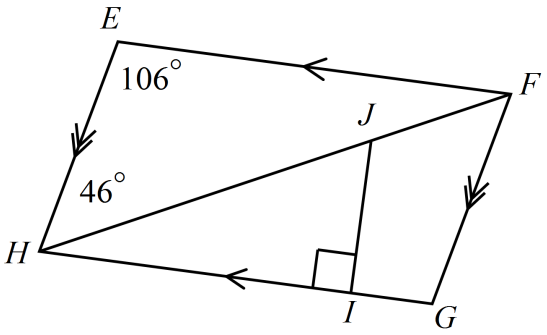
10. *EFGH* is a parallelogram with its diagonal *FH* drawn.
IJ is perpendicular to *GH*.
What is the size of $\angle FJI$?



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High School
Mathematics Test 2013
Basic Geometry

Calculator Allowed

Year 9

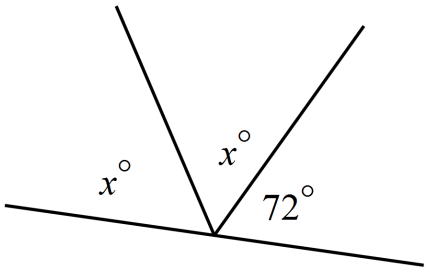
Name_____

Section 2 Multiple Choice Section

Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section.

DIAGRAMS ARE NOT TO SCALE.

1. What is the value of x ?



A. 36
B. 54
C. 72
D. 108

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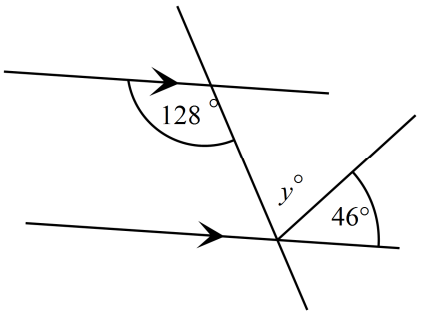
2. What is the value of y ?



A. 44
B. 46
C. 82
D. 128

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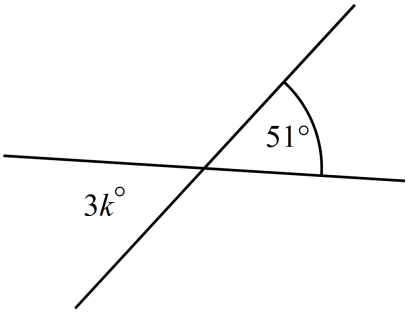
3. What is the value of k ?



A. 17
B. 43
C. 51
D. 153

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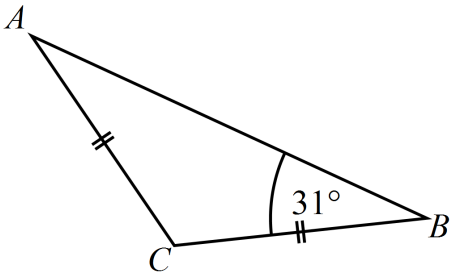
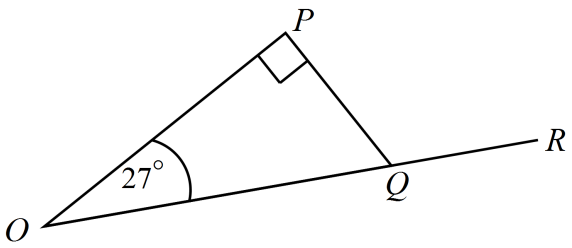
4. Which is the most accurate description of ΔABC ?



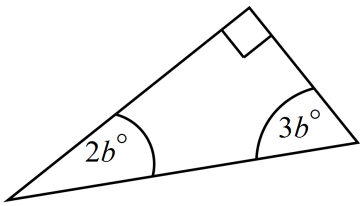
A. An acute isosceles triangle.
B. An acute scalene triangle.
C. An obtuse isosceles triangle.
D. An obtuse scalene triangle.

5. What is the size of $\angle PQR$?



A. 27^o
B. 54^o
C. 63^o
D. 117^o

6. What is the value of b ?

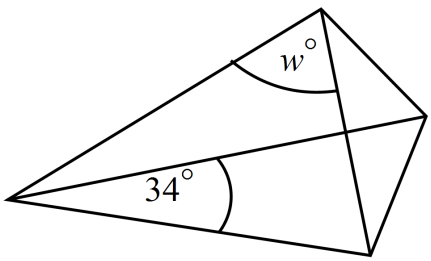


A. 18
B. 36
C. 85
D. 175

7. Which of these is not a property of all rhombuses?

A. All sides are equal.
B. The diagonals are equal in length.
C. The diagonals are perpendicular.
D. The opposite sides are parallel.

8. The figure shown is a kite.
The diagonals of the kite have been drawn.
What is the value of w?



A. 34
B. 56
C. 90
D. 124

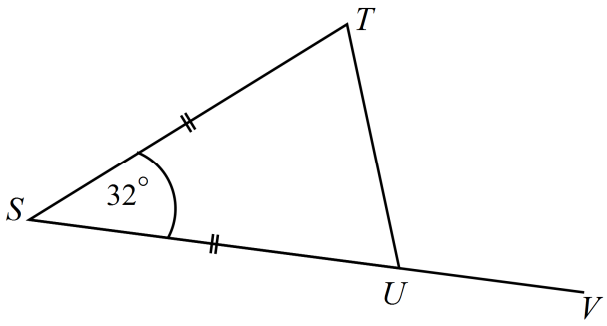
9. What is the size of $\angle TUV$?

A. 32^o

B. 74^o

C. 106^o

D. 148^o



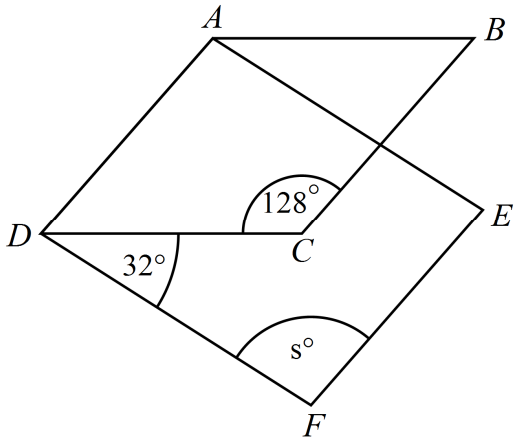
10. Quadrilateral ABCD is a rhombus and quadrilateral AEFD is a parallelogram.
What is the value of s ?

A. 32

B. 52

C. 84

D. 96



High School
Mathematics Test 2013
Basic Geometry

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Calculator Allowed

Name_____

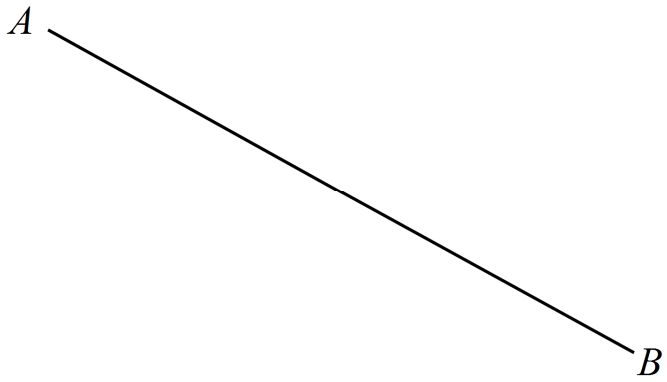
Section 3 Longer Answer Section

For these constructions, complete the diagrams in the spaces provided on this test paper.
Leave all construction lines in place to show how you obtained your result.

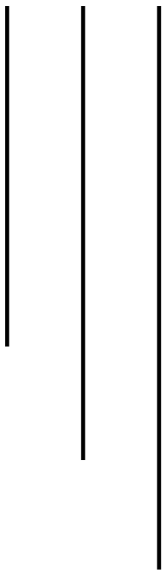
Marks

1. Complete the constructions below using only a pair of compasses and rule (straight edge).

a) Draw the perpendicular bisector of AB. **2**



b) Construct a triangle whose sides are the three intervals below. Label it as ΔPQR. **2**



High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name _____

Completely fill the response oval representing the most correct answer.

1.	A ⬭	B ⬭	C ⬭	D ⬭
2.	A ⬭	B ⬭	C ⬭	D ⬭
3.	A ⬭	B ⬭	C ⬭	D ⬭
4.	A ⬭	B ⬭	C ⬭	D ⬭
5.	A ⬭	B ⬭	C ⬭	D ⬭
6.	A ⬭	B ⬭	C ⬭	D ⬭
7.	A ⬭	B ⬭	C ⬭	D ⬭
8.	A ⬭	B ⬭	C ⬭	D ⬭
9.	A ⬭	B ⬭	C ⬭	D ⬭
10.	A ⬭	B ⬭	C ⬭	D ⬭

High School
Mathematics Test 2013
Basic Geometry

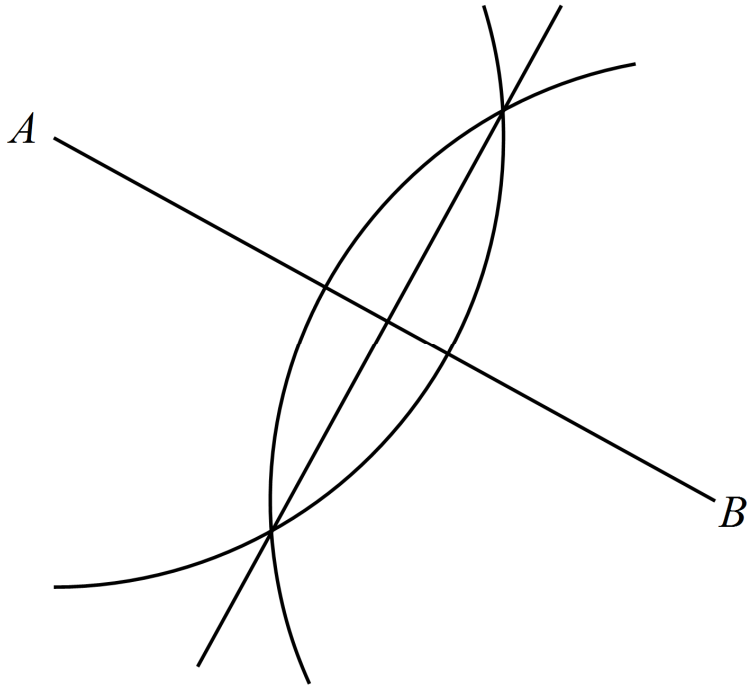
ANSWERS

Section 1	
1.	$x = 180 - 117 = 63$ (supplementary angles)
2.	$\angle \text{LOM} = 124^\circ$ (vertically opposite angles)
3.	$\angle IMJ = 360 - (74 + 66 + 90) = 360 - 230 = 130^\circ$ (angles at a point)
4.	$k = 86^\circ$ (corresponding angles)
5.	$\angle UVW = 180 - 102 = 78^\circ$ (cointerior angles)
6.	$p = 180 - (46 + 90) = 180 - 136 = 44^\circ$ (angle sum Δ)
7.	$\angle DAB = 360 - (75 + 94 + 85) = 360 - 254 = 106^\circ$ (angle sum quadrilateral)
8.	$3m + m + m = 180^\circ$ (angle sum of isosceles Δ) $5m^\circ = 180^\circ$ $m = \frac{180}{5} = 36^\circ$
9.	$\angle \text{L}MN = 82 + 56 = 138^\circ$ (exterior angle of triangle) $\angle \text{L}NM = \text{ML}N$ (base angles of isosceles Δ) $2 \times \angle \text{L}NM + 138 = 180$ (angle sum Δ) $2 \times \angle \text{L}NM = 180 - 138 = 42$ $\angle \text{L}NM = \frac{42}{2} = 21^\circ$ You may wish to award 2 marks for this question.
10.	$\angle IGF = \angle HEF - 106^\circ$ (opposite angles of a parrallelogram are equal) $\angle GFJ = \angle EHF = 46^\circ$ (alternate angles on parrallel lines are equal) $\angle JIG = \angle JIH = 90^\circ$ (equal supplementary angles) $\angle FJI = 360 - (106 + 46 + 90)$ (angle sum of quadrilateral) $\angle FJI = 360 - 242 = 118^\circ$ You may wish to award 2 marks for this question.

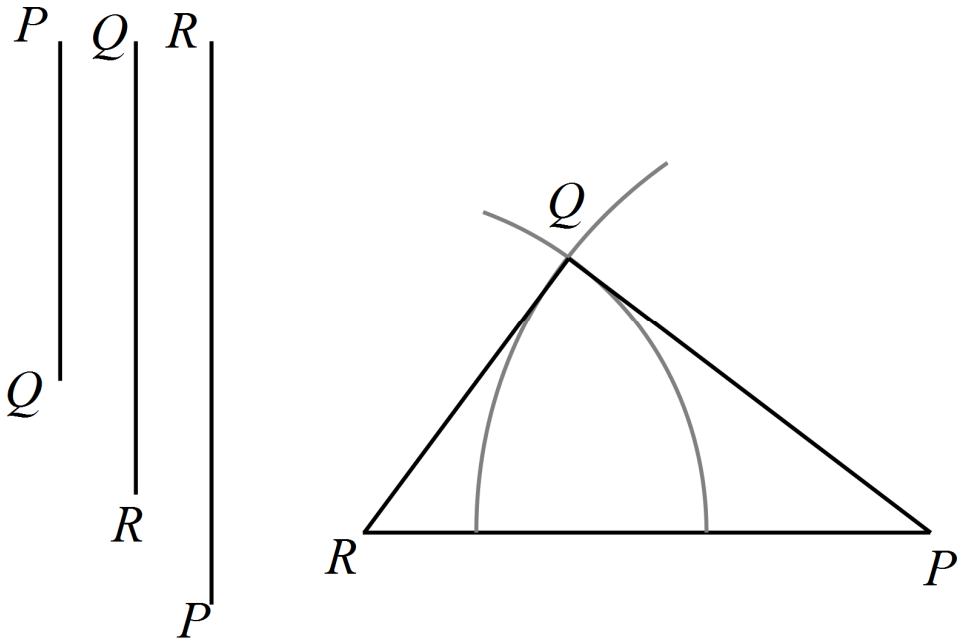
Section 2	
1.	B
2.	C
3.	A
4.	C
5.	D
6.	A
7.	B
8.	B
9.	C
10.	D

Section 3

a)



b)



High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name Marking Sheet

Completely fill the response oval representing the most correct answer.