High School Mathematics Test 2013

Year 8

Polygons & Circles

Non Calculator Section

Name_____

Skills and Knowledge Assessed:

- Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165)
- Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166)
- Investigate the relationship between features of circles such as circumference, area, radius and diameter. (ACMMG197)

Answer all questions in the spaces provided on this test paper by:

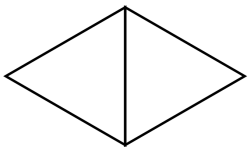
Writing the answer in the box provided.

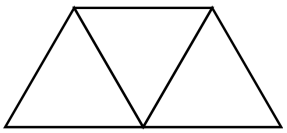
or

Shading in the bubble for the correct answer from the four choices provided.

Show any working out on the test paper.

1. Identical tiles in the shape of equilateral triangles have been used to make the shapes shown.
What are the names of the shapes?





- ☐ A kite and a parallelogram.
- ☐ A kite and a trapezium.
- ☐ A rhombus and a parallelogram.
- ☐ A rhombus and a trapezium.

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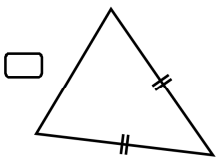
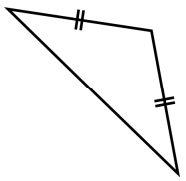
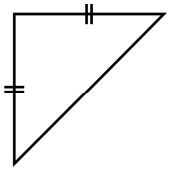
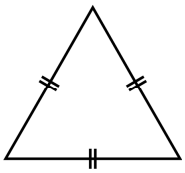
2. Which figure shows an acute isosceles triangle?









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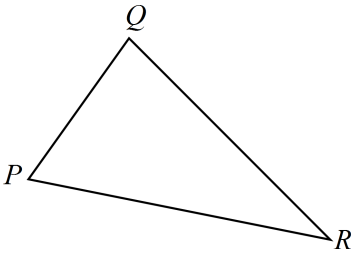
3. Which of the following could be used to describe this shape?



- ☐ $\angle PQR$
- ☐ ΔPQR
- ☐ $\therefore PQR$
- ☐ $\perp PQR$

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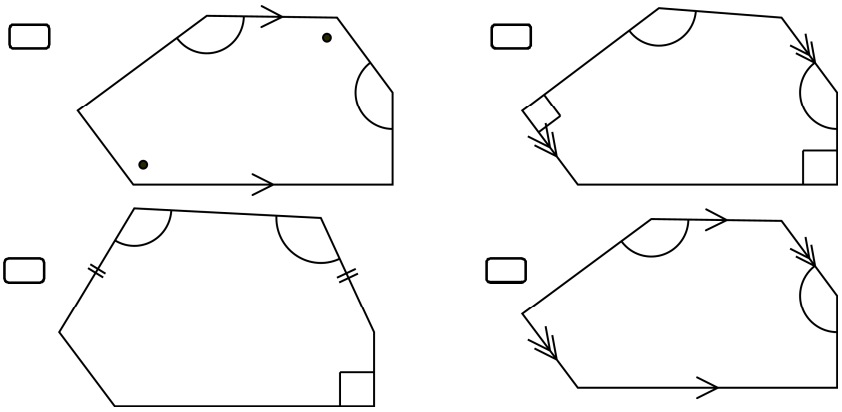
4. Which polygon has two pairs of parallel sides and one pair of equal angles?

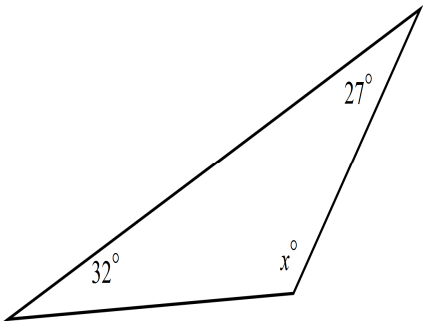


5. Which of the following is true of an acute isosceles triangle?

- ☐ The angle sum is 360^o.
- ☐ All the angles are acute.
- ☐ There are three equal sides.
- ☐ There are three equal angles.

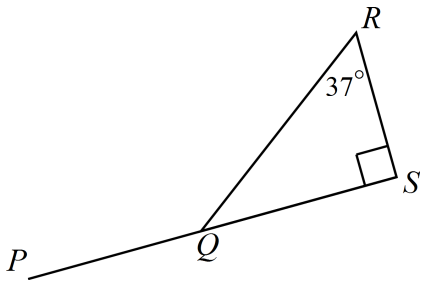
6. The value of x is:

- ☐ 32°
- ☐ 59°
- ☐ 121°
- ☐ 148°



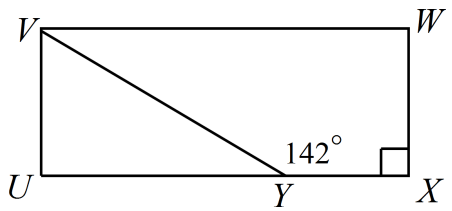
7. What is the size of the exterior angle PQR?

$\angle PQR =$ ☐ o



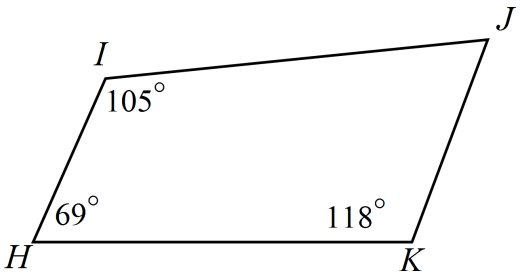
8. $UVWX$ is a rectangle.
$\angle VYX = 135^\circ$
What is the size of $\angle UVY$?

$\angle UVY =$ ☐ o



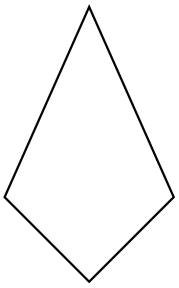
9. What is the size of angle *IJK*?

$\angle IJK =$ ☐ °



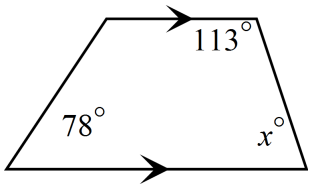
10. Which of the following is not true of kite?

- ☐ The angle sum is 360°.
- ☐ The diagonals intersect at 90°.
- ☐ There is only one pair of equal sides.
- ☐ There is only one pair of equal angles.



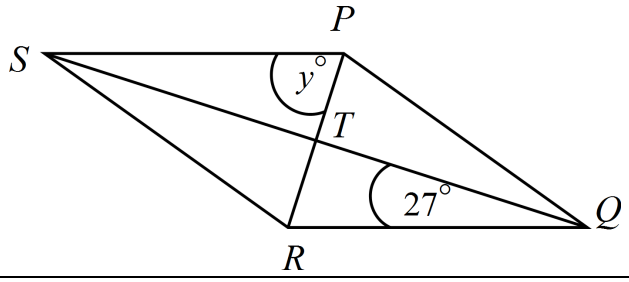
11. The figure shown is a trapezium.
What is the value of *x*?

$\theta =$ ☐ °



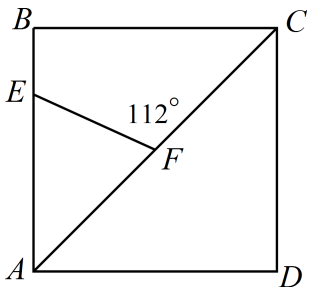
12. *PQRS* is a rhombus. The diagonals intersect at *T*. What is the value of *y*?

$y =$ ☐

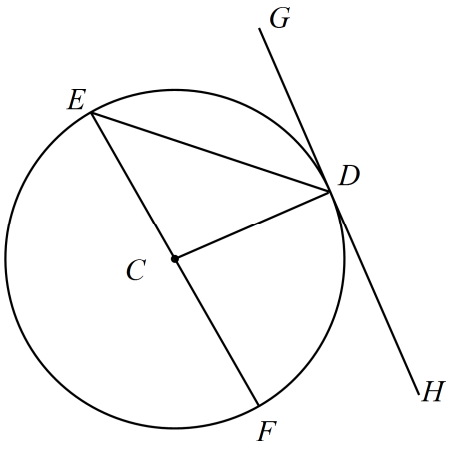


13. *ABCD* is a square and $\angle EFC = 112°$.
What is the size of $\angle AEF$?

$\angle AEF =$ ☐ °



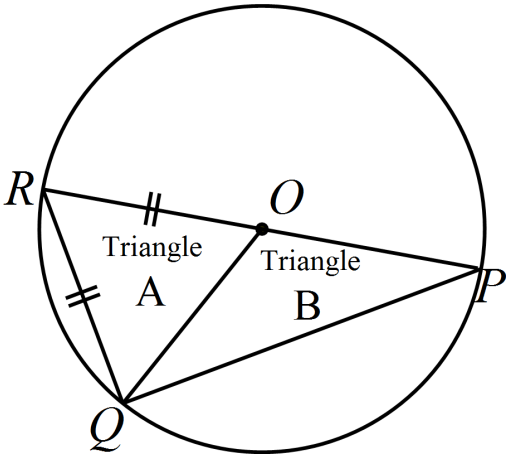
14. *C* is the centre of the circle.
D, E and *F* are points on the circumference.
The line *GH* touches the circle at *D*.



What name is given to the line *DE*?

- ☐ A chord.
- ☐ A diameter.
- ☐ A radius.
- ☐ A tangent.

15. *O* is the centre of the circle, and *P*, *Q* and *R* are points on the circumference.
OR = *RQ*.
PR is a diameter of the circle.



Kerry makes three statements about Triangle A and Triangle B.

Statement 1: Triangle A is equilateral.
Statement 2: Triangle B is scalene.
Statement 3: Triangle B is obtuse angled.

Which statements are true?

- ☐ Statements 1 and 2 are true.
- ☐ Statements 1 and 3 are true.
- ☐ Statements 2 and 3 are true.
- ☐ All three statements are true.

High School Mathematics Test 2013

Year 8

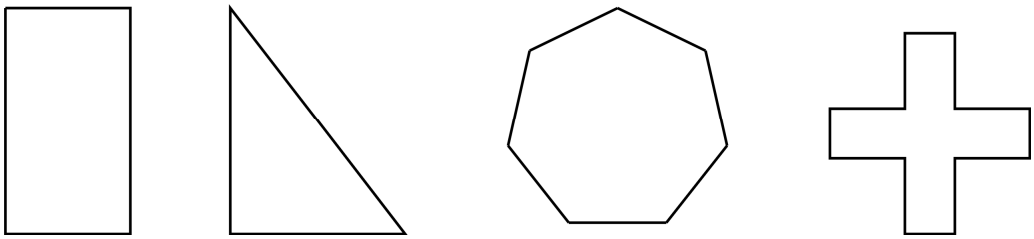
Polygons & Circles

Calculator Allowed Short Answer Section

Name_____

Answer all questions in the spaces provided on this test paper by:
Writing the answer in the box provided.
or
Shading in the bubble for the correct answer from the four choices provided.
Show any working out on the test paper. Calculators are allowed.

1. Which figure is a regular polygon?



☐ ☐ ☐ ☐

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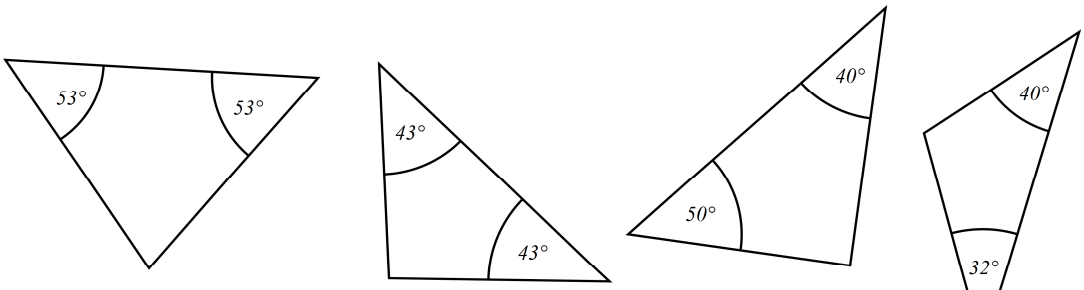
2. Which triangle below is an obtuse scalene triangle?



☐ ☐ ☐ ☐

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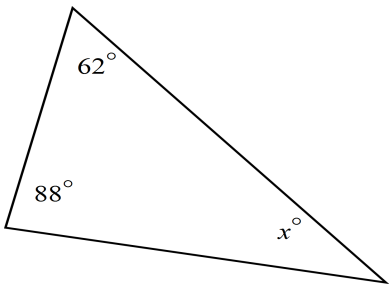
3. The value of x is:

☐ 30 ☐ 50

☐ 60 ☐ 150



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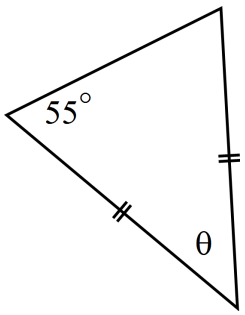
4. What is the size of the angle marked θ ?

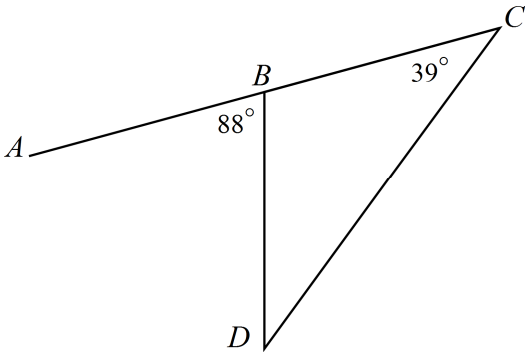
$\theta =$ ☐ o



5. AC is a straight line. What is the size of $\angle BDC$?

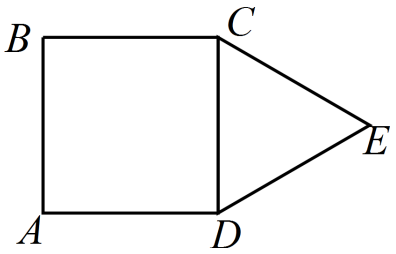
☐ 49° ☐ 53°

☐ 88° ☐ 127°



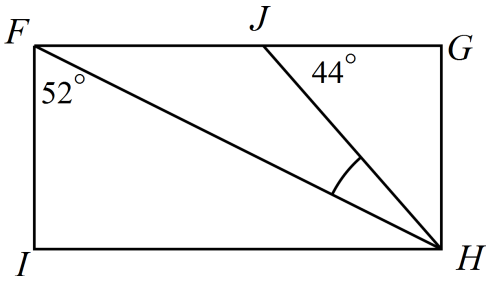
6. $ABCD$ is a square and CDE is an equilateral triangle.
What is the size of $\angle BCE$?

$\angle BCE =$ ☐ o



7. $FGHI$ is a rectangle.
J is a point on the side FG.
What is the size of $\angle FHJ$?

$\angle FHJ =$ ☐ o



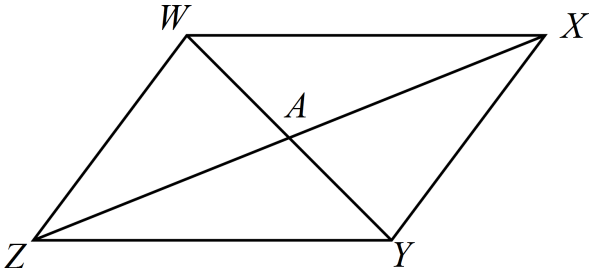
8. $WXYZ$ is a parallelogram.
Which statement is **not** true?

☐ A is the midpoint of WY.

☐ A is the midpoint of XZ.

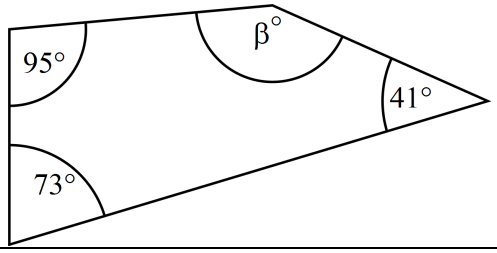
☐ $WX = ZY$.

☐ $WY = XZ$.



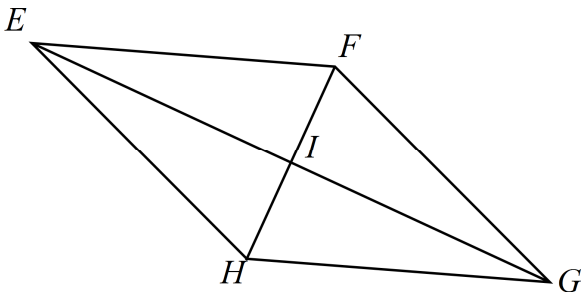
9. What is the value of β ?

$\beta =$ ☐ °



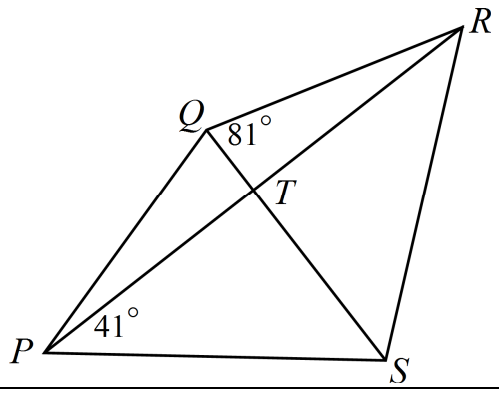
10. *EFGH* is a rhombus whose diagonals intersect at *I*.
Which is **not** true?

- ☐ $EF \parallel HG$.
- ☐ $FI = IH$.
- ☐ $HG \perp FH$.
- ☐ $EG \perp FH$.



11. PQRS is a kite, whose diagonals intersect at T.
$\angle RQT = 81^\circ$ and $\angle SPT = 41^\circ$.
Find the size of $\angle SPQ$.

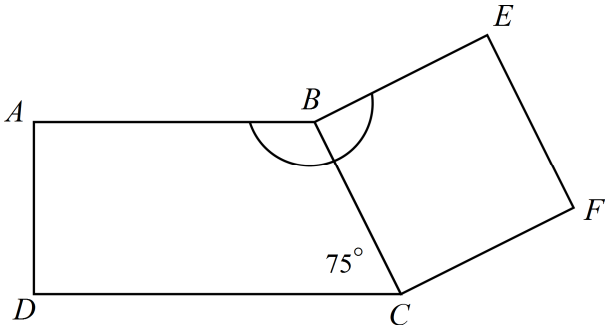
$\angle SPQ =$ ☐ °



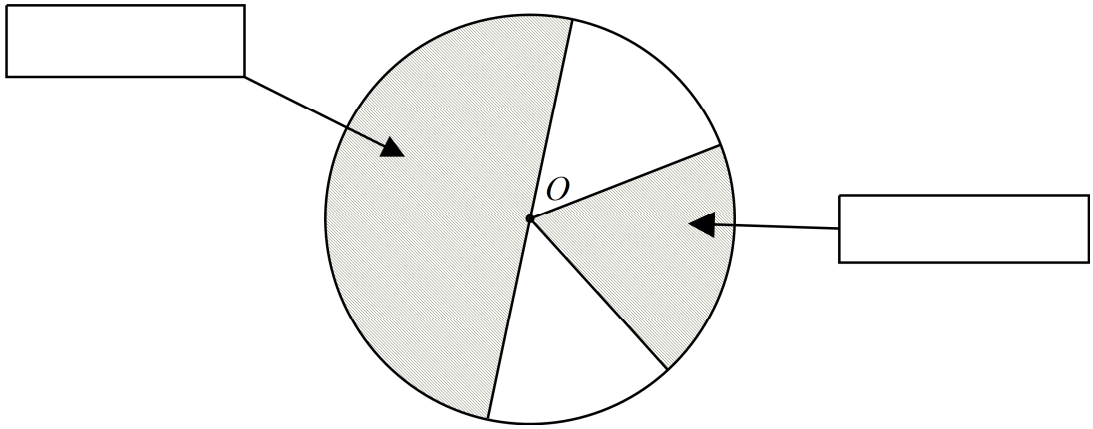
12. ABCD is a trapezium with AB||DC.
BEFC is a square.
$\angle BCD = 75^\circ$.

What is the size of the $\angle ABE$ indicated by the curve?

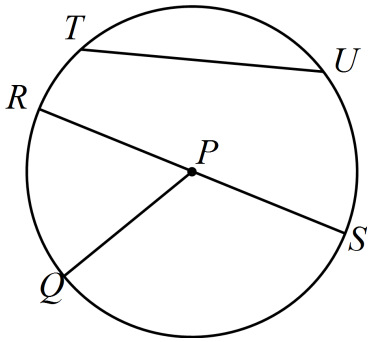
- ☐ 45° ☐ 75°
- ☐ 165° ☐ 195°



13. O is the centre of the circle.
Write the names that are given to the two shaded sections of the circle.



14. *P* is the centre of the circle.
Q, R, S, T and *U* are points on the circumference.
Which lines must be equal?

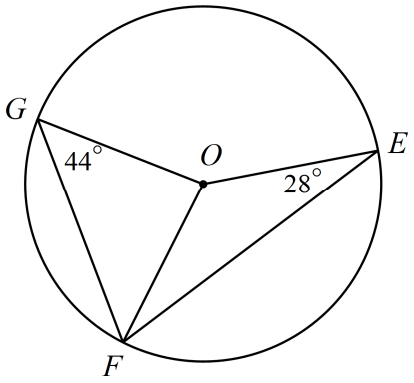


☐ *RP* and *PQ*. ☐ *RS* and *PQ*.

☐ *TU* and *PQ*. ☐ *PS* and *TU*.

15. *O* is the centre of the circle.
E, F and *G* are points on the circumference.
$\angle FGO = 44^\circ$ and $\angle FEO = 28^\circ$.

What is the size of $\angle GFE$?



$\angle GFE =$ ☐ o

High School Mathematics Test 2013

Year 8

Polygons & Circles

ANSWERS

Non Calculator Section

1.	A rhombus and a trapezium.
2.	The 1st one
3.	ΔPQR
4.	The last one.
5.	All the angles are acute.
6.	121°
7.	127^o
8.	52^o

9.	68^o
10.	There is only one pair of equal sides.
11.	67^o
12.	63^o
13.	67^o
14.	A chord.
15.	Statements 1 and 3 are true.

Calculator Allowed Section

1.	The 3rd one.
2.	The 4th one.
3.	30 (The 1st one)
4.	70^o
5.	49^o (The 1st one)
6.	150^o
7.	6^o
8.	$WY = XZ$.

9.	151^o
10.	$HG \perp FH$.
11.	50^o
12.	195°
13.	Semi-circle and sector.
14.	RP and PQ.
15.	72^o