PROOF USING LOGIC

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Higher Tier

1.

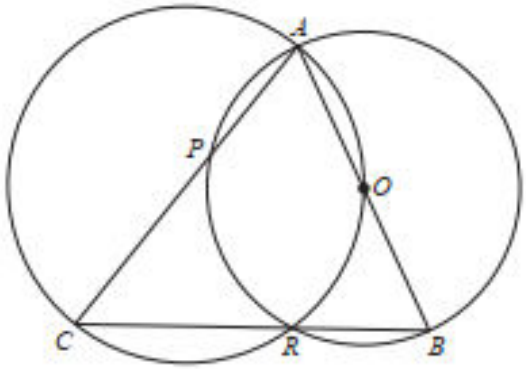
13 Given that n can be any integer such that $n > 1$, prove that $n^2 - n$ is never an odd number.

(Total for Question 13 is 2 marks)

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Higher Tier

2.

21



A, *B*, *R* and *P* are four points on a circle with centre *O*.
A, *O*, *R* and *C* are four points on a different circle.
The two circles intersect at the points *A* and *R*.

CPA, *CRB* and *AOB* are straight lines.

Prove that angle *CAB* = angle *ABC*.

(Total for Question 21 is 4 marks)

Pearson Edexcel - Thursday 24 May 2018 - Paper 1 (Non-Calculator) Higher Tier

3.

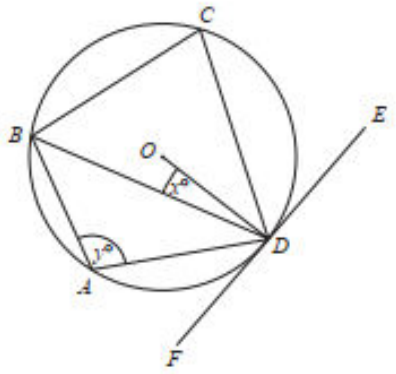
12 Prove that the square of an odd number is always 1 more than a multiple of 4

(Total for Question 12 is 4 marks)

Pearson Edexcel - Thursday 7 June 2018 - Paper 2 (Calculator) Higher Tier

4.

13



A, B, C and D are points on the circumference of a circle, centre O.
FDE is a tangent to the circle.

(a) Show that $y - x = 90$
You must give a reason for each stage of your working.

(3)

Dylan was asked to give some possible values for x and y.

He said,
"y could be 200 and x could be 110, because $200 - 110 = 90$"

(b) Is Dylan correct?
You must give a reason for your answer.

.....

.....

(1)

(Total for Question 13 is 4 marks)

Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Higher Tier

5.

19 A triangle has vertices P, Q and R.

The coordinates of P are $(-3, -6)$
The coordinates of Q are $(1, 4)$
The coordinates of R are $(5, -2)$

M is the midpoint of PQ.
N is the midpoint of QR.

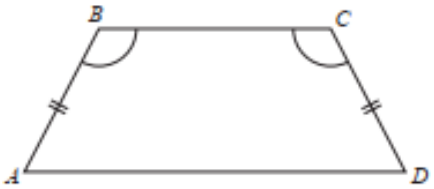
Prove that MN is parallel to PR.
You must show each stage of your working.

(Total for Question 19 is 4 marks)

Pearson Edexcel - Thursday 25 May 2017 - Paper 1 (Non-Calculator) Higher Tier

6.

21 $ABCD$ is a quadrilateral.



$AB = CD$.
Angle ABC = angle BCD.

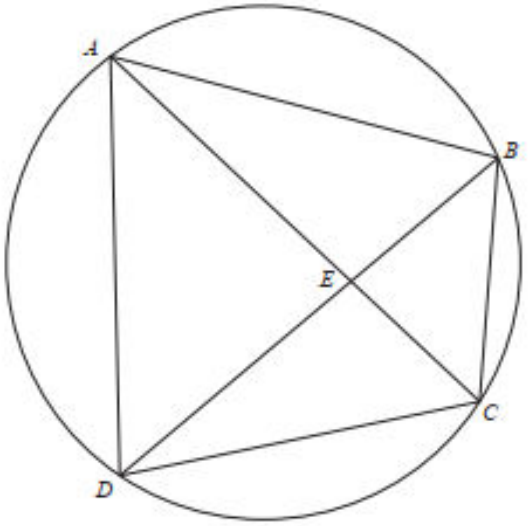
Prove that $AC = BD$.

(Total for Question 21 is 4 marks)

Pearson Edexcel - Thursday 8 June 2017 - Paper 2 (Calculator) Higher Tier

7.

15 A, B, C and D are four points on the circumference of a circle.



AEC and BED are straight lines.

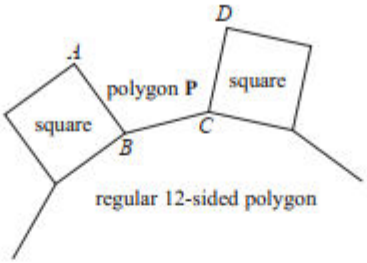
Prove that triangle ABE and triangle DCE are similar.
You must give reasons for each stage of your working.

(Total for Question 15 is 3 marks)

Pearson Edexcel - Tuesday 13 June 2017 - Paper 3 (Calculator) Higher Tier

8.

5 In the diagram, AB, BC and CD are three sides of a regular polygon **P**.



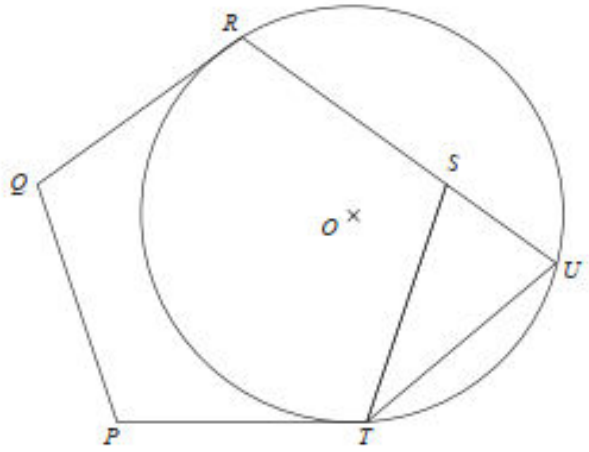
Show that polygon **P** is a hexagon.
You must show your working.

(Total for Question 5 is 4 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 2 (Calculator) Higher Tier

9.

20



PQRST is a regular pentagon.
R, *U* and *T* are points on a circle, centre *O*.
QR and *PT* are tangents to the circle.
RSU is a straight line.

Prove that $ST = UT$.

(Total for Question 20 is 5 marks)

Pearson Edexcel - Wednesday 4 November 2015 - Paper 1 (Non-Calculator) Higher Tier

10.

*20

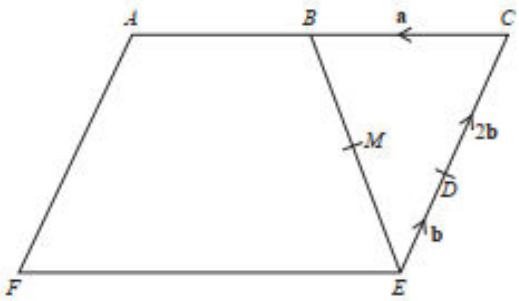


Diagram **NOT** accurately drawn

$ACEF$ is a parallelogram.
B is the midpoint of AC.
M is the midpoint of BE.

$\overrightarrow{CB} = \mathbf{a}$

$\overrightarrow{ED} = \mathbf{b}$

$\overrightarrow{DC} = 2\mathbf{b}$

Show that AMD is a straight line.

(Total for Question 20 is 5 marks)

Pearson Edexcel - Monday 6 June 2011 - Paper 3 (Non-Calculator) Higher Tier

11.

17.

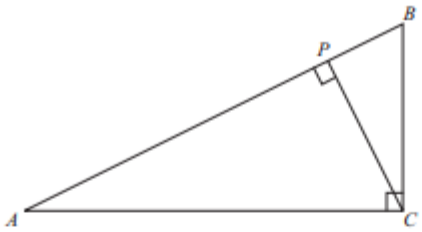


Diagram **NOT** accurately drawn

In the diagram,

ABC is a triangle,
angle *ACB* = 90°,
P lies on the line *AB*,
CP is perpendicular to *AB*.

Prove that the angles of triangle *APC* are the same as the angles of triangle *CPB*.

(Total 3 marks)

OCR GSCE – Sample Papers – Paper 5 (Non - Calculator) Higher Tier

12.

16 Bethany says that $(2x)^2$ is always greater than or equal to $2x$.

Decide whether she is correct or not.
Show your working to justify your decision. **[3]**

AQA GSCE – Sample Paper 2 (Calculator) Higher Tier

13.

18 In the formula $T = (n - 6)^2 + 1$ n is a positive integer.

18 (a) Kim says,

"The value of T is always greater than 1
because $(n - 6)^2$ is always greater than 0"

Comment on her statement.

[1 mark]

18 (b) What is the only value of T that is a square number?

[1 mark]

Answer _____