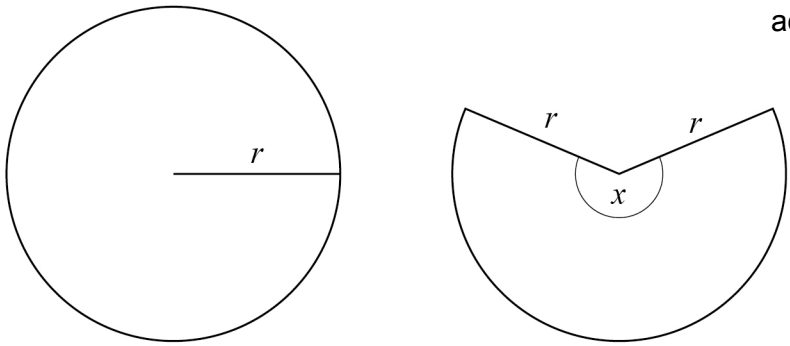
1 Here are a circle and a sector of the circle.

They each have radius r.

Not drawn accurately



circumference of circle = perimeter of sector

Work out the size of angle x.

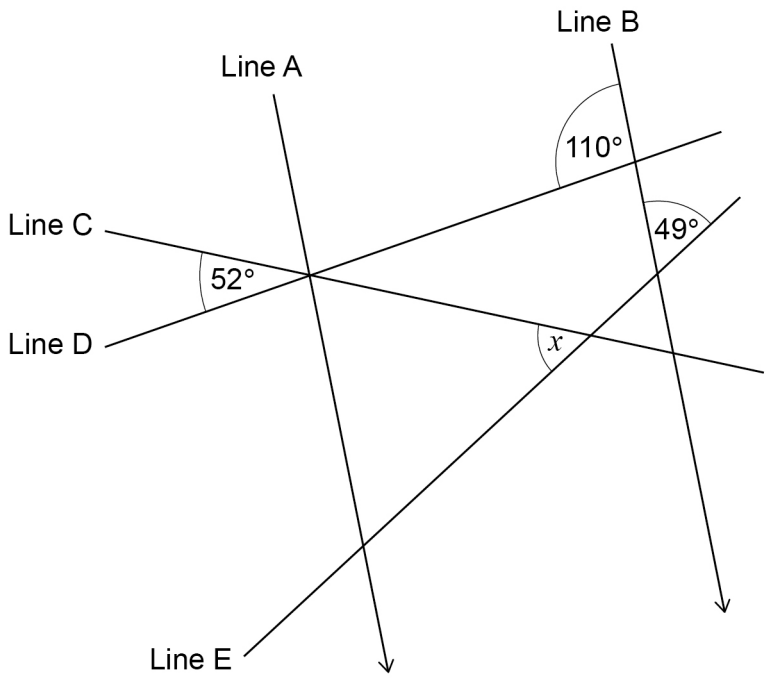
Give your answer in terms of π

[4 marks]

Answer _____ degrees

2 Lines A, B, C, D and E intersect as shown.

Lines A and B are parallel.



Not drawn accurately

Work out the size of angle x.

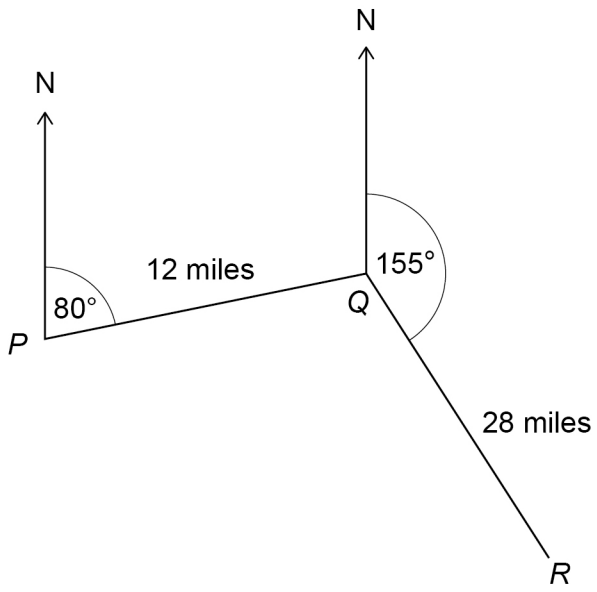
[3 marks]

Answer _____ degrees

3 A ship sails from *P* to *Q* and then from *Q* to *R*.

Q is 12 miles from *P*, on a bearing of 080°

R is 28 miles from *Q*, on a bearing of 155°



Not drawn accurately

Work out the direct distance from *P* to *R*.

[4 marks]

Answer _____ miles

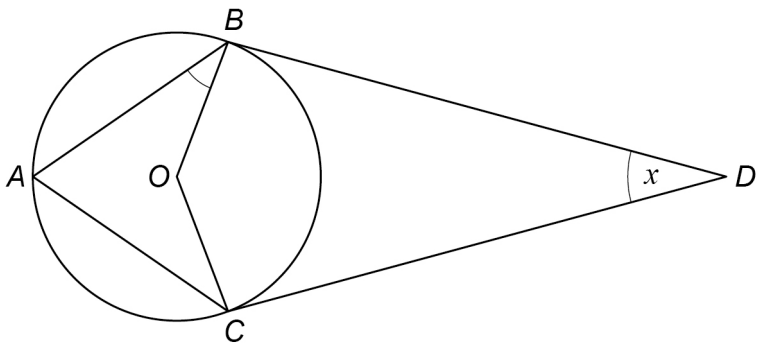
4 *A*, *B* and *C* are three points on the circumference of a circle, centre *O*.

BD and *CD* are tangents to the circle.

ABDC is a kite.

Angle *BDC* is x

Not drawn accurately



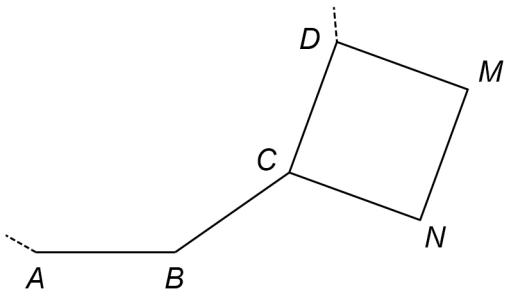
Prove that angle *ABO* is $45° - \frac{x}{4}$

[4 marks]

5 *AB*, *BC* and *CD* are sides of a regular 12-sided polygon.

CDMN is a square.

Not drawn accurately

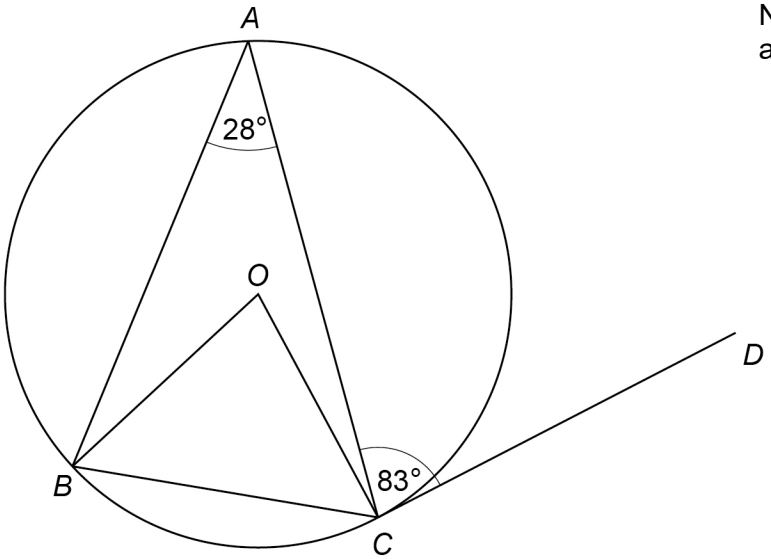


Prove that points *A*, *B* and *N* lie on a straight line.

[4 marks]

6 *A*, *B* and *C* are points on a circle, centre *O*.

DC is a tangent to the circle.

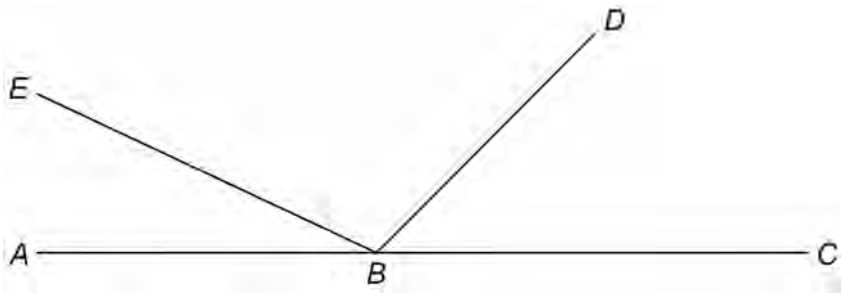


Not drawn accurately

Show that angle *ABO* : angle *ACO* = 3 : 1

[5 marks]

7 *ABC*, *BD* and *BE* are straight lines.



Not drawn accurately

angle *EBD* = 5 × angle *ABE*

angle *DBC* = 3 × angle *ABE*

Work out the size of angle *EBD*.

[3 marks]

Answer _____ °

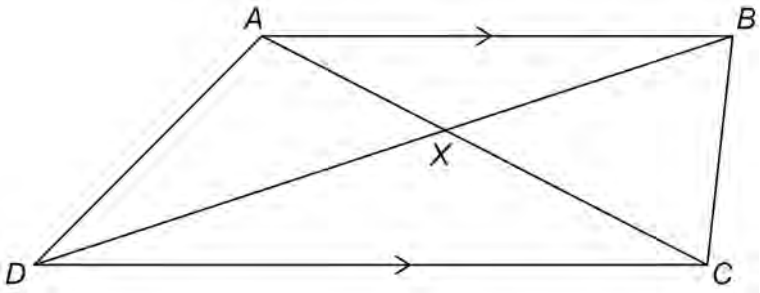
8 *ABCD* is a trapezium.

All four sides are different lengths.

AB is parallel to *CD*.

The diagonals intersect at *X*.

Not drawn accurately



For each statement, tick the correct box.

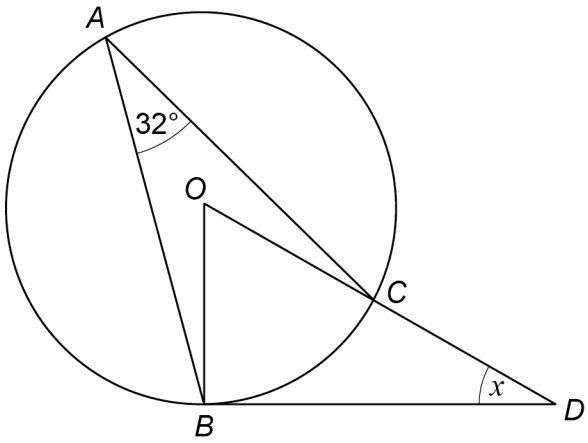
[4 marks]

	True	**May be true**	**Not true**
Triangles *AXB* and *CXD* are similar	☐	☐	☐
Triangles *AXD* and *BXC* are congruent	☐	☐	☐
Angle *ADB* = angle *BDC*	☐	☐	☐
Area of triangle *ABC* = area of triangle *ABD*	☐	☐	☐

9 *A*, *B* and *C* are points on a circle, centre *O*.

BD is a tangent to the circle.

OCD is a straight line.



Not drawn accurately

Work out the size of angle x.

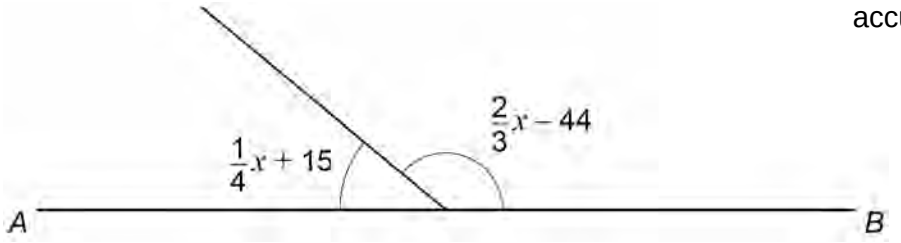
[3 marks]

$x =$ _____ degrees

10 *AB* is a straight line.

Both angles are given in degrees.

Not drawn accurately



By working out the value of x,

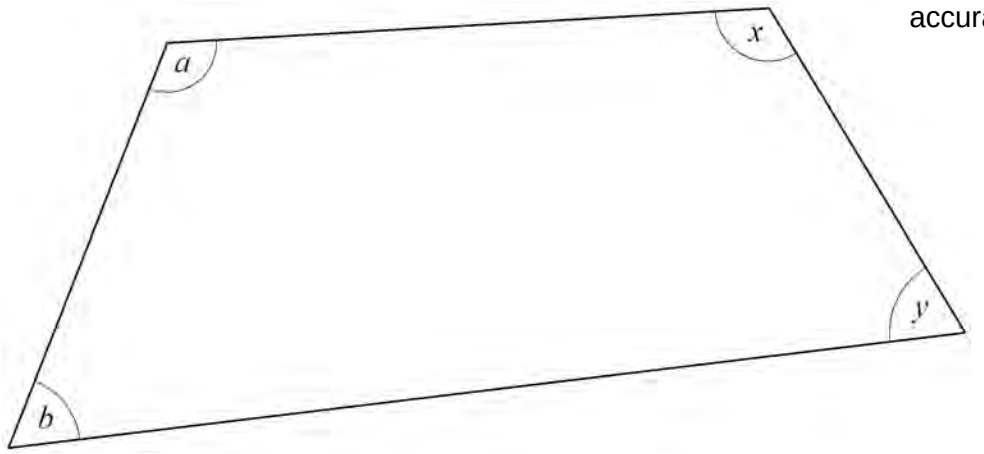
work out the ratio smaller angle : larger angle

[4 marks]

Answer _____ : _____

11

Not drawn accurately



$b = 45°$ and $a : b = 7 : 3$ and $x : y = 4 : 1$

Show that $a : y = 5 : 2$

[3 marks]