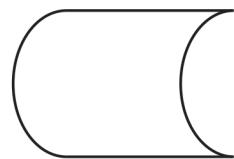
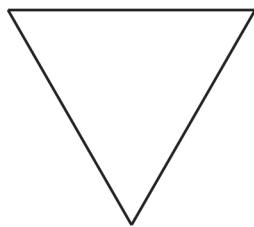


1

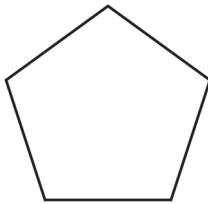


On each shape draw all the lines of symmetry.

[3]

[Total: 3]

2



Write down the order of rotational symmetry of this regular pentagon.

..... [1]

[Total: 1]

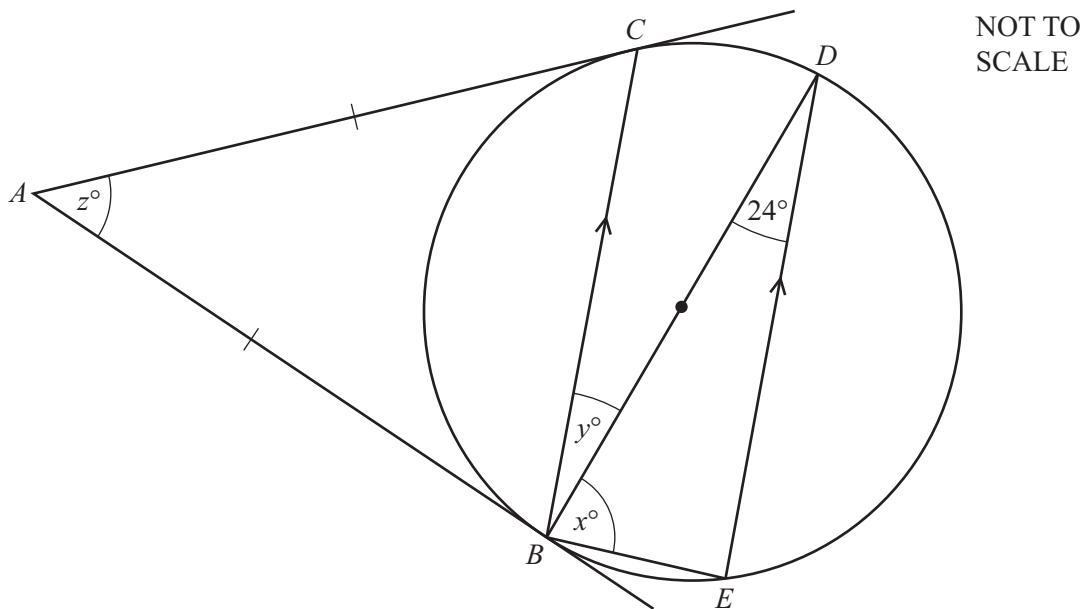
3 Each exterior angle of a regular polygon is 30° .

Work out the number of sides the polygon has.

Answer [2]

[Total: 2]

4



The points B , C , D and E lie on a circle.

AB and AC are equal length tangents to the circle.

BD is a diameter of the circle and BC is parallel to ED .

Angle $BDE \equiv 24^\circ$.

Calculate the value of

(a) x_1

Answer(a) $x = \dots$ [2]

(b) $y,$

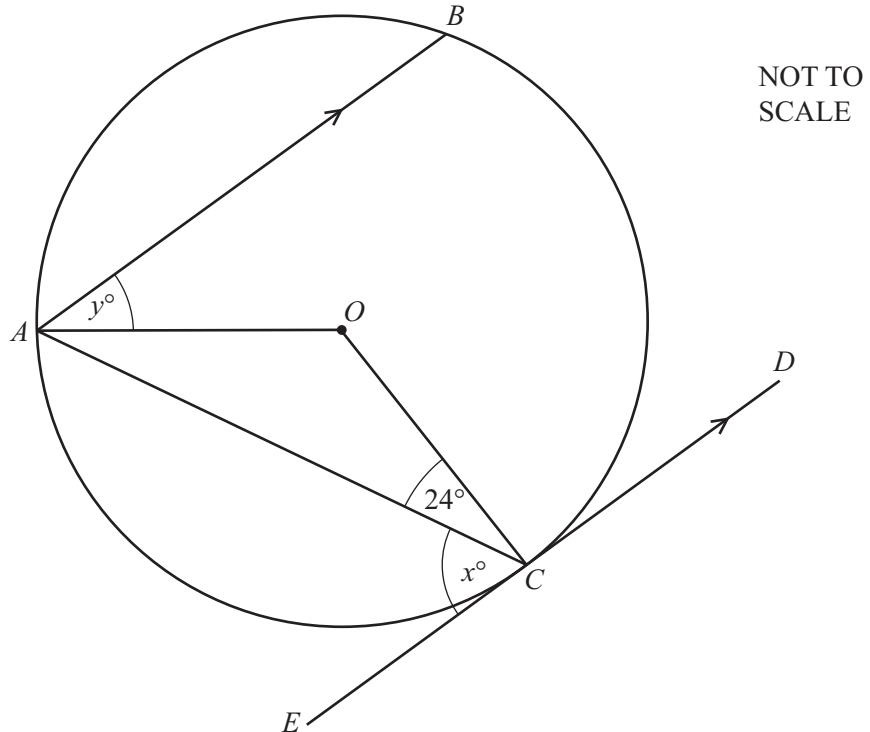
Answer(b) $y = \dots$ [1]

(c) z_1

Answer(c) $z = \dots$ [2]

[Total: 5]

5



The diagram shows a circle with centre O .
 ED is a tangent to the circle at C .
 AB is parallel to ED and angle $ACO = 24^\circ$.

Find the value of

(a) x ,

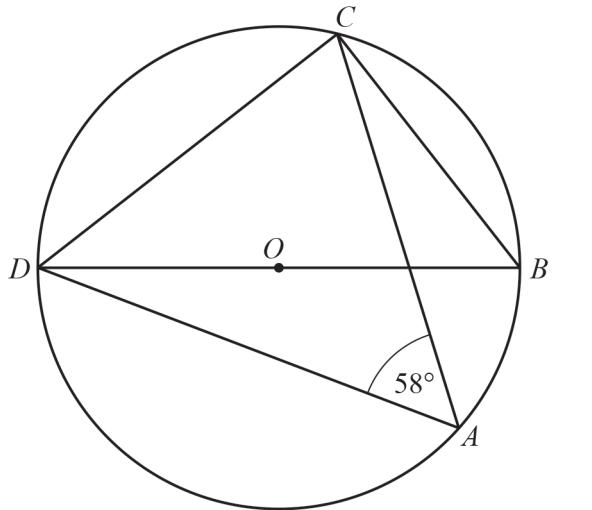
Answer(a) $x = \dots$ [1]

(b) y .

Answer(b) $y = \dots$ [2]

[Total: 3]

6

NOT TO
SCALE

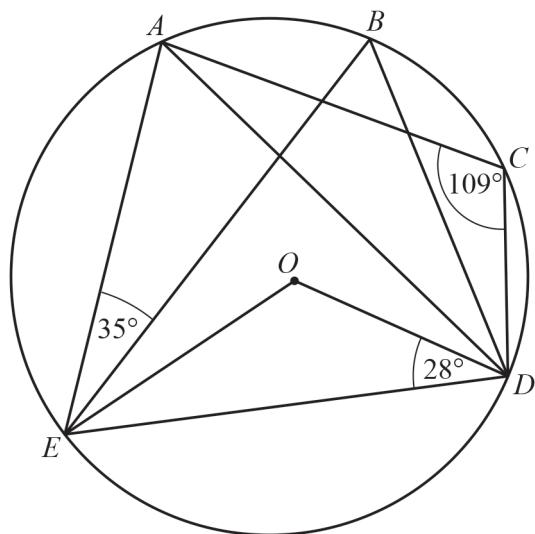
A, B, C and D are points on the circumference of the circle, centre O .
 DOB is a straight line and angle $DAC = 58^\circ$.

Find angle CDB .

Angle CDB = [3]

[Total: 3]

7

NOT TO
SCALE

A, B, C, D and E lie on the circle, centre O .
Angle $AEB = 35^\circ$, angle $ODE = 28^\circ$ and angle $ACD = 109^\circ$.

(a) Work out the following angles, giving reasons for your answers.

(i) Angle EBD = because

.....
..... [3]

(ii) Angle EAD = because

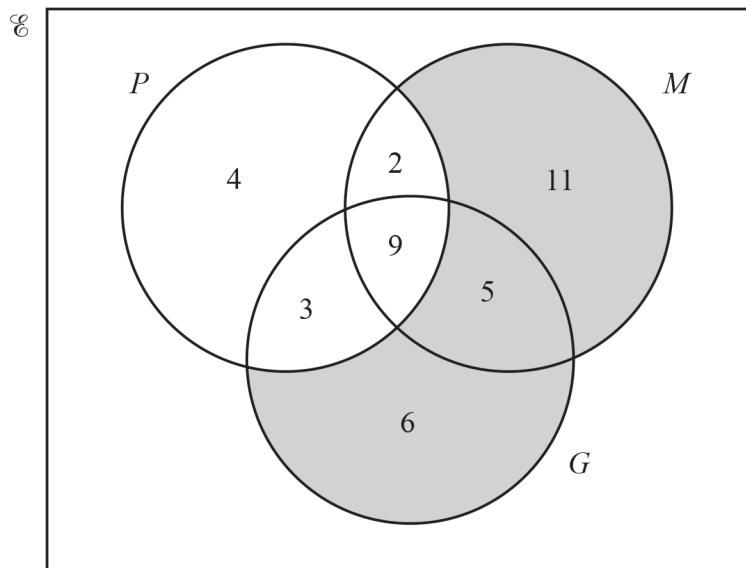
..... [2]

(b) Work out angle BEO .

Angle BEO = [3]

[Total: 8]

8 The Venn diagram shows the number of students in a class of 40 who study physics (P), mathematics (M) and geography (G).



(a) Use set notation to describe the shaded region.

..... [1]

(b) Find $n((P \cap G) \cup M')$.

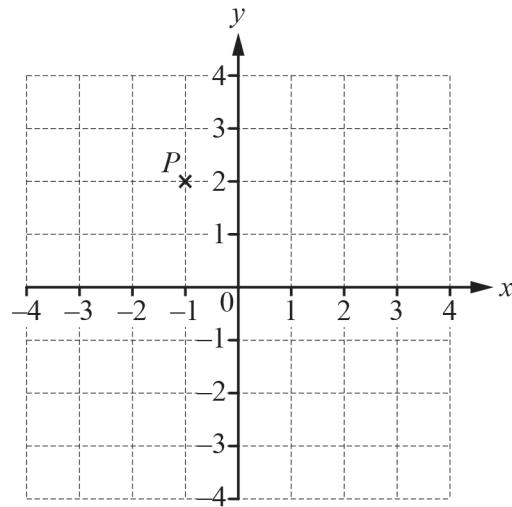
..... [1]

(c) A student is chosen at random from those studying geography.

Find the probability that this student also studies physics or mathematics but not both.

..... [2]

[Total: 4]



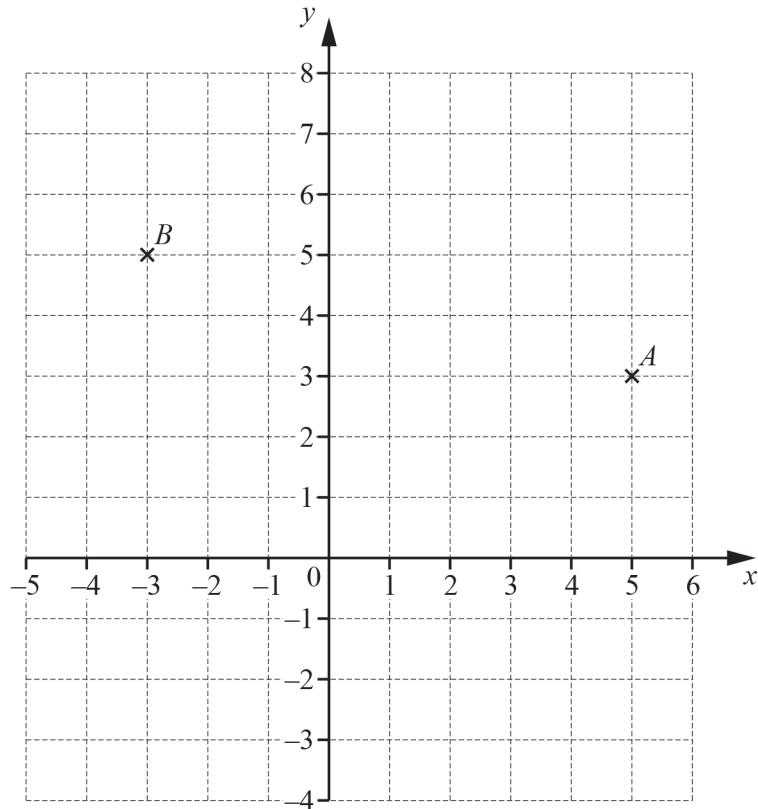
9 P is the point $(-1, 2)$ and $\overrightarrow{PQ} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$.

Find the co-ordinates of Q .

(..... ,) [1]

[Total: 1]

10



(a) Write down the co-ordinates of point A.

(..... ,) [1]

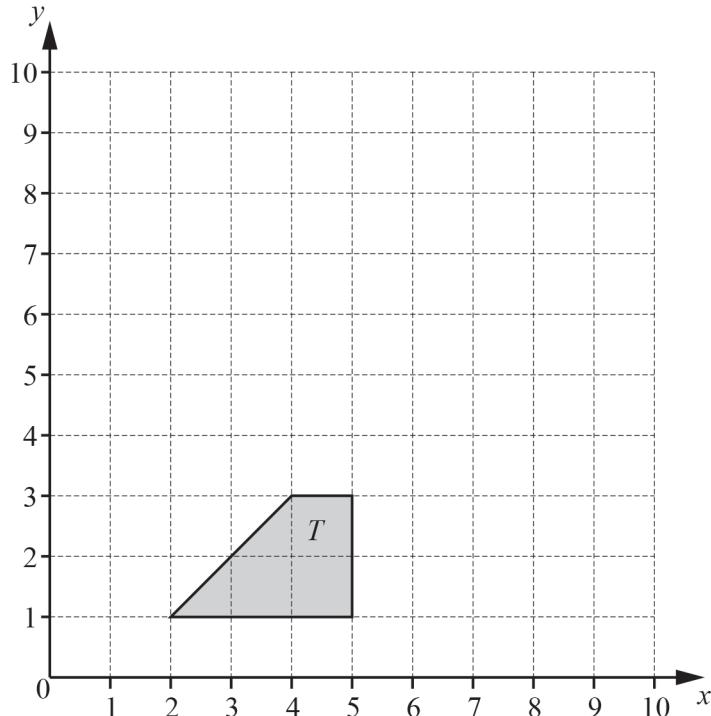
(b) Plot the point C at (4, -3). [1]

(c) Find the vector \overrightarrow{AB} .

$$\overrightarrow{AB} = \begin{pmatrix} \quad \\ \quad \end{pmatrix} [1]$$

[Total: 3]

11



(a) Translate shape T by the vector $\begin{pmatrix} -1 \\ 6 \end{pmatrix}$.

Label the image A .

[2]

(b) Rotate shape T about the point $(5, 3)$ through 180° .

Label the image B .

[2]

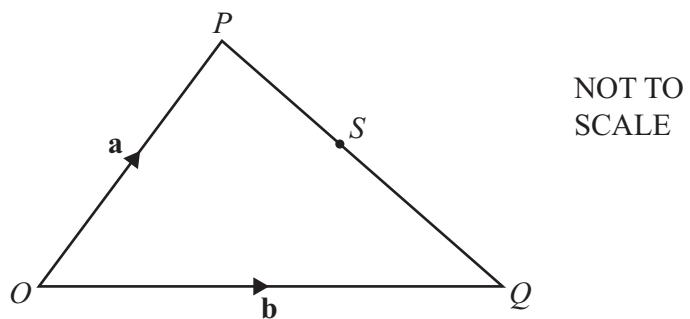
(c) Describe fully the **single** transformation that maps shape A onto shape B .

.....
.....

[3]

[Total: 7]

12



S is a point on PQ such that $PS : SQ = 4 : 5$.

Find \overrightarrow{OS} , in terms of \mathbf{a} and \mathbf{b} , in its simplest form.

$$\overrightarrow{OS} = \dots \quad [2]$$

[Total: 2]