| | | | | Geometry 3H Assessment | | THE ANSWERS |

Higher Level *All questions*

Out of 40   TOTAL SCORE _____

Final Percentage [ ] %

1) Circle the exact value of

a) Cos 30° $\dfrac{1}{\sqrt{3}}$ $\dfrac{1}{2}$ $\boxed{\dfrac{\sqrt{3}}{2}}$ $\dfrac{2}{\sqrt{3}}$ **1**

b) Sin 30° $\boxed{\dfrac{1}{2}}$ 1 $\dfrac{\sqrt{3}}{2}$ $\dfrac{\sqrt{2}}{2}$ **1**

c) Tan 45°   0 $\dfrac{1}{\sqrt{3}}$ $\sqrt{3}$ $\boxed{1}$ **1**

2) What is the exact value of Sin 0° + Cos 0°?   <u>1</u>   **3**
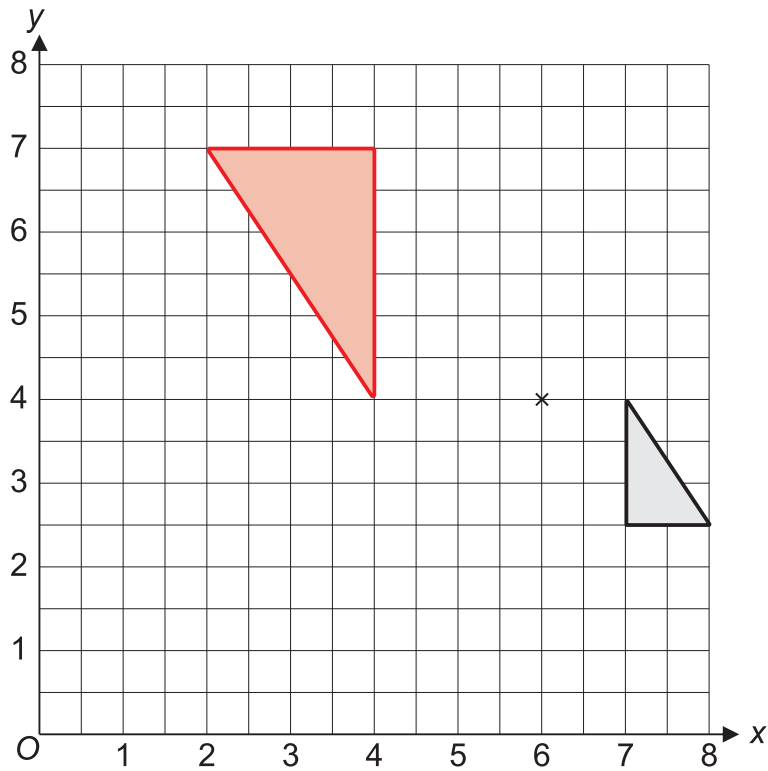
3)
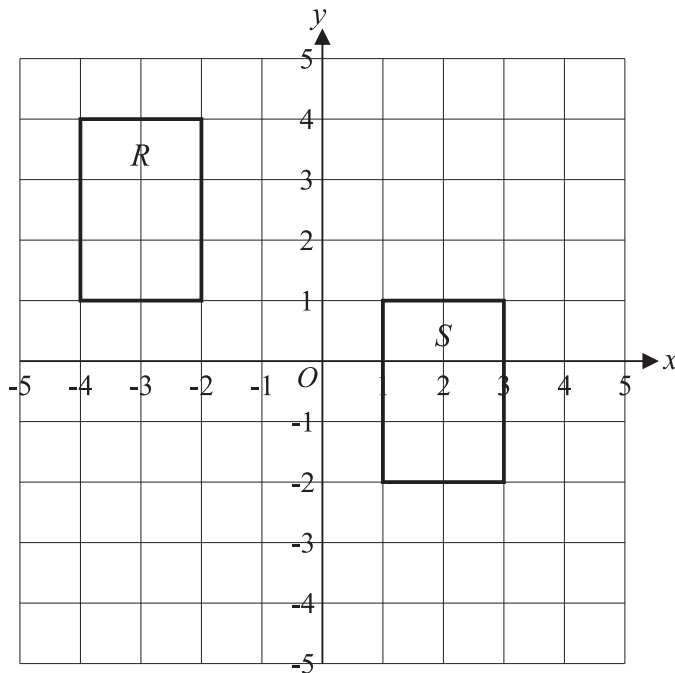
What is the vector that translates shape *R* to shape *S* ? $\begin{bmatrix} 5 \\ -3 \end{bmatrix}$ **3**
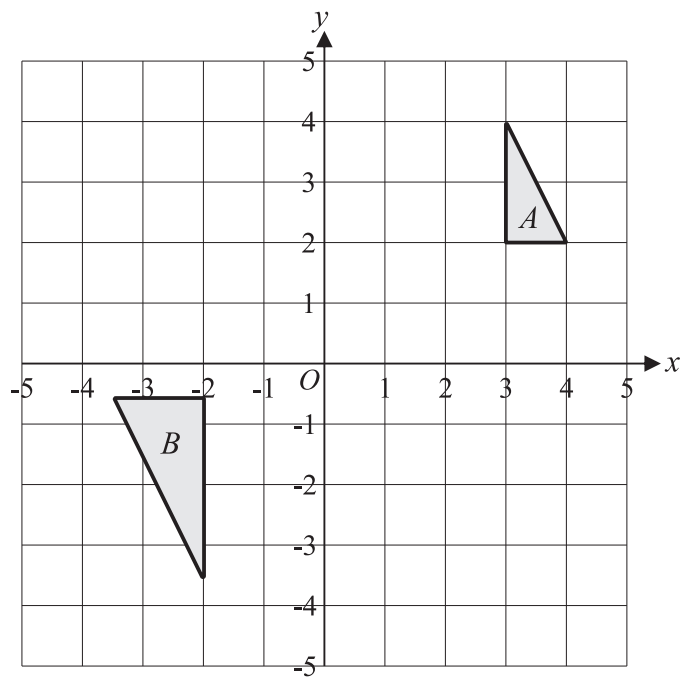
4) Here are two column vectors

$$\mathbf{f} = \begin{bmatrix} 3 \\ 5 \end{bmatrix} \qquad \mathbf{g} = \begin{bmatrix} 4 \\ -2 \end{bmatrix}$$

Work out 4**f** – 2**g** $\begin{bmatrix} 4 \\ 24 \end{bmatrix}$ **3**

5) Enlarge the triangle by scale factor −2 with centre (6, 4). **3**
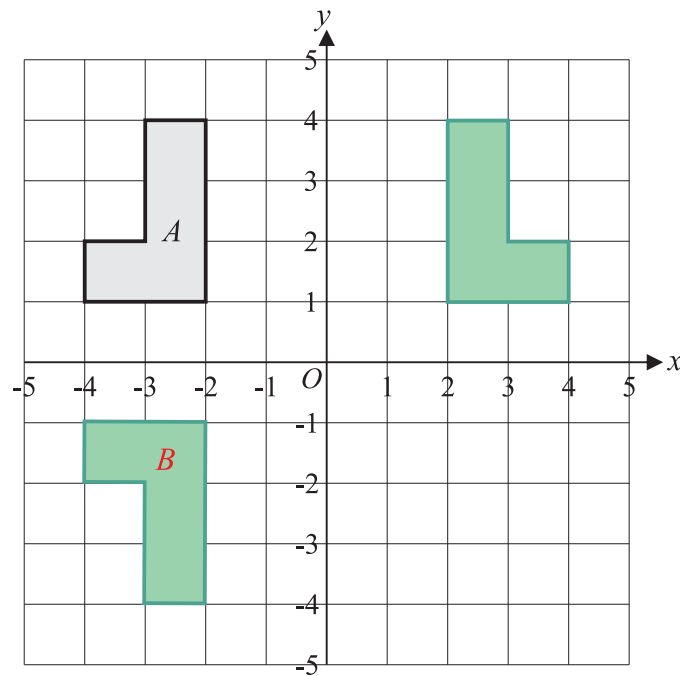

6)

Describe fully the single transformation that maps triangle *A* onto triangle *B*.

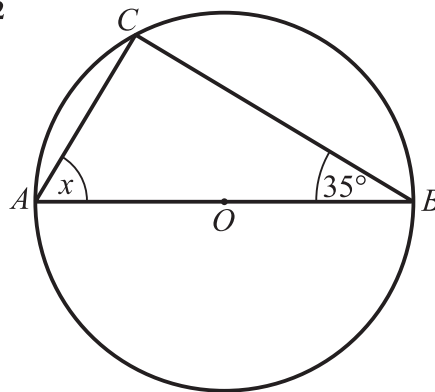Enlargement scale factor −1.5 centre (1, 1)   **3**

7)

Shape *A* is reflected in the *y*-axis and then its image is rotated 180° about the origin to give shape *B*.

Describe fully the single transformation that maps *A* to *B*   <u>Reflection in the *x*-axis</u>   **3**

8) *A*, *B* and *C* are points on the circumference of a circle with centre *O*.

Work out the size of angle *x* <u> 55° </u> **2**
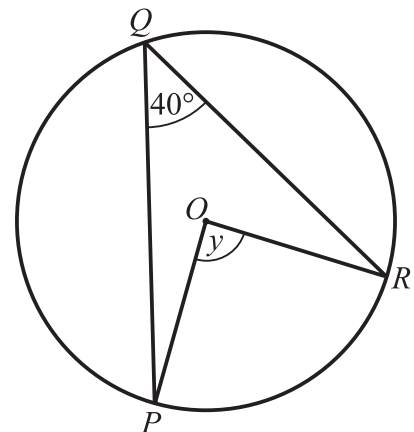

9) *P*, *Q* and *R* are points on the circumference of a circle with centre *O*.

Work out the size of angle *y*.

Give a reason for your answer.
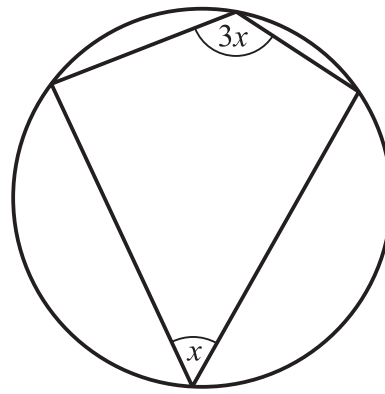
Answer <u> 80° </u> **1**

Reason <u>Angle at centre is twice angle at circumference</u> **1**

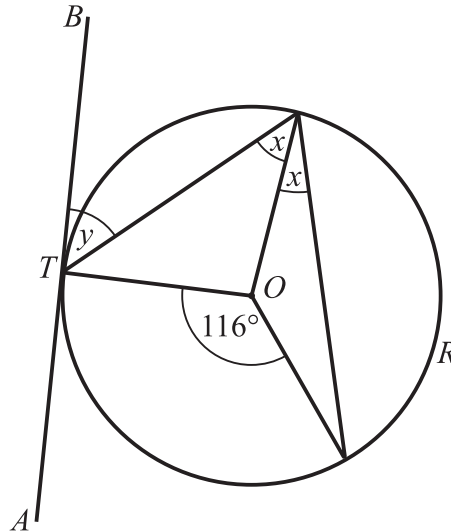10) The diagram shows a cyclic quadrilateral.

Work out the value of x ___45°___ **2**
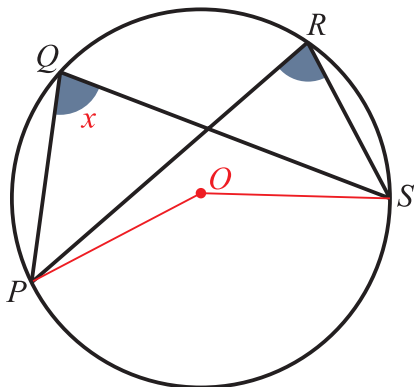
11) The diagram shows a circle centre O.

ATB is a tangent at T.

a) Work out the value of x ___29°___ **2**

b) Work out the value of y ___61°___ **2**

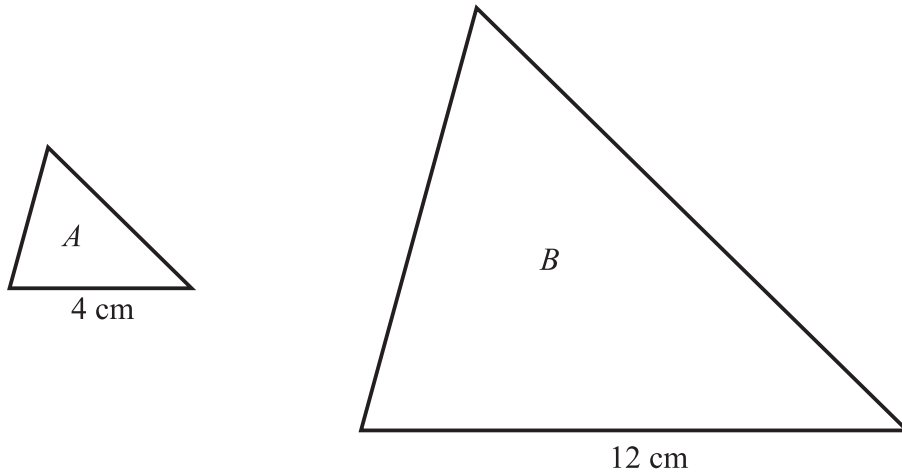12) Prove that the two shaded angles are equal.

Let angle $PQS = x°$ **3**

Therefore angle $POS = 2x°$ (angle at centre is twice angle at circumference)

Angle $PRS = x°$ (angle at circumference is half angle at centre)

Therefore the shaded angles PQS and PRS are both equal to $x°$
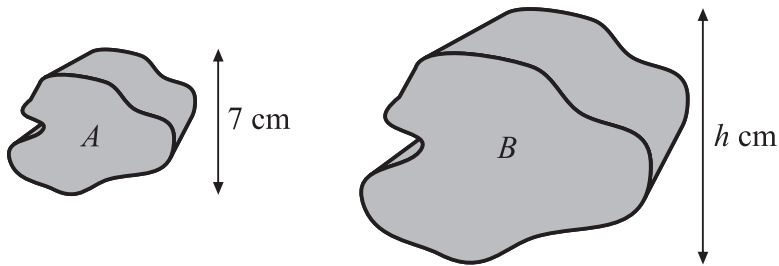
13) Shapes *A* and *B* are mathematically similar.

Shape *A* has a base of 4 cm and an area of 14 cm^2.

Shape *B* has a base of 12 cm.

What is the area of shape *B*? ___126___ cm^2 **3**

14) *A* and *B* are two similar solids.

The volume of shape *A* is 100 cm^3.

The volume of shape *B* is 800 cm^3.

Calculate the height, *h*, of shape *B*.
Show your workings.

Volume scale factor = $\dfrac{800}{100}$ = 8

Volume scale factor = (linear scale factor)^3

Linear scale factor = $\sqrt[3]{8}$ = 2

2 × 7 = 14

Height of *B* is ___14___ cm **3** *(2 marks for answer and 1 for working)*