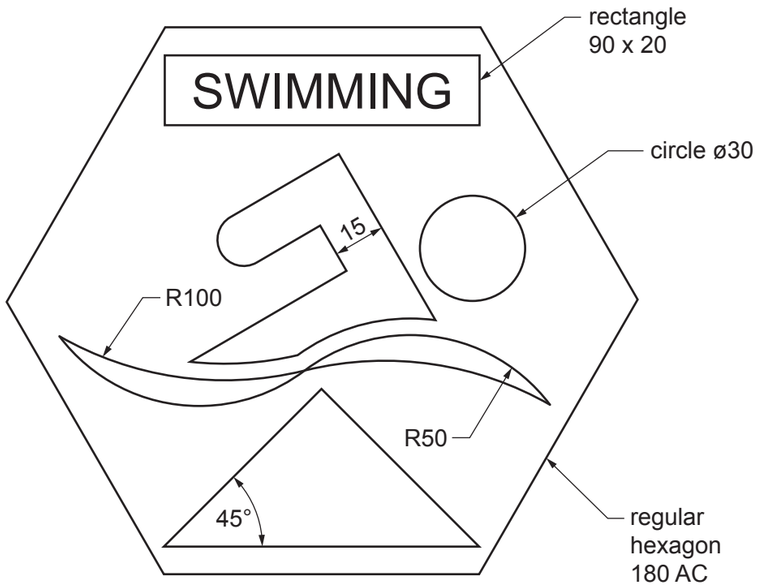
Section A

Answer **all** questions in this section.

A1 A design for a swimming badge is shown.



Complete the full-size drawing of the swimming badge by adding:

(a) the circle [1]

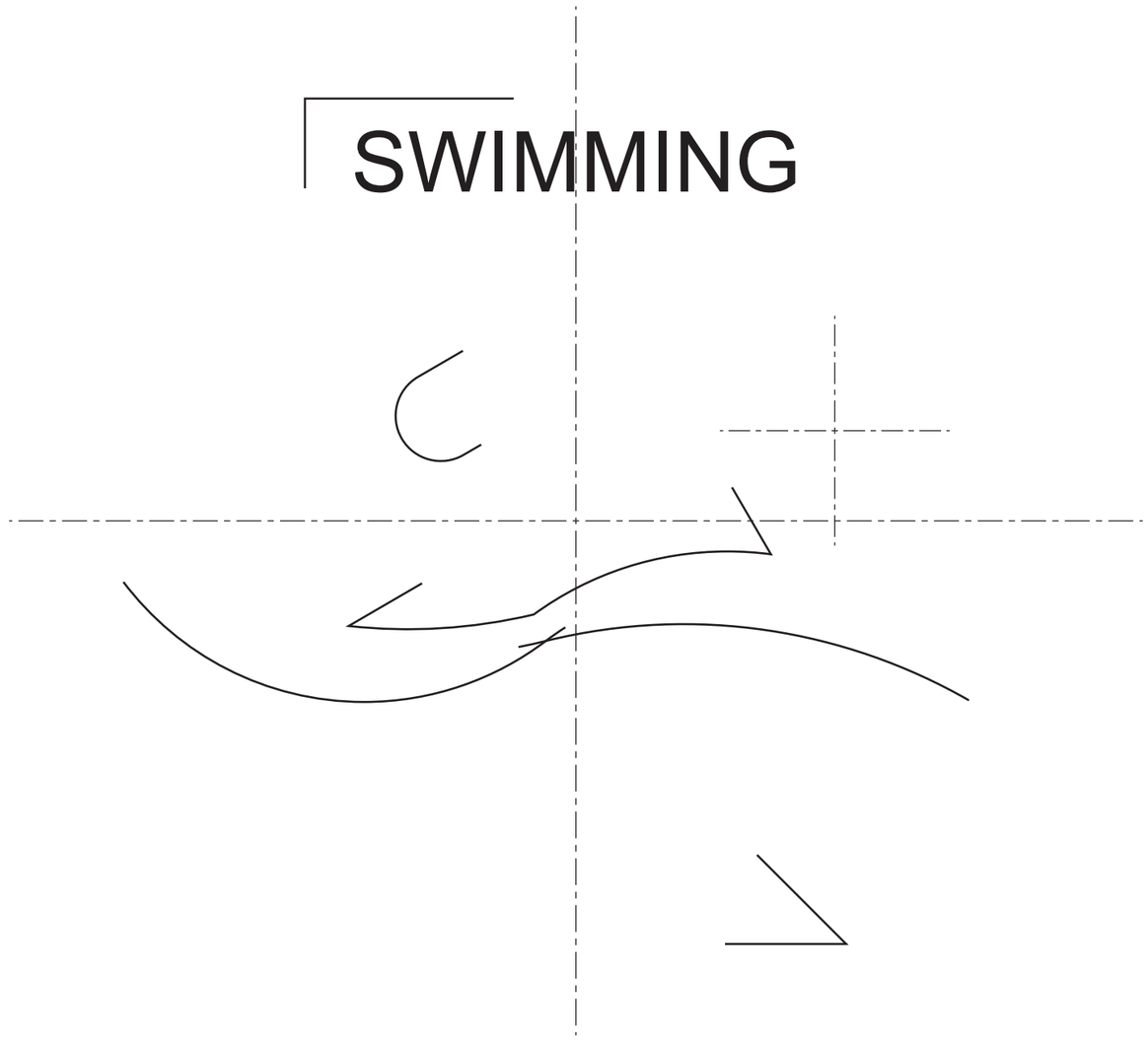
(b) the rectangle [2]

(c) the triangle [2]

(d) the hexagon [3]

(e) the arm and body of the swimmer [3]

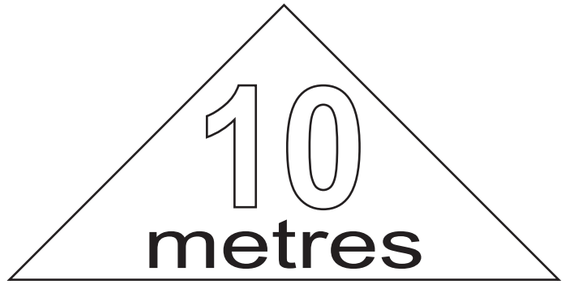
(f) the two curved waves. [4]



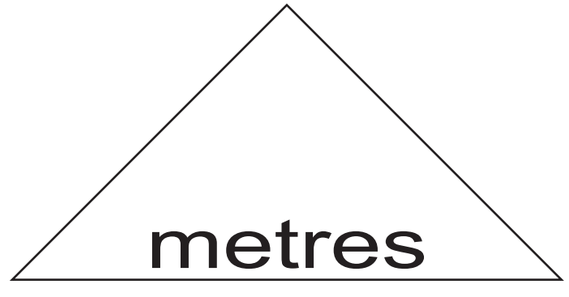
A2 A label showing the distance that has been swum will be shown in the triangular part of the badge.

A label for 10 metres is shown.

Complete the label for 25 metres by adding the numbers in a consistent size and style. [3]



label for 10 metres



label for 25 metres

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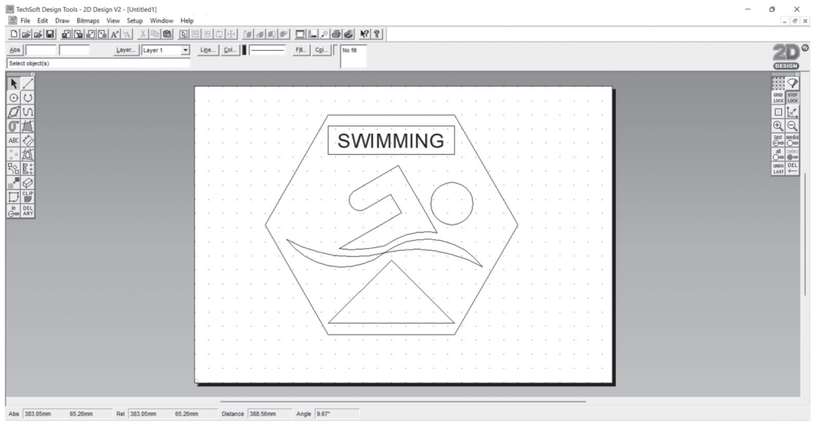
A3 The badge will be made of 5 mm acrylic sheet using a laser cutter.

A screenshot of the badge design drawn on CAD is shown.



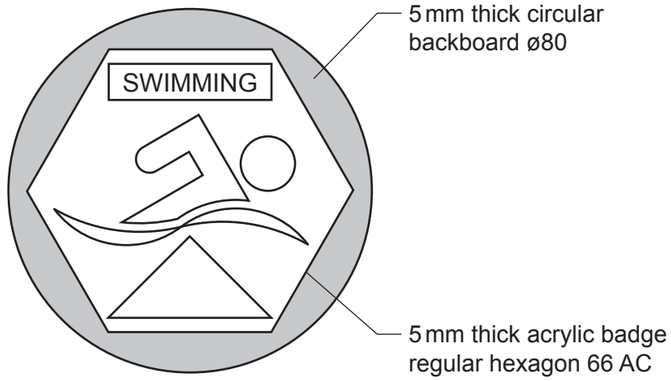
(a) Explain how you would modify the design so the laser cutter would cut out the hexagonal outline and engrave the remainder of the design.

.....

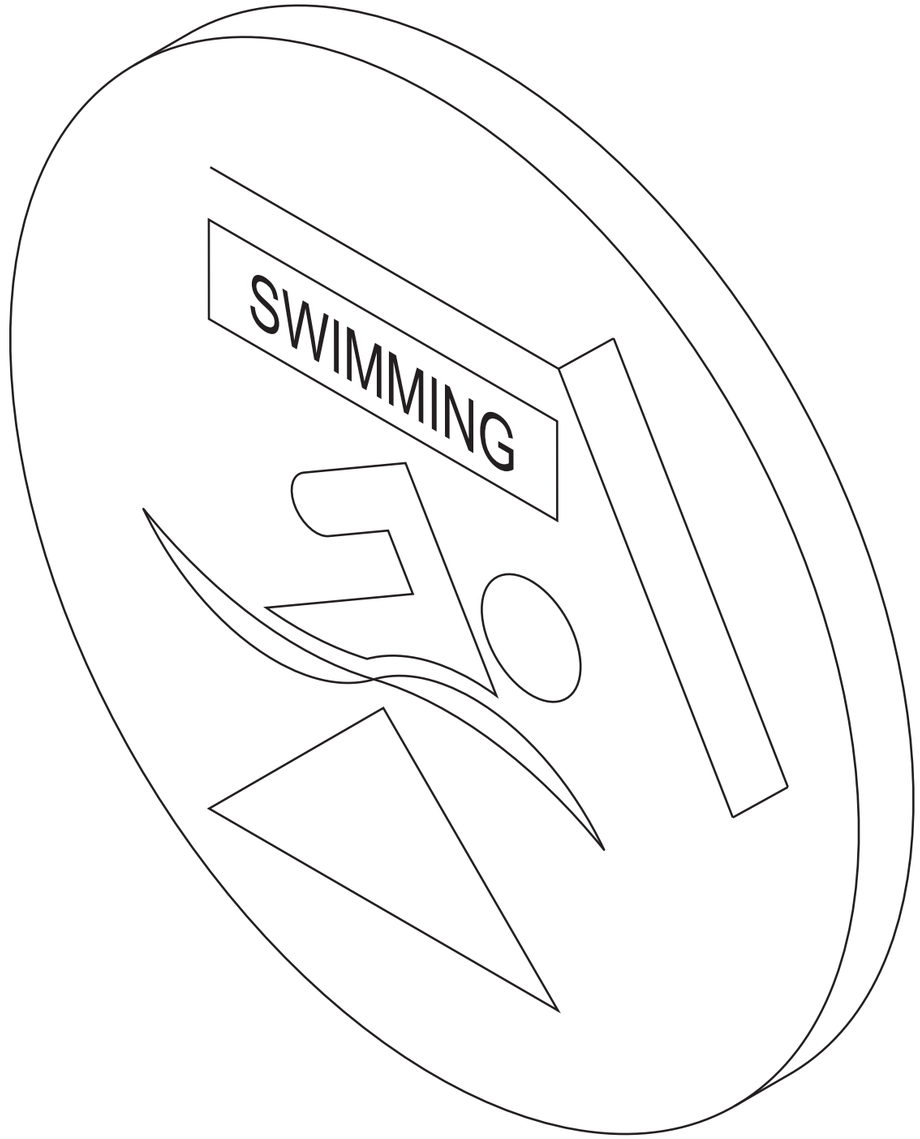
.....

..... [2]

(b) The hexagonal badge design will be mounted onto a circular backboard as shown.



Complete the isometric view of the assembled badge to a scale of 2:1 by adding the hexagonal front piece. [5]

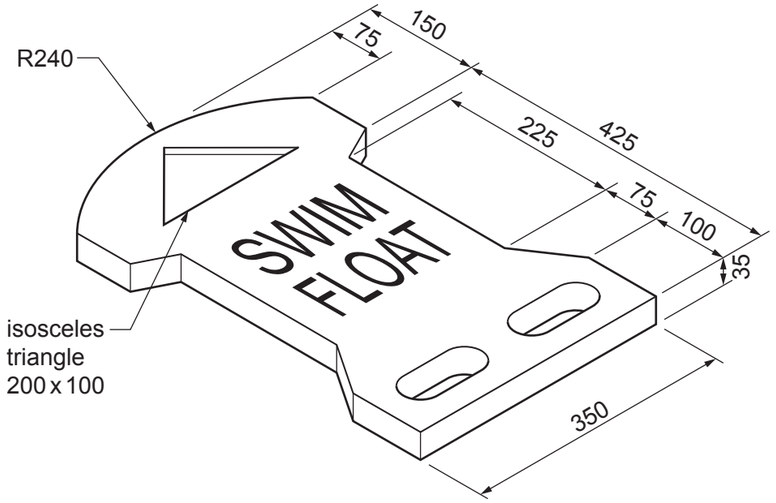


isometric view

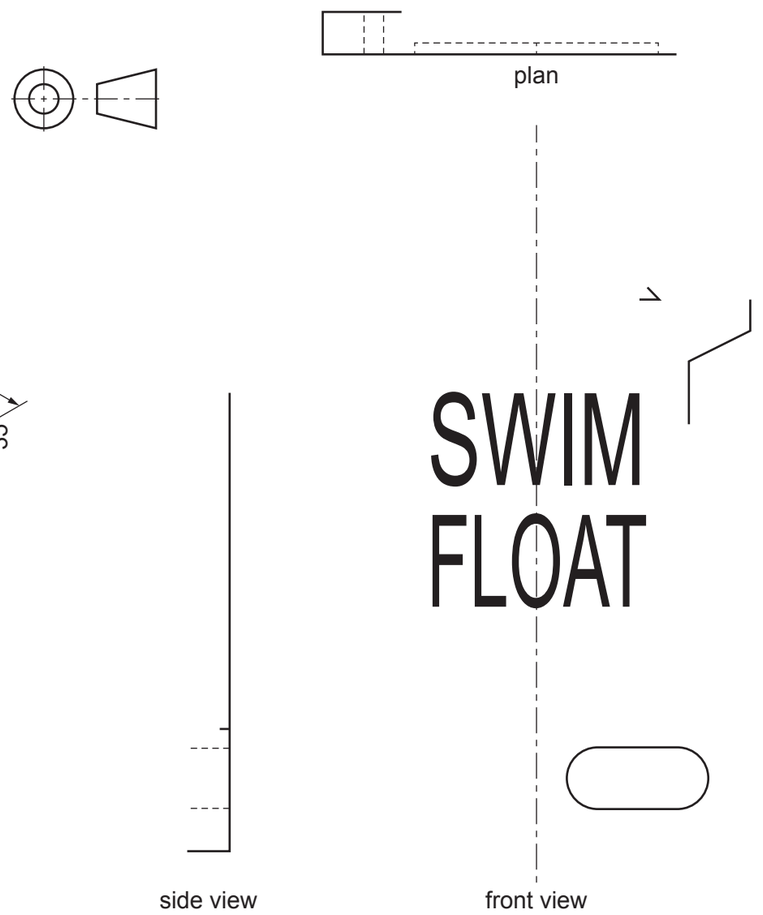
Section B

Answer **one** question, **either** Question **B4** or **B5**, from this section.

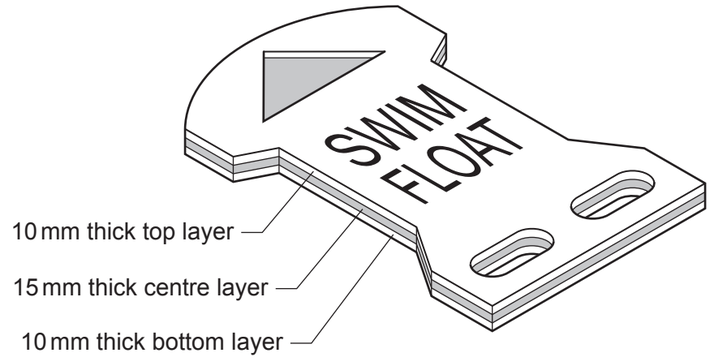
B4 A swim float is shown.



(a) Complete the orthographic views of the swim float to a scale of 1:5. [14]



(b) The swim float is made of three layers of Styrofoam glued together as shown.



(i) State **two** properties of Styrofoam that make it suitable for the swim float.

1 .....

2 .....
[2]

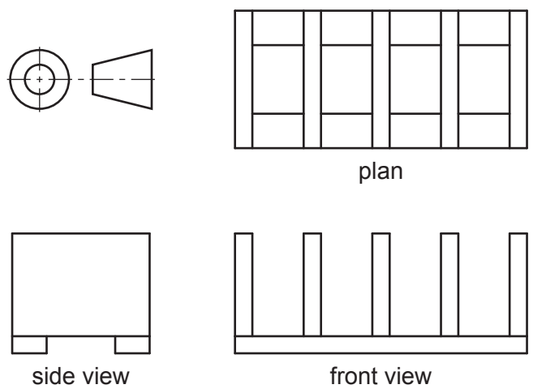
(ii) Explain why standard PVA glue would **not** be a suitable adhesive to join the three layers of Styrofoam together.

.....

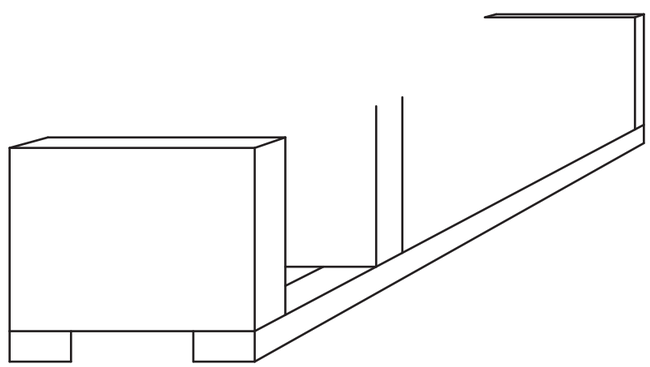
.....

..... [2]

(c) Orthographic views of a storage rack for the swim floats are shown.



Complete the estimated one-point perspective view of the storage rack. [7]



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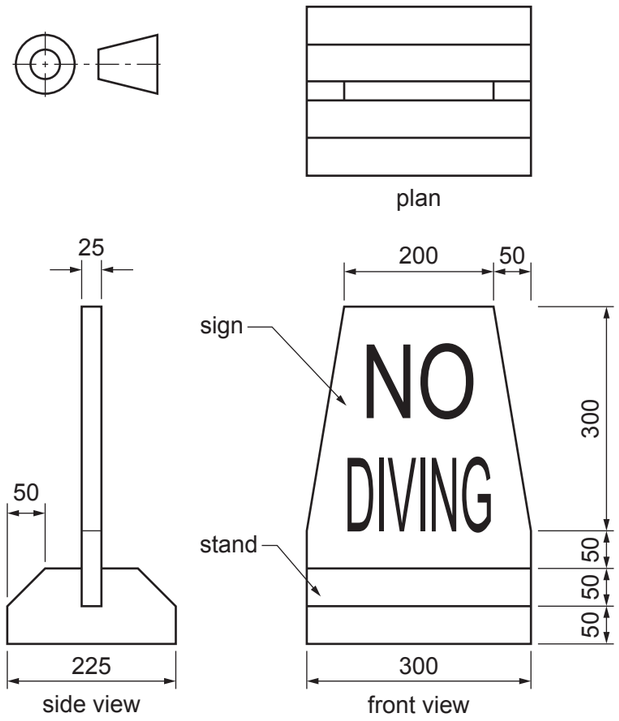
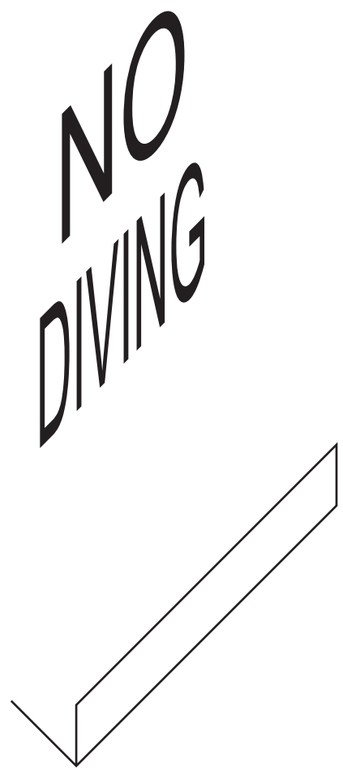
B5 Orthographic views of a sign and stand are shown.

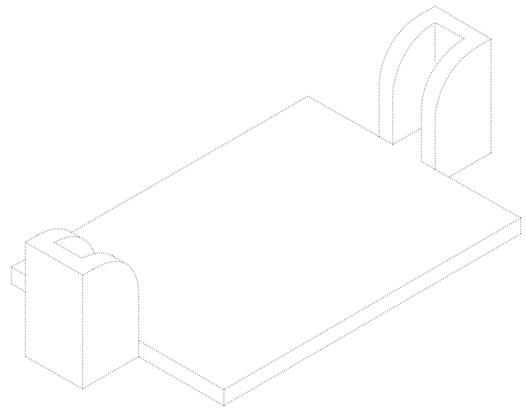


(a) Complete the planometric view of the sign and stand to a scale of 1:5. [12]



planometric view

(b) An alternative design for the stand is shown.



(i) Apply thick and thin line technique to the design for the stand. [5]

(ii) The stand will be made from three pieces of 5 mm thick acrylic sheet.

Name **one** suitable item of equipment for bending the side pieces of the stand to the required shape.

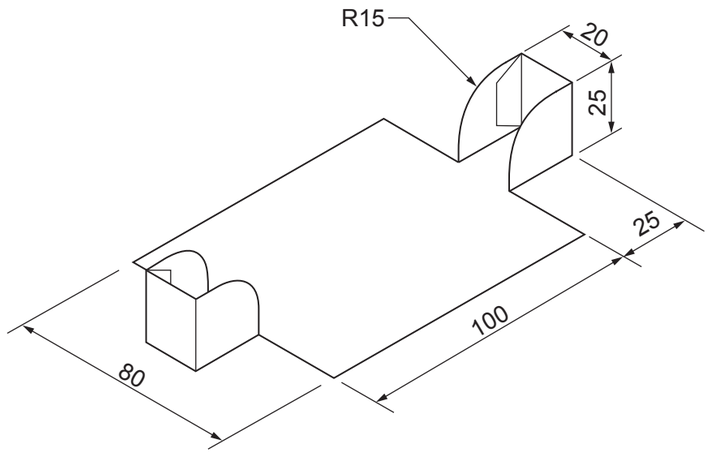
..... [1]

(iii) State **one** suitable type of adhesive for joining the side pieces to the base.

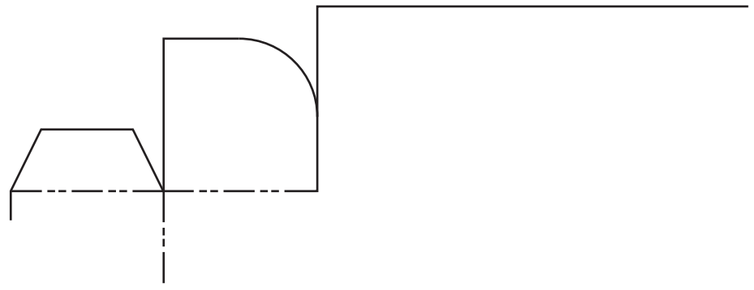
..... [1]

(c) A model of the design for the alternative stand is shown.

The model is made from **one** piece of thin card.



Complete the full-size development (net) of the model. [6]



development (net)