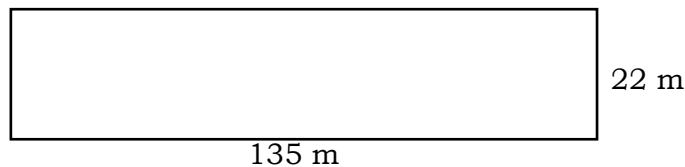


**HIGHER TIER  
MINI PRACTICE EXAM 4**

**CALCULATOR ALLOWED  
20 MINUTES ALLOWED**

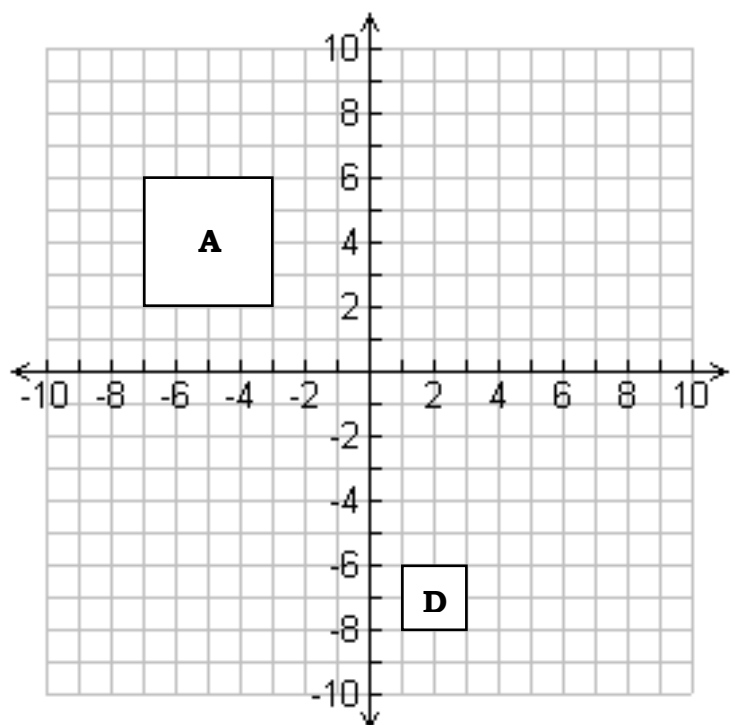
1.  
Rectangle A, pictured below, has length 22 metres and width 135 metres.  
The length of Rectangle A is increased by 33% and the width is decreased by 12% to form Rectangle B.



Find the percentage increase in the area of Rectangle A to Rectangle B.  
Give your answer to the nearest percent.

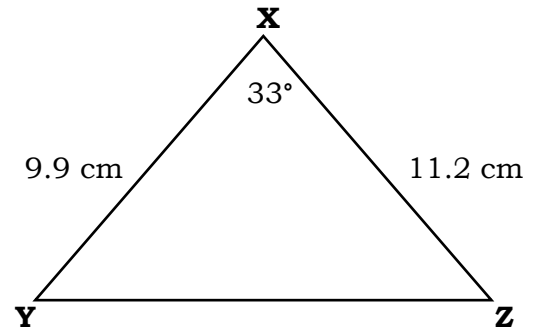
(5)

2.  
(a) Reflect Shape A in the line  $y = -1$  and label this Shape B.  
(1)  
(b) Enlarge Shape A by scale factor  $-0.5$  using  $(1, 4)$  as the centre of enlargement and label this Shape C.  
(2)  
(c) Describe fully the single transformation that transforms Shape D into Shape C.  
(2)



3.

Find the area of the triangle XYZ to the nearest square centimetre.



(2)

4.

The luminosity of a star is inversely proportional to its distance to the Earth, in light years.

Star A has a luminosity of  $4 \times 10^{-5}$  and is 60 light years from Earth.

Star B is 500 lightyears from Earth.

Find the luminosity of Star B. Give your answer in standard form.

(4)

5.

L and M are straight lines.

L has equation  $2y + 5x = 8$ .

M crosses the x-axis at  $x = 5$  and crosses the y-axis at  $y = -2$ .

Are L and M perpendicular to each other? Explain your answer.

(4)