Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

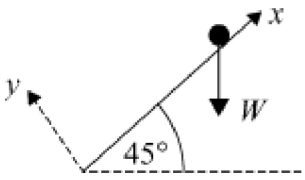
4 Forces

Exercise D, Question 7

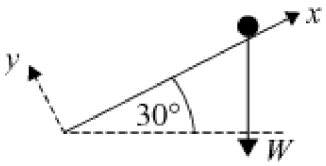
Question:

The following diagrams show a particle on an inclined plane. Find the components of the weight of the particle in the directions of the x-axis and y-axis.

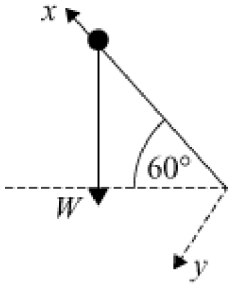
(a)



(b)



(c)



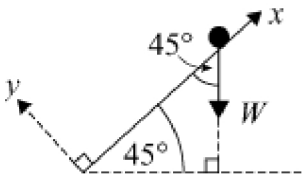
Solution:

(a)

x-direction $\quad -W \cos 45°$

y-direction $\quad -W \sin 45°$

i.e. components $-0.707W$ (3 s.f.) in both directions



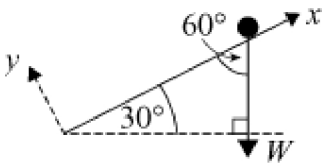
(b)

x-direction $-W \cos 60°$

$= \quad -0.5W$

y-direction $-W \sin 60°$

$= \quad -0.866W$ (3 s.f.)



(c)
x-direction $-W \cos 30°$
$= -0.866W$ (3 s.f.)
y-direction $W \sin 30°$
$= 0.5W$