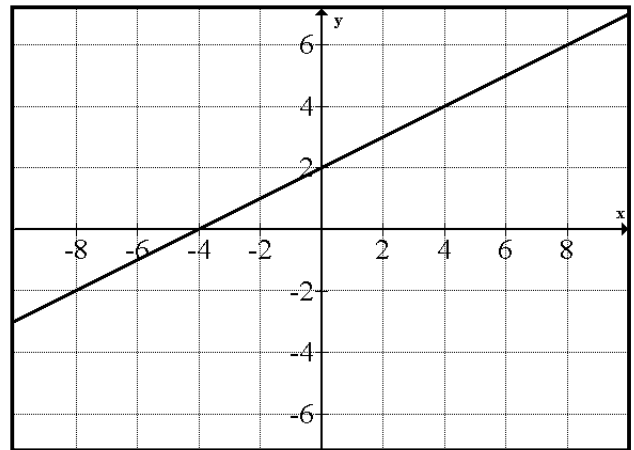# Intermediate 2 – Homework 3

Non-calculator section:

1. Expand the brackets and simplify
$$(x + 3)(x^2 - 3x + 9)$$

2. Solve the pair of equations given below
$$3m + 4n = 7$$
$$2m - 3n = 16$$

3. Simplify $\dfrac{x^2 - 9}{2x^2 + 6x}$
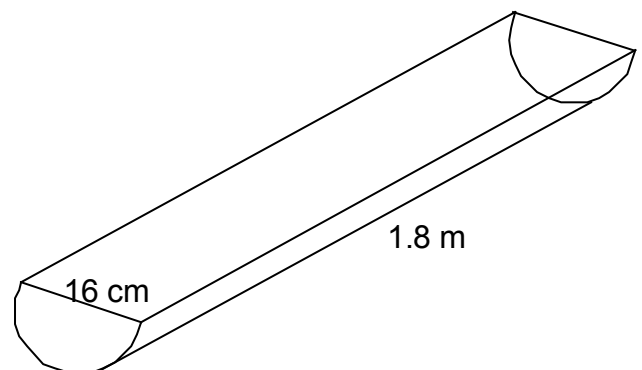
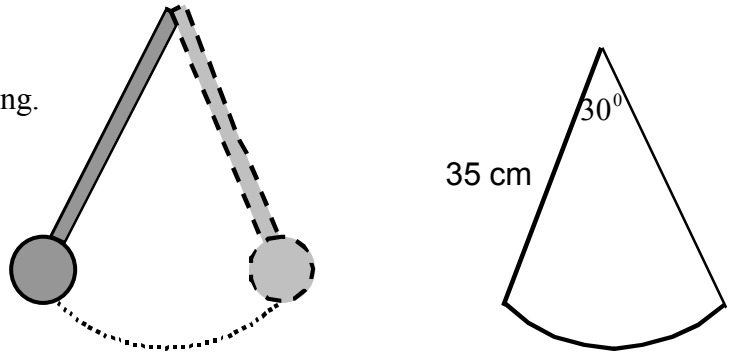4. Find the equation of the line shown opposite.

Calculator section:

5. A car valued at £7800 new depreciates in value by 14% in each of its first two years and by 9% in its third year. Find the value of the car after three years.
   Give your answer correct to two significant figures.

6. The diagram opposite shows part of a rainwater gutter. The ends of the gutter are semi-circular in shape. Calculate the volume of the gutter.
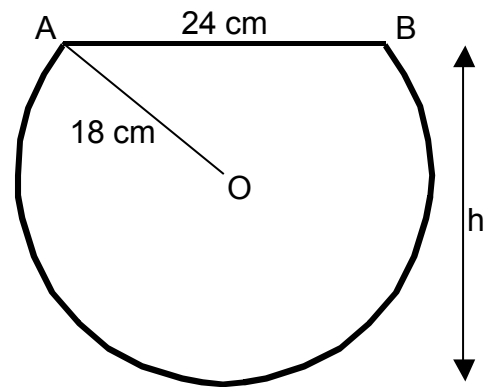

1.8 m

16 cm

7. The pendulum of a clock is 35 cm long.
   It swings through an angle of 30º.
   Calculate the length the pendulum
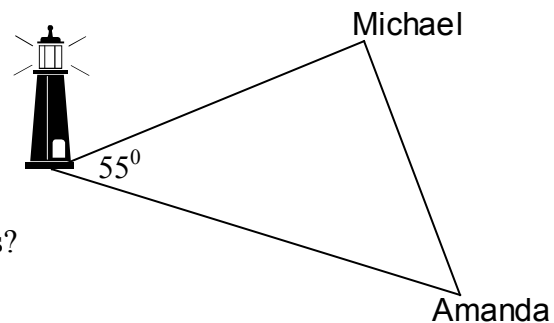   travels in one swing.

35 cm

30^0

8. A logo for a company is in the shape of a circle
   with a horizontal top.
   The radius OA of the circle is 18 cm and the
   distance AB is 24 cm.

   Calculate h, the height of the logo.

A   24 cm   B

18 cm

O

h

9. The diagram shows the directions walked by Amanda
   and Michael after they leave a lighthouse.
   Michael walks at a speed of 3.6 kmph and Amanda
   walks at a speed of 4.2 kmph.

   How far apart will Amanda and Michael be after 3 hours?

Michael

55^0

Amanda

10. The marks of 24 pupils in a test are shown below.

1	0 3 9
2	1 4 5 7 9
3	2 3 3 5 6 7
4	0 0 1 1 2 2 2 4 8 9

3 | 4 represents 34
n = 24

   (a) Show this information in a boxplot.
   (b) Find the semi-interquartile range of these marks.