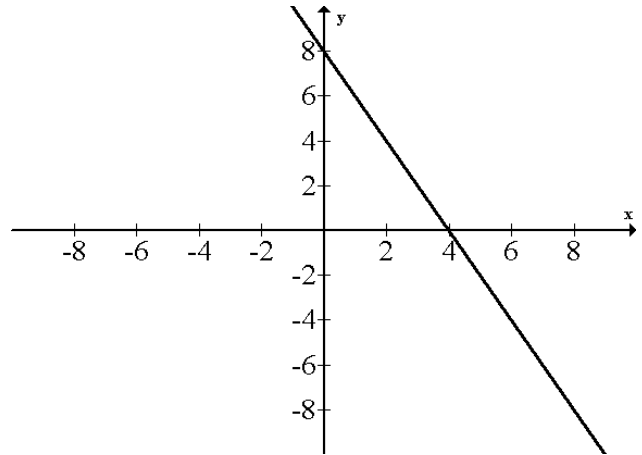


Intermediate 2 – Homework 4

Non-calculator section:

1. Find the equation of the line shown in the diagram opposite.



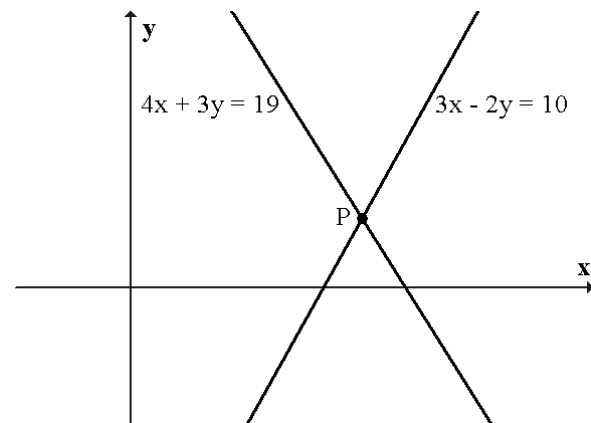
2. Expand the brackets and simplify $24mn + (4m - 3n)^2$
3. (a) Factorise fully $3a^2 - 9a$

(b) Hence simplify $\frac{3a^2 - 9a}{a^2 + 2a - 15}$

4. The diagram shows two lines with equations

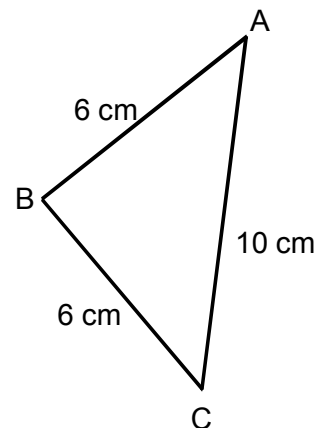
$$3x - 2y = 10 \quad \text{and} \quad 4x + 3y = 19$$

Find the coordinates of P, the intersection of these lines.



5. The diagram opposite shows triangle ABC. For this triangle show that

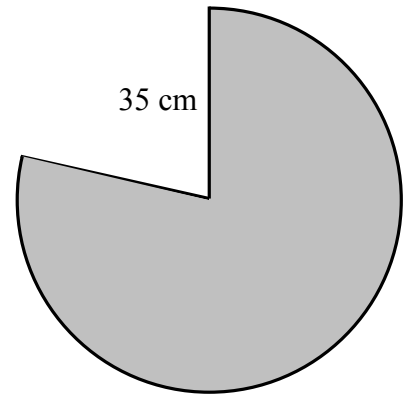
$$\cos ABC = -\frac{7}{18}$$



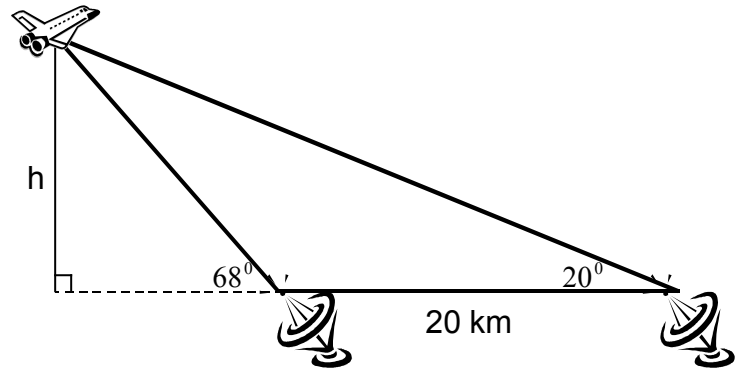
Calculator section:

6. Mr. And Mrs. Aziz invest £1000 for their daughter, Asma, on her first birthday. If the money is expected to grow at an average rate of 6% per annum, how much money will Asma have on her eighteenth birthday?

7. The top of a chimney is made from aluminium. A sector of a circle with radius 35 cm is cut out and shaped. If the area of the sector is 2993.3 cm^2 find the size of the angle at the centre of the sector.



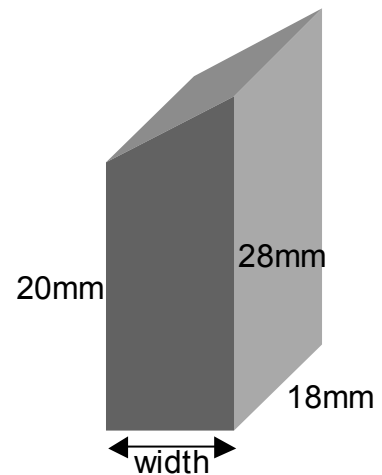
8. Two tracking stations, 20 km apart, are tracking a space shuttle, as shown. The angle of elevation from one station to the shuttle is 68° and from the other the angle of elevation is 20° .



Calculate, h , the height the shuttle is above the stations.

9. The cross-section of the prism opposite is made from a rectangle and a triangle.

Given the volume of the prism is 5184 mm^3 , calculate its width.



10. (a) The average monthly rainfall, to the nearest millimetre, in Edinburgh from May to November is shown below.

61 54 50 42 49 65 71



Use appropriate formulae to calculate the mean and standard deviation. **Show all your working clearly.**

- (b) Over the same period in Moscow, the average rainfall gives a mean of 60 and a standard deviation of 13. Compare the rainfall in the two cities.