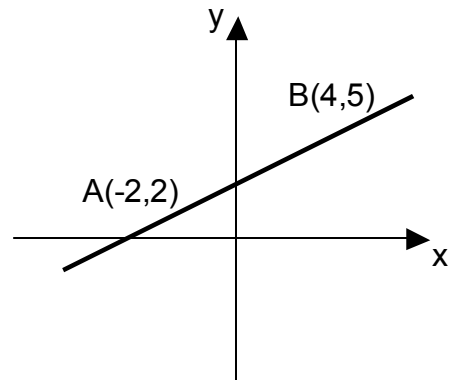


## S3 Homework 6

### Non-calculator section:

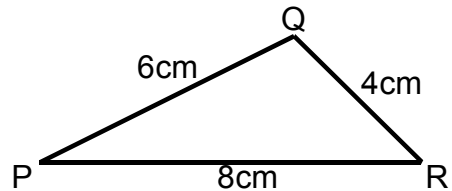
- Express as a single fraction in its simplest form  $\frac{3}{8} \div \left(\frac{3}{4}\right)^2$
- Expand the brackets and simplify  $(x + 2)(x - 1)^2$ .
- $P = \frac{m(m + n)}{m - n}$ . Find P when  $m = -2$  and  $n = -6$ .

- Find the equation of the line joining the points  $A(-2,2)$  and  $B(4,5)$ .
  - Find the coordinates of the points where this line cuts the x and y axes.



- The diagram opposite shows a triangle PQR with sides 4cm, 6cm and 8cm.

Show that  $\cos PQR = -\frac{1}{4}$ .



- 7, -2, 5, 3, 8

In the sequence above, each term after the first two terms is the sum of the previous two terms.

For example: the third term is  $5 = 7 + -2$

- A sequence follows the above rule.  
The first term is  $x$  and the second term is  $y$ . The 5<sup>th</sup> term is 5.

$$x, y, \quad \text{---}, \quad \text{---}, \quad 5$$

Show that  $2x + 3y = 5$

- This is repeated for another sequence, first term  $y$  and second term  $x$ , 6<sup>th</sup> term 17.

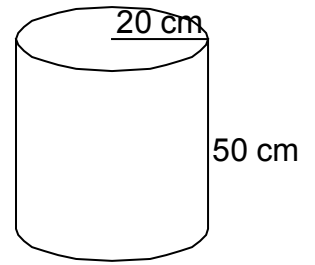
$$y, x, \quad \text{---}, \quad \text{---}, \quad \text{---}, \quad 17$$

Write down another equation in  $x$  and  $y$ .

- Find the values of  $x$  and  $y$ .

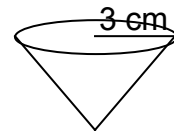
**Calculator section:**

7. A drinks container is in the shape of a cylinder with radius 20 cm and height 50cm.



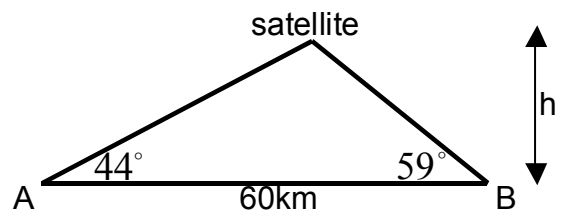
- (a) Calculate the volume of this container.  
**Give your answer correct to 2 significant figures.**  
( volume of cylinder =  $\pi r^2 h$  )

- (b) Liquid from this full container can fill 800 cups, in the shape of cones, each of radius 3cm.



What will be the height of each cone?

8. Two points A and B are 60 km apart. From A the angle of elevation to a satellite is  $44^\circ$  and from B the same satellite is at an angle of elevation of  $59^\circ$ .



Find the height, h, of the satellite above the ground.

9. A prism has a cross-section in the shape of the sector of a circle, radius 14 cm.

Calculate the volume of this prism.

