

## Risp 9: A Circle Property

I'm going to pick a number, let's say... 12.

Pick four numbers, any numbers, let's call them  $p$ ,  $q$ ,  $s$ , and  $t$ , where  $p$  and  $q$  multiply to 12, and  $s$  and  $t$  multiply to -12.

Now create the points  $(p, s)$  and  $(q, t)$ .

*Copy this diagram and write in your values.*

$p$	$q$	product	$s$	$t$	product
		12			-12

$p$	$s$	$q$	$t$
(            ,            )	(            ,            )		

*Everyone in your group should try to have a different diagram.*

Now on axes, plot the point  $A = (p, s)$  and the point  $B = (q, t)$ .  
Using compasses, draw the circle that has  $AB$  as diameter.

Do you notice anything unusual about your circle?

*Compare your circle with those your colleagues have drawn.*

*What do they all have in common?*

Can you find the equation of your circle?

Does this confirm your findings?

What happens if we change the starting number?

Can you make any conjectures?

Can you prove them?