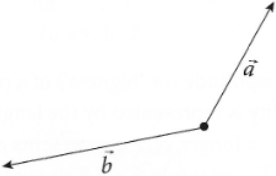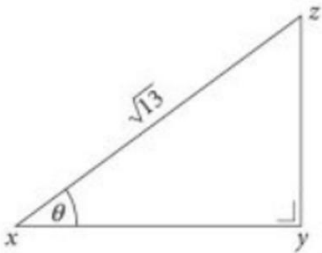| Assess your learning - **Vectors and Scalars** Rate your understanding of this chapter *(be honest!)*	🔴 No	🟠 Kinda	🟢 Yes	Revised for **Week 10 Exam**	Revised for **Week 30 Exam**
I can carry out a dimensional analysis on a formula to see if it's valid. E.g. Conduct a dimensional analysis of: $t^2 = 4\pi^2 \frac{l}{g}$					
I can explain the difference between vectors and scalars.					
I can give an example of a vector and a scalar.					
I can add two vectors together using the parallelogram method. E.g. Draw $2\vec{a} + 3\vec{b}$ onto the diagram below: 					
I can represent vectors on the $\vec{\imath}$ and $\vec{\jmath}$ plane. E.g. Show the vector $4\vec{\imath} - 3\vec{\jmath}$ on the $\vec{\imath}$ and $\vec{\jmath}$ plane.					
I can find the magnitude and direction of a vector, that's in $\vec{\imath}$ and $\vec{\jmath}$ form. E.g. Find the magnitude and direction of $4\vec{\imath} - 3\vec{\jmath}$.					
I can add/subtract vectors together, that are in $\vec{\imath}$ and $\vec{\jmath}$ form. E.g. If $\vec{a} = 3\vec{\imath} + \vec{\jmath}$, and $\vec{b} = \vec{\imath} + 7\vec{\jmath}$, write $\vec{a} + \vec{b}$ in terms of $\vec{\imath}$ and $\vec{\jmath}$.					
I can compute the dot product of 2 vectors. E.g. Evaluate: $(7\vec{\imath} + 10\vec{\jmath}).(2\vec{\imath} + 2\vec{\jmath})$.					
I can find the angle between two vectors, using the formula $\cos\theta = \frac{\vec{p}.\vec{q}}{\|\vec{p}\|.\|\vec{q}\|}$ E.g. Find the angle θ between $\vec{x} = 3\vec{\imath} + 4\vec{\jmath}$ and $\vec{y} = 4\vec{\imath} + 3\vec{\jmath}$.					
I can show if two vectors are perpendicular. E.g. Prove that $5\vec{\imath} - 2\vec{\jmath}$ is perpendicular to $8\vec{\imath} + 20\vec{\jmath}$.					
I can write in the opposite and adjacent sides of a right-angled triangle, when given the hypotenuse and one of the angles in the triangle θ, without evaluating θ. E.g. Calculate $\|yz\|$, if $\tan\theta = \frac{2}{3}$ 					

I can write a vector in $\vec{\imath}$ and $\vec{\jmath}$ form, when given its magnitude and direction. E.g. $\vec{a}$ is a vector of magnitude $25\ cm$ which makes an angle α with the positive x-axis. $\vec{b}$ is a vector of magnitude $5\ cm$, which makes an angle β with the negative x-axis. If $\tan\alpha = \frac{4}{3}$ and $\tan\beta = \frac{5}{12}$, write $\vec{p}$ and $\vec{q}$ in terms of $\vec{\imath}$ and $\vec{\jmath}$.					
I can convert between polar form and rectangular form. E.g. Write the vector $3\vec{\imath} + 4\vec{\jmath}$ in polar form.					
I can draw a time-displacement graph from a word problem. E.g. Joe runs at a constant speed of $6\ m/s$ from a point O, running along a straight track for $8\ s$. He takes a $10\ s$ break and then returns along the same track to O in $7\ s$. Draw a time-displacement graph of his motion.					