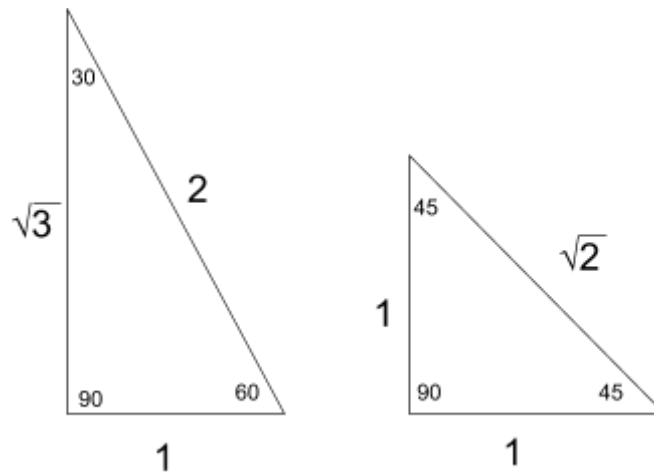


1. (T3.5, N, CI) We will now introduce two specific triangles, we call them the *special right triangles*.
(Oxford, 13.1, p.448)



- Keeping the ratio of the side lengths the same, rewrite the special right triangles with hypotenuses of length 1.
- Using the triangles from above, determine the following:

$\sin(30^\circ)$ or $\sin(\frac{\pi}{6})$	$\sin(45^\circ)$ or $\sin(\frac{\pi}{4})$	$\sin(60^\circ)$ or $\sin(\frac{\pi}{3})$
$\cos(30^\circ)$ or $\cos(\frac{\pi}{6})$	$\cos(45^\circ)$ or $\cos(\frac{\pi}{4})$	$\cos(60^\circ)$ or $\cos(\frac{\pi}{3})$
$\tan(30^\circ)$ or $\tan(\frac{\pi}{6})$	$\tan(45^\circ)$ or $\tan(\frac{\pi}{4})$	$\tan(60^\circ)$ or $\tan(\frac{\pi}{3})$

2. (T3.5, N, CI) Fill out the following table: (Oxford, 13.1, p.448)

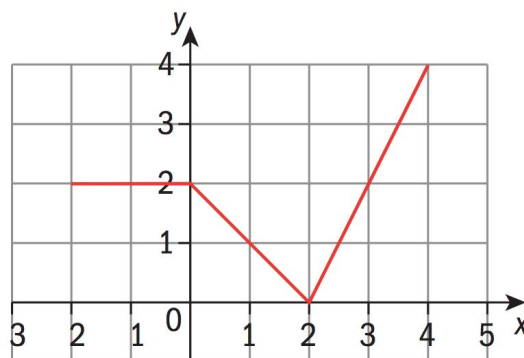
	$0^\circ / 0$	$90^\circ / \frac{\pi}{2}$	$180^\circ / \pi$	$270^\circ / \frac{3\pi}{2}$	$360^\circ / 2\pi$
Sine					
Cosine					
Tangent					

3. (T4.4, R, CA) The heights and weights of a sample of 11 students is listed below.
(Oxford, 10.1, p. 332)

Height (m) h	1.36	1.47	1.54	1.56	1.59	1.63	1.66	1.67	1.69	1.74	1.81
Weight (kg) w	52	50	67	62	69	74	59	87	77	73	67

- Write down the regression line of w on h .
- Use the regression line to estimate the weight of someone whose height is 1.6m.
- Write down the correlation coefficient for this regression line.

4. **(T2.11, E, CI)** The graph shows the function $f(x)$, for $-2 \leq x \leq 4$. *(Oxford, 1.6, p.21)*



- Let $h(x) = f(-2x) + 2$. In your notes sketch the graph of $h(x)$.
- Let $g(x) = f(\frac{1}{2}x - 1)$. The point $A(3, 2)$ on the graph of $f(x)$ is transformed to the point P on the graph of $g(x)$. Find the coordinates of P .

5. **(T2.9, R, CA)** Charlotte decided to go skydiving. After jumping out of the plane her velocity at time t seconds after her parachute opened was $v \text{ ms}^{-1}$ where

$$v(t) = 9 + 29e^{-0.063t}$$

(Oxford, 4.3, p.109)

- Sketch the graph of v against t
 - What was Charlotte's speed at the instant the parachute opened?
 - What was her lowest possible speed if she fell from a very great height?
 - If she actually landed 45 seconds after the parachute opened what was her speed on landing?
 - How long did it take her to reach half the speed she had when the chute opened?
6. **(T2.9, R, CA)** Two species of spiders inhabit a remote island. The population of species A is 12,000 and is increasing at a rate of 1.25% per month. The population for species B is 50,000 and is decreasing at a rate of 175 spiders each month. When will the population of species A be greater than the population of Species B? *(Oxford, 4.3, p.109)*
7. **(T1.3, E, CA)** A geometric series has a common ratio of 0.4 and sum to infinity of 250. Find the first term. *(Oxford, 6.3, p.167)*
8. **(T3.2, E, CA)** A hiker leaves camp and walks 5km on a bearing of 058° . She stops for a break, then continues walking for another 8km on a bearing of 103° . She stops again before heading straight back to camp. How far must she walk to get back to camp? *(Oxford, 11.5, p.386)*