


3rd July	
<p>James is creating a 7-digit code to lock his iPad.</p> <p>He does not repeat any digit.</p> <p>How many possible codes can James create?</p>	 Corbettmaths $\underline{10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4}$ $= \underline{604800}$
<p>Solve</p> $x + 5y - 3z = 122 \quad (1)$ $3x + 2y + 4z = 41 \quad (2)$ $2x + 2y + 3z = 39 \quad (3)$	$(1) + (3) \quad 3x + 7y = 161$ $(1) \times 4 + (3) \times 3 \quad 13x + 26y = 611$ $\Rightarrow x + 2y = 47$ $\Rightarrow \underline{3x + 6y = 141}$ $y = 20$ $x = 7$ $14 + 40 + 3z = 39$ $\Rightarrow \underline{z = -5}$
<p>a is 45% of b and $b : c = 4 : 5$</p> <p>Show $25a = 9c$</p>	$a = 0.45b$ $\frac{b}{c} = \frac{4}{5} \Rightarrow b = \frac{4}{5}c$ $\Rightarrow a = 0.45 \times \frac{4}{5}c$ $\Rightarrow a = \frac{9}{25}c$ $\Rightarrow \underline{25a = 9c}$
<p>Solve $4\sin\theta \tan\theta = 15$ for $0^\circ \leq \theta \leq 360^\circ$</p>	$\frac{4\sin^2\theta}{\cos\theta} = 15$ $4(1 - \cos^2\theta) = 15\cos\theta$ $0 = 4\cos^2\theta + 15\cos\theta - 4$ $0 = (4\cos\theta - 1)(\cos\theta + 4)$ $\cos\theta = \frac{1}{4} \text{ or } -4 \text{ (rejected)}$ $\theta = \underline{75.5^\circ, 284.5^\circ}$