Question	Answer	Mark	Mark scheme	Additional guidance
19	$3:7+4\sqrt{3}$	P1	for first step in process to find the length of a side of triangle *ACF*, eg $BC=\frac{x}{\sin 60}$ or $BC=\frac{2\sqrt{3}}{3}x$ or $DC=\frac{x}{\tan 60}$ oe eg $DC=x\tan 30$ or $DC=\frac{\sqrt{3}}{3}x$ or $AM=x\sin 60$ oe eg $AM=\sqrt{x^2-(0.5x)^2}$ or $AM=\frac{\sqrt{3}}{2}x$	For reference $x = AG = AB$ Must have expression for *BC* (or *FG*) or *DC* (or *FE*) or *AM* or where *M* is where perpendicular from *A* meets *BG* May use cos30 for sin60
		P1	for process to find area of *ABG* or area of *ACF*, eg (Area *ABG* =) $\frac{1}{2}\times x\times x\times \sin 60$ oe eg $"\frac{\sqrt{3}}{2}x"\times x\div 2$ or $\frac{\sqrt{3}}{4}x^2$ or (Area *ACF* =) $\frac{1}{2}\times\left(x+"\frac{2\sqrt{3}}{3}x"\right)\times\left(x+"\frac{2\sqrt{3}}{3}x"\right)\times\sin 60$ oe **or** for process to find ratio of sides, eg $AB:AC=x:x+"\frac{2\sqrt{3}}{3}x"$ oe	For reference may use $\frac{1}{\sqrt{3}}$ for $\frac{\sqrt{3}}{3}$ and $\frac{2}{\sqrt{3}}$ for $\frac{2\sqrt{3}}{3}$ and $\frac{\sqrt{3}}{2}$ for sin60 etc throughout
		P1	for process to find the areas of *ABG* **and** area of *ACF* , eg $\frac{1}{2}\times x\times x\times \sin 60$ **and** $\frac{1}{2}\times\left(x+"\frac{2\sqrt{3}}{3}x"\right)\times\left(x+"\frac{2\sqrt{3}}{3}x"\right)\times\sin 60$ oe or for process to find ratio of areas, eg $x^2:\left(x+"\frac{2\sqrt{3}}{3}x"\right)^2$ or $1:\left(1+"\frac{2\sqrt{3}}{3}"\right)^2$ oe	For reference Area *ABG* = $\frac{\sqrt{3}}{4}x^2$ oe Area *ACF* = $x^2+\frac{7\sqrt{3}}{12}x^2$ oe

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		P1	for process to expand the square, eg $\left(1+"\frac{2\sqrt{3}}{3}"\right)^2 = 1+\frac{4\sqrt{3}}{3}+\frac{4}{3}$ oe or $\left(x+"\frac{2\sqrt{3}}{3}x"\right)^2 = x^2+\frac{4\sqrt{3}}{3}x^2+\frac{4}{3}x^2$ oe **or** for $\left(1(x)+"\frac{2\sqrt{3}}{3}(x)"\right)\left(1(x)+"\frac{\sqrt{3}}{2}(x)"\right) = 2(x^2)+\frac{\sqrt{3}}{2}(x^2)+\frac{2\sqrt{3}}{3}(x^2)$ oe	May be implied by a correct simplified area for *ACF* eg $x^2+\frac{7\sqrt{3}}{12}x^2$
		A1	for $3:7+4\sqrt{3}$ oe in required form	Award 0 marks for a correct answer with no (or incorrect) supportive working