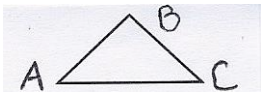
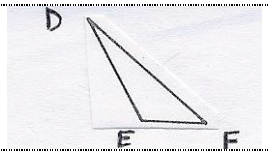
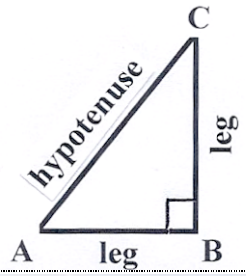
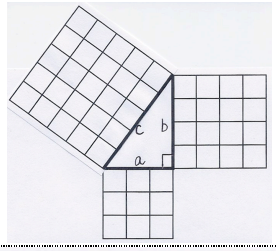
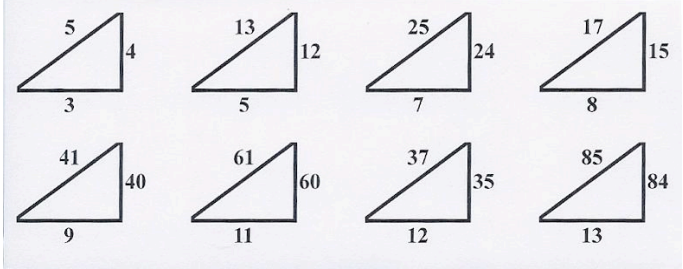
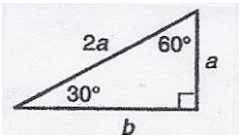
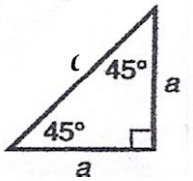
Mathematics Manual for the CAST Battery

#	TERM and DEFINITION	ILLUSTRATION	NOTES
a.	Triangles can be classified according to angles.		
i.	An ***acute*** triangle has three acute angles.		$m\angle ABC = 60^\circ$ $m\angle BCA = 60^\circ$ $m\angle CAB = 60^\circ$
ii.	An ***obtuse*** triangle has one obtuse angle.		$m\angle DEF = 120^\circ$
iii.	A ***right*** triangle has one 90° angle; the longest side of a right triangle is called the ***hypotenuse***, and the other two sides are called ***legs***.		$m\angle ABC = 90^o$
	The ***Pythagorean Theorem*** [$\mathbf{c^2 = a^2 + b^2}$] states that the square of the hypotenuse of any right triangle is equal to the sum of the squares of the other two legs.		$c^2 = a^2 + b^2$ $c^2 = 3^2 + 4^2$ $c^2 = 9 + 16$ $c^2 = 25$ $c = 5$
	When three integers are so related that the sum of the squares of two of them is equal to the square of the third, the set of three integers is called a ***Pythagorean Triple***.		
	In a triangle with angles 30°, 60°, 90°, the shortest side will be exactly half as long as the longest side.		$2a = 1\,\text{in}$ $a = \frac{1}{2}(1\,\text{in})$ $= \frac{1}{2}\,\text{in}$
	If the two legs of a right triangle are equal, the angles will be 45°, 45°, and 90° and the hypotenuse will be $\sqrt{2}$ times the length of the other sides. (This kind of triangle is called a *right-isosceles* triangle.		$a = \frac{3}{4}\,\text{in}$ $c = \frac{3}{4}\sqrt{2}\,\text{in}$

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