(9) B

r, s ARE ROOTS OF $x^2+3x+c=0$ SO $r\cdot s = c$, $r+s=-3$

IF $r^2+s^2=33$ THEN $(r+s)^2 = r^2+2rs+s^2 = 3^2 = 9$

$(r+s)^2-(r^2+s^2) = 2rs = 9-33 = -24$ SO $rs = \boxed{-12 = c}$

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(10) E

DROP 1ST AT 12ft, IF IT BREAKS DROP 2ND AT 1ft, INCREASE BY 1 UNTIL IT BREAKS. 12TH DROP AT 11ft

IF 1ST DID NOT BREAK AT 12ft DROP IT AT 23ft

IF IT BREAKS AT 23ft DROP 2ND AT 13ft INCREASE BY 1ft UNTIL IT BREAKS, 12TH TOTAL DROP AT 22ft.

GET A SEQUENCE OF DROP HEIGHTS FOR 1ST IF IT DOES NOT BREAK

DROP	1	2	3	4	5	6	7	8	9	10	11	12
	12	23	33	42	50	57	63	68	72	75	77	78
UP BY	11	10	9	8	7	6	5	4	3	2	1	

IF 1ST BALL BREAKS AT A LEVEL SAY AT 63 ft THEN DROP 2ND AT 58 ft AND INCREASE BY 1 ft.

ANY HEIGHT FROM 1 ft TO 78 ft CAN BE KNOWN.

BREAK

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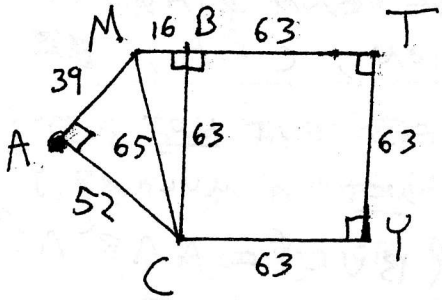
(11) A



$MB = MT - BT = 79-63 = 16$

$(MB)^2+(BC)^2=(MC)^2$

$16^2+63^2 = 65^2$, $AM=39$, $AC=52$

SO $\triangle AMC$ IS A RIGHT TRIANGLE

$13*(3,4,5)$ RIGHT TRIANGLE $AM \perp AC$

AREA OF AMTYC IS AREA $\triangle AMC$ + AREA $\triangle MBC$ + AREA SQUARE BTYC

AREA OF AMTYC $= \frac{1}{2}\cdot 39\cdot 52 + \frac{1}{2}\,16\cdot 63 + 63^2 = 5487$