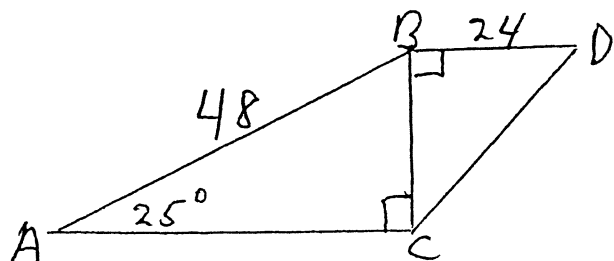**ANSWERS**

A) $40.2°$

B) 57.1

C) 585

A) Given $\triangle ABC$, $\angle A = 25°$, $\angle C = 90°$, $AB = 48$. In $\triangle BCD$, $\angle DBC = 90°$, and $BD = 24$. To the nearest tenth, calculate the degree measure of $\angle BDC$.

$BC = 48 \sin 25°$
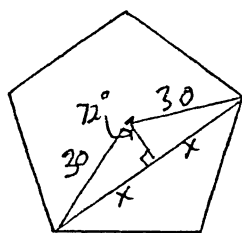
$\tan D = \dfrac{48 \sin 25°}{24} = 2 \sin 25°$

$D = \tan^{-1}(2 \sin 25°) = 40.2°$

B) A regular pentagon is inscribed in a circle of radius 30 inches. Calculate to the nearest tenth of an inch the length of a diagonal of the pentagon.

$x = 30 \sin 72°$

$d = 2x = 60 \sin 72° = 57.1$

C) A 180 foot tall antenna is located on top of a building. Some distance from the building the angle of elevation of the top of the antenna is 64.3 degrees. From a point 200 feet farther from the building, the angle of elevation is 53.4 degrees. To the nearest integer, calculate the height of the building.
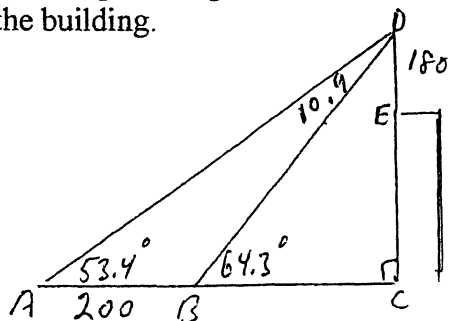
$\dfrac{BD}{\sin 53.4°} = \dfrac{200}{\sin 10.9°}$

$CD = BD \sin 64.3 = \dfrac{200 \sin 53.4° \sin 64.3°}{\sin 10.9°}$

$= 765.1 \qquad CE = 765 - 180 = 585$