The diagram below shows a trapeze artist at point T, 60 ft. vertically above the ground. Point C is the point on the ground directly below the trapeze artist.

60 ft.

48°   32°
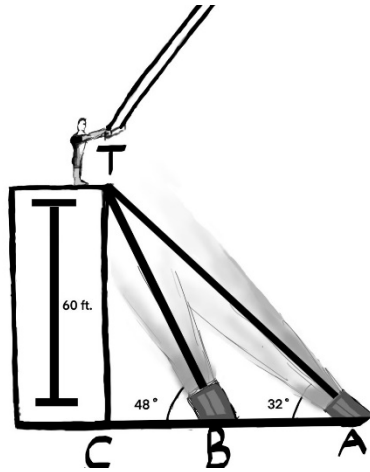
C   B   A   * Diagram not to scale

(a) Find the size of the angle of depression from T to A and label it on the diagram above.

(1 mark)

(b) Find the distance from C to A

(2 marks)

(c) Cameron walks closer to point C and stops at point B and looks upward at an angle of 48°. Find the distance from A to B.

(3 marks)

Mark scheme:

(a) 33°

(A1)

Diagram: [1 mark]

(A1)

(b) $CA = \dfrac{60}{\tan 33°}$ **OR** $CA = \sqrt{\left(\dfrac{60}{\sin 33°}\right)^2 - 60^2}$ **OR** $\dfrac{60}{\sin 33°} = \dfrac{CA}{\sin 57°}$
     (M1)

                                                                        (M1)(A1)

   $CA = 92.4\ (ft.)\ (92.39189…)$
     A1   2 marks

(c)   **Method 1**

Attempt to find BC   (M1)

$BC = \dfrac{60}{\tan 49°}$

$= 52.2 \ (ft.) \ (52.15720...)$ (A1)
(A1)

AB = 92.39189... - 52.15720...

$= 40.2 \ m \ (40.23469...)$ A1