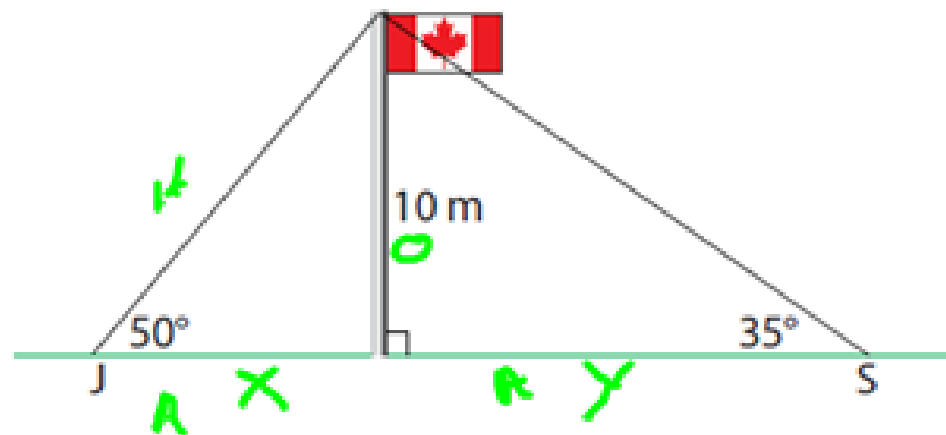


Jack and Sarah are facing each other on opposite sides of a 10-m flagpole. From Jack's point of view, the top of the flagpole is at an angle of elevation of about 50° . From Sarah's point of view, the angle of elevation is about 35° .



Sarah

$$\tan \theta = \frac{O}{A}$$

$$\tan 35 = \frac{10}{y}$$

$$y \cdot 0.70 = \frac{10}{y} \cdot y$$

- a) List two methods that Jack and Sarah could use to determine the distance between each other.

Jack

$$\tan \theta = \frac{O}{A}$$

$$\tan 50 = \frac{10}{x}$$

$$x \cdot 1.19 = \frac{10}{x} \cdot x$$

$$\frac{1.19x}{1.19} = \frac{10}{1.19}$$

$$x = 8.4$$

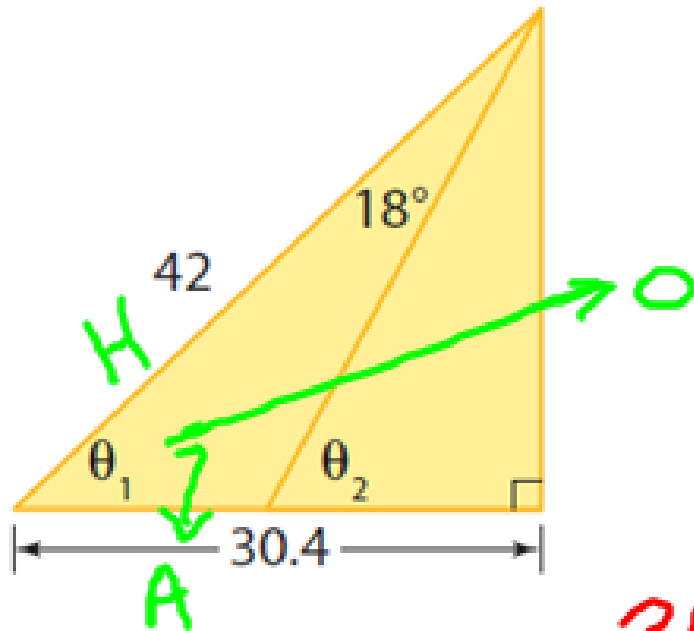
$$x + y = 8.4 + 14.28 = \boxed{22.68}$$

$$0.70y = 10$$

$$y = \frac{10}{0.70}$$

$$y = 14.28$$

c)



To find θ_2 you need Opp.

$$\tan \theta = \frac{O}{A}$$

$$\tan 44 = \frac{O}{30.4}$$

$$30.4 (0.96) = \frac{O}{30.4} \cdot 30.4$$

$$\cos \theta_1 = \frac{A}{H}$$

$$\cos \theta_1 = \frac{30.4}{42}$$

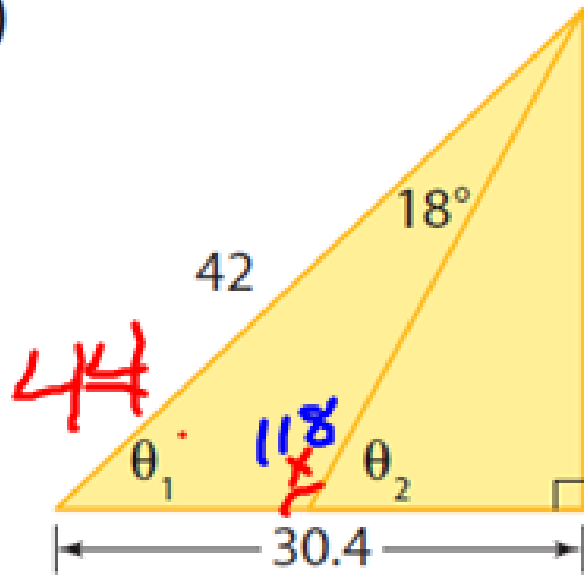
$$\cos \theta_1 = 0.72$$

$$\theta_1 = \cos^{-1}(0.72) =$$

$$\theta_1 = 43.94$$

$$\text{Opp} = 29.18$$

c)



$$Q_2 = 180 - 118 \\ = 62^\circ$$

$$Q_1 = 44^\circ$$

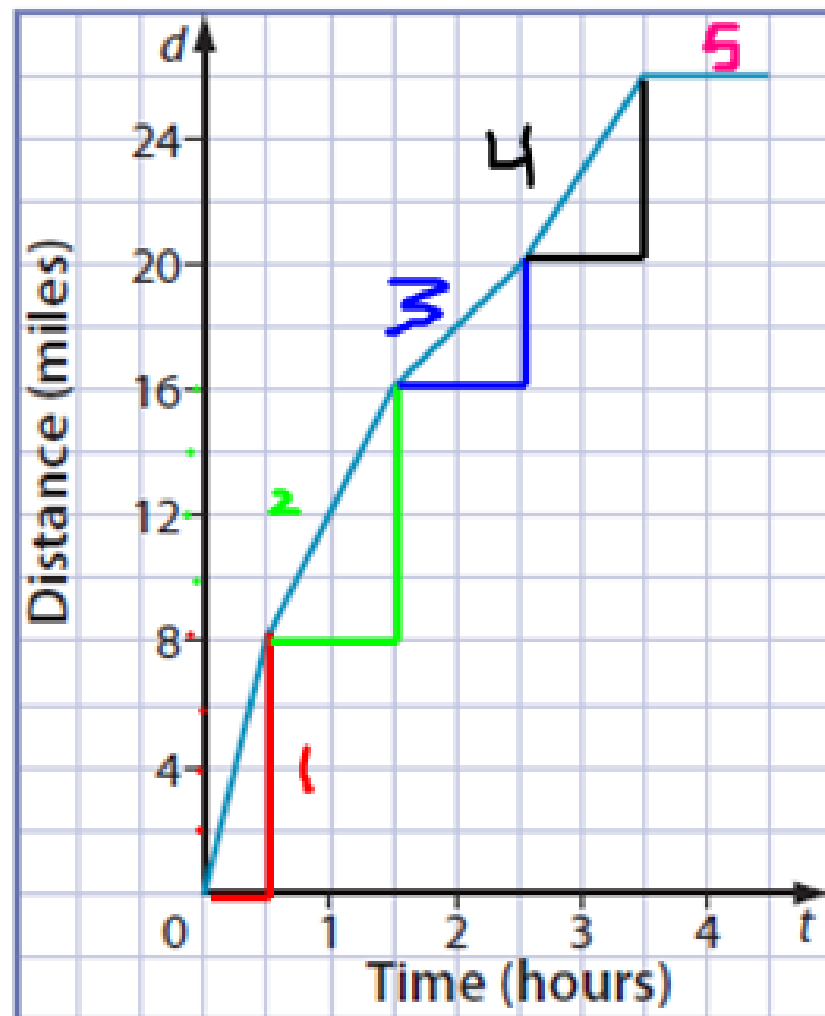
$$44 + 18 + x = 180$$

$$62 + x = 180 \\ -62 \quad -62$$

$$x = 180 - 62 \\ = 118^\circ$$

6. Chelsea plans to run in the Huffin' Puffin Marathon. of her last marathon are shown in the graph.

- Identify the intervals on the graph that have constant slope.
- Determine the slope of each of these intervals.
- Explain the slope as a rate of change.



1. Slope: $\frac{\text{Rise}}{\text{Run}}$

$$m = \frac{8}{0.5} = 16$$

$$\frac{8}{\frac{1}{2}} \rightarrow \frac{8}{1} \times \frac{2}{1} = 16$$

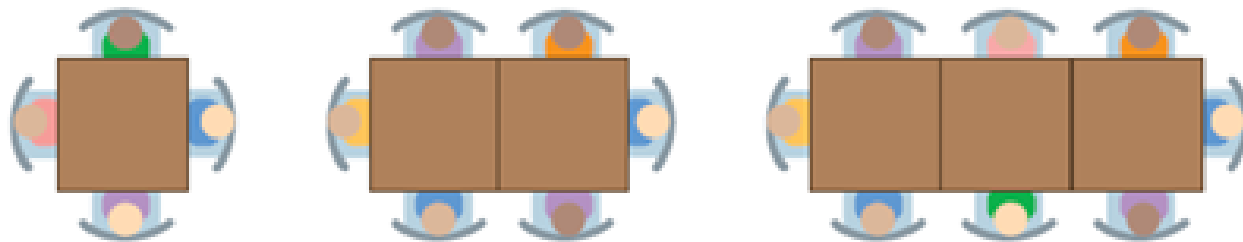
$$2) m = \frac{8}{1} = 8$$

$$5) m = \frac{0}{1} = 0$$

$$3) m = \frac{4}{1} = 4$$

$$4) m = \frac{5}{1} = 5$$

2. A classroom has small square tables that can sit one person on each side. The teacher wants to seat more than four students together. So, she puts several tables together.



- a) Copy and complete the chart to show the number of people seated at each set of tables.

Number of Tables	Number of People
1	4
2	6
3	8
4	10
5	12

$$\rightarrow \text{Slope} = \frac{\text{Vert. Change}}{\text{Horizontal Ch.}}$$

$$\text{Slope} = \frac{2}{1} = 2$$

- b) How does the number of people seated change as the number of tables increases by 1?
- c) What would be the slope of the line on a graph of the data?
- d) Describe the slope as a rate of change.