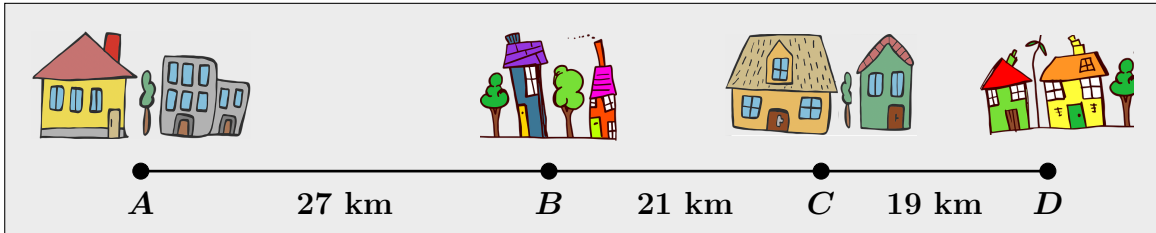# CEMC at Home

## Grade 4/5/6 - Tuesday, April 14, 2020
Roadmaps to Success

Question 1: Four towns, A, B, C, and D, lie in that order along a straight road. We are told that the distance from A to B is 27 km, the distance from B to C is 21 km, and the distance from C to D is 19 km. This information is shown in the *roadmap* below.

| A | 27 km | B | 21 km | C | 19 km | D |

Using these distances, we can see that the distance from A to C equals the sum of the distance from A to B and the distance from B to C, which gives 27 km + 21 km = 48 km. We can keep track of the distances between each pair of towns in the chart shown below. For example, notice that the distance from A to B (27 km) is placed in the same column as A and the same row as B in the chart.

- What is the distance from B to D? Put your answer in the correct place in the chart to the right.
- What is the distance from A to D? Put your answer in the correct place in the chart to the right.

A			
27	B		
48	21	C	
—	—	19	D

Question 2: Five towns, P, Q, R, S, and T, lie in that order along a different straight road.

| P | Q | R | S | T |
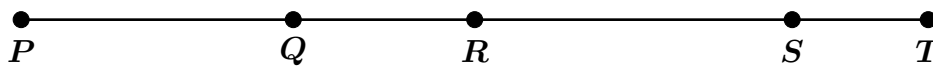
Since there are five towns, there are 10 different pairs of towns and these are listed below:

$$PQ, PR, PS, PT, QR, QS, QT, RS, RT, ST$$

Look at the chart below, which is meant to give all the distances between pairs of towns, in kilometres. Four of the distances are given: PR, PS, QS, and RT. For example, the distance from Q to S is 31 km. The six remaining distances are missing: PQ, PT, QR, QT, RS, and ST. It may be surprising to you that we can use the just the four pieces of information given here to complete the entire chart!

(a) What is the distance from R to S?

(b) What is the distance from Q to R?

(c) What is the distance from P to T?

(d) Complete the rest of the chart.

P				
—	Q			
29	—	R		
48	31	—	S	
—	—	29	—	T

To solve this problem, you might find it helpful to draw the distances given in the chart onto the roadmap above and add new distances when you find them. For example, what does the distance of 31 in the chart above represent on the roadmap? Note that the roadmap is not drawn exactly to scale.

Question 3: Suppose that five towns, U, V, W, X, and Y, lie in that order along a different straight road. Four of the distances between pairs of towns are given in the chart and six distances are missing. Unfortunately, someone made a mistake when measuring and recording the distances. Explain why it is impossible for all four of these distances to be correct.

U				
28	V			
102	—	W		
—	—	—	X	
—	200	125	—	Y

More Info:

Check the CEMC at Home webpage on Tuesday, April 21 for a solution to Roadmaps to Success.