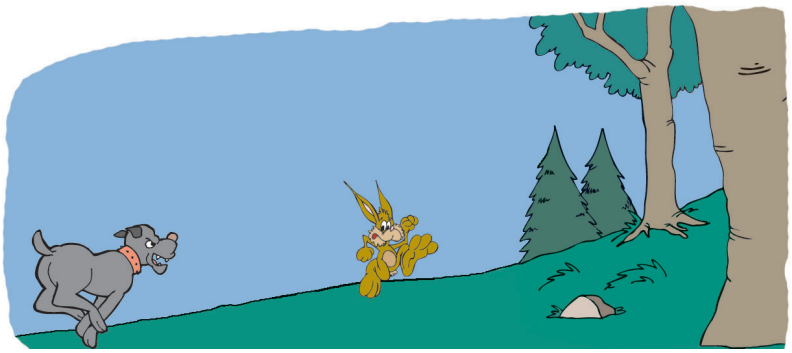
Problem

Curly the hound is chasing Hoppy, the rabbit. Every second, Curly runs 7 metres, and Hoppy runs 5 metres. Right now, they are 160 metres apart.

a) Fill in the table at right. How close is Curly to Hoppy after 10 seconds?

b) How many seconds will it take for Curly to catch the rabbit? How far will Curly have run?

c) A forest is 400 metres from where the rabbit starts running. Can the rabbit make it to the safety of the forest? Finish the story.



Time (sec)	Total Distance Run		Gap Between
	Curly	Hoppy	
0	7 m	5 m	160 m
1	14 m	10 m	158 m
2	21 m	15 m	
3			
4			
5			
6			
7			
8			
9			
10			

Hints

Hint 1 - a) What is a quick way to see how far Curly has run after 10 seconds? How far has Hoppy run?

Hint 2 - b) In every second, how much closer does Curly get to Hoppy?

Hint 3 - c) How long will it take Hoppy to reach the forest?

Hint 4 - c) How long will it take Curly to reach the forest?

Solution

a) See the table at right. After 10 seconds, the gap between Curly and Hoppy is 140 m.

b) Since Curly runs at 7 metres per second (m/s) and Hoppy runs at 5 m/s, Curly gains 2 m on Hoppy each second. Thus, to make up the 160 m gap between them will take Curly $160 \div 2 = 80$ s, i.e., Curly will catch up to the rabbit in 80 seconds. By that time, Curly will have run 560 m.

c) Since the forest is 400 metres from where Hoppy starts running, and Curly is 160 metres further away, i.e., 560 metres from the forest, we see that Curly will catch up to Hoppy JUST as Hoppy reaches the forest! So if Hoppy hides quickly, he might just make it!

Time (sec)	Total Distance Run		Gap Between
	Curly	Hoppy	
0	7 m	5 m	160 m
1	14 m	10 m	158 m
2	21 m	15 m	156 m
3	28 m	20 m	154 m
4	35 m	25 m	152 m
5	42 m	30 m	150 m
6	49 m	35 m	148 m
7	56 m	40 m	146 m
8	63 m	45 m	144 m
9	70 m	50 m	142 m
10	77 m	55 m	140 m