

Negative Numbers

Aim: Count forwards and backwards past zero into negative numbers. Solve problems using negative numbers and give reasons for answers.

Denis the Delivery Man

Denis has 10 parcels to deliver in a block of flats. The deliveries need to be made in a certain order depending on when people are at home. The flats have floors above and below ground level. The lift only stops at even numbered floors and Denis has to use the stairs to the odd numbered floors.

	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
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	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor 3			
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor 0			
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor -6			
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>
	Floor	<input type="text"/>	Order	<input type="text"/>

As Denis delivers the parcels, mark the floors he visits in the order that he makes the deliveries. Remember to use the negative value to mark the basement floors.

1. Denis starts his delivery at floor 7.
2. He then needs to travel down 10 floors. Where is he now?
3. Up he goes 7 floors for his next delivery.
4. He now delivers to basement floor -9. How far has he travelled? In which direction has he travelled?
5. He then climbs up 5 floors. Mark the floor on the scale.
6. For his next two deliveries, Denis must use the stairs for his first delivery; he must use the lift for the other journey. He wants to choose the journey with the least amount of stairs to walk. If he has a parcel for floor 6 and floor -10, which delivery must he go to using the lift? Explain your answer.
7. Denis has delivered 7 parcels now and he must go to reception on the ground floor to pick up his last three deliveries. How many floors must he travel?
8. Two parcels are for floor 5, the final parcel is for 12 floors below that. Where does Denis finish his deliveries?
9. How many floors must Denis travel by lift to get back to the ground floor?
10. How many floors has Denis not visited on his delivery round?

Challenge

If Denis now has to start at the lowest floor and deliver parcels to every floor that he hasn't delivered parcels to, how many flights of stairs would he need to use? He must always be walking up the stairs. Show how you worked this out.