

1a. RABRCR

1b. AC takes 8 minutes while ARC required 6 minutes only, so AC is not the most efficient route for travelling A and C.

BC takes 6 minutes while BRC required 5 minutes only, so BC is not the most efficient route for travelling B and C.

RARBR takes 14 minutes while RABR or RBAR only take 12 minutes.

Shortest routes from R to A,B,C are RA, RB, RC.

Shortest route from A to C is ARC.

Shortest route from B to C is BRC.

BC or AC will not use in the delivery.

RCR is one part of the delivery and RABR or RBAR is another part of the delivery.

2a. RABCR

2b. After 3 months, the time required were changed. This time, when we are travelling from A to B, B to C, or C to A we need not to via R as the direct route required time are now shorter than equal to via R.

In addition, the time for ARC and AC are the same, so my first location will be either A or C and I will be coming back from either A or C also.

3a.

If $x > (w + u)$ and $y > (w + v)$ and $z > (u + v)$,

Use R(L1)R(L2)R(L3)R to complete the delivery. Where L1, L2, L3 are A,B,C

If $x < (w + u)$ and $y > (w + v)$ and $z > (u + v)$,

Use R(L1)(L2)RCR or RCR(L1)(L2)R. Where L1 and L2 are A and B

If $x > (w + u)$ and $y < (w + v)$ and $z > (u + v)$,

Use R(L1)(L2)RBR or RBR(L1)(L2)R. Where L1 and L2 are A and C

If $x > (w + u)$ and $y > (w + v)$ and $z < (u + v)$,

Use R(L1)(L2)RAR or RAR(L1)(L2)R. Where L1 and L2 are B and C

If $x < (w + u)$ and $y < (w + v)$ and $z > (u + v)$,

Use $R(L1)A(L2)R$. Where $L1$ and $L2$ are B and C

If $x > (w + u)$ and $y < (w + v)$ and $z < (u + v)$,

Use $R(L1)C(L2)R$. Where $L1$ and $L2$ are A and B

If $x < (w + u)$ and $y > (w + v)$ and $z < (u + v)$,

Use $R(L1)B(L2)R$. Where $L1$ and $L2$ are A and C

If $x < (w + u)$ and $y < (w + v)$ and $z < (u + v)$,

Find the shortest route from R to any point(L^*), if RA is shortest then L^* is A , if RB is shortest then L^* is B , if RC is shortest then L^* is C .

Find the shortest route from L^* to the next point, if L^* is A and $x < y$ then go to B else go to C , if L^* is B and $x < z$ then go to A else go to C , if L^* is C and $y < z$ then go to A else go to B .

Find the shortest route from the last point to R , if $x + u < w$ or $x + w < u$ or $z + u < v$ or $z + v < u$ or $y + w < v$ or $y + v > w$ use the above route to back to R otherwise back to R directly.